

VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

(Re – accredited with 'A' Grade by NAAC)

VIRUDHUNAGAR

10.01.2014

MINUTES OF THE FIFTH ACADEMIC COUNCIL MEETING

The fifth Academic Council Meeting of Virudhunagar Hindu Nadars' Senthikumara Nadar College (Autonomous) Virudhunagar was held on 10th January, 2014 at 11.30 a.m. in V.P.S.A.Paramasiva Nadar – Thillai Sivakami Ammal Memorial Building II MBA Hall.

The Chairperson and Principal welcomed the gathering

The Chairperson also introduced Dr.S.Sekar Subramanian, Chairperson of Board of Studies of B.B.A., Mr.R.Ayyampermual, Chairperson of Board of Studies of M.B.A and M.Sc. IT&M and L.N.Algumanikumar, Chairperson of Board of Studies of NME – NCC to the council who were inducted as new members of the Academic Council.

Five subjects were presented for resolution

Dr.R.Selvam, Chairperson, Board of Studies of Skill Based Subject - **Employability Skills** moved the subject 1

Subject 1:

Approval for the introduction of common Skill Based Subject for all the Under Graduate Courses in V semester.

Resolution

The subject was considered and resolved to approve the introduction of a common Skill Based Subject **Employability Skills** for all Under Graduate courses in V semester.

Lt.N.Alagumanikumar, Chairperson Board of Studies of NME – NCC moved the subject 2

Subject 2:

Approval for the introduction of NCC as Non Major Elective subject.

Resolution

The subject was considered and resolved to approve the introduction of National Cadet Corps as one of the Non-Major Elective subjects in the III year Under Graduate courses.

Dr.P.Sami, Dean Student Services moved the subject 3

Subject 3:

Approval for the Boards of Studies constituted for the common Skill Based subject and the Non Major Elective – NCC.

Resolution

The subject was considered and resolved to approve the Boards of Studies constituted for the common Skill Based subject and the Non Major Elective – NCC.

Subject 4

Approval for the changes in the title of papers and course content in the existing syllabi and the detailed syllabi for the III year courses passed in various Boards of Studies.

Dr. S. Jeyaram, Chairperson, Board of Studies of B.A. Tamil moved the subject 4(i)

Subject 4 (i):

Approval for the third year syllabus of B.A. Tamil and the changes in the title of the papers passed in the Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1211 - 1225).

Resolution

The subject was considered and resolved to approve both the third year syllabus for B.A. Tamil and the changes made in the title of the papers.

Dr. A. Mohankumar, Chairperson, Board of Studies of B.A. English, moved the subject 4(ii)

Subject 4(ii):

Approval for the third year syllabus of B.A. English and the changes in the title of the papers passed in the Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1226-1234).

Resolution

The subject was considered and resolved to approve both the third year syllabus for B.A. English and the changes made in the title of the papers.

Dr. G. Ravi, Chairperson, Board of Studies of B.A. History moved the subject 4 (iii)

Subject 4(iii):

Approval for the third year syllabus of B.A. History and the changes in the title of the papers passed in the Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1246-1258).

Resolution

The subject was considered and resolved to approve both the third year syllabus for B.A. History and the changes made in the title of the papers.

Dr. E. Narayanan Nadar, Chairperson, Board of Studies of B.A. Economics moved the subject 4(iv)

Subject 4(iv):

Approval for the third year syllabus of B.A. Economics and the changes in the title of the papers passed in the Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1235-1245).

Resolution

The subject was considered and resolved to approve both the third year syllabus for B.A. Economics and the changes made in the title of the papers.

Dr. M. Sakthivel, Chairperson, Boards of Studies of B.Com., B.Com. with CA, and Add on course on Computerized Accounting and Office Automation moved the subject 4 (v)

Subject 4 (v):

Approval for the third year syllabus of B.Com., B.Com. with CA and Advanced Diploma in Computerized Accounting and Office Automation and also the changes in the title of the papers for B.Com. with CA passed in their respective Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1259-1280).

Resolution

The subject was considered and resolved to approve the third year syllabus for B.Com., B.Com. with CA and Advanced Diploma in Computerized Accounting and Office Automation and also the changes made in the title of the papers for B.Com. CA.

Dr.S.Sekar Subramanian, Chairperson, Board of Studies of B.B.A. moved the subject 4 (vi)

Subject 4 (vi):

Approval for the third year syllabus of B.B.A. and the changes in the title of the papers passed in the Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1291-1299).

Resolution

The subject was considered and resolved to approve both the changes made in the title of the papers and the third year syllabus for B.B.A.

Thiru S. Muthuraj, Chairperson, Boards of Studies of B.Sc. Maths and B.Sc. Maths with CA, moved the subject 4 (vii)

Subject 4 (vii):

Approval for the third year syllabus of B.Sc. Maths and B.Sc. Maths with CA, the changes in the title of the papers and changes in the II M.Sc. subjects passed in their respective Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1304-1329).

Resolution

The subject was considered and resolved to approve both the third year syllabus for B.Sc. Maths and B.Sc. Maths with CA and the changes made in the title of the papers.

Dr. S. Rajasingh, Chairperson, Board of Studies of B.Sc. Physics and M.Sc. Physics, moved the subject 4 (viii)

Subject 4 (viii):

Approval for the third year syllabus of B.Sc. Physics and changes in the syllabus of M.Sc. Physics and the title of the papers in B.Sc. Non Major Elective subjects passed in the Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1330-1347).

Resolution

The subject was considered and resolved to approve both the third year syllabus for B.Sc. Physics and the changes made in the syllabus of M.Sc. Physics and the title of the papers in B.Sc. Non Major Elective.

Dr. R. Boominathan, Chairperson, Board of Studies of B.Sc. Chemistry moved the subject 4 (ix)

Subject 4 (ix):

Approval for the third year syllabus of B.Sc. Chemistry and the changes in the title of the papers passed in the Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1348-1360).

Resolution

The subject was considered and resolved to approve both the third year syllabus for B.Sc. Chemistry and the changes made in the title of the papers.

Dr. A. Rajendran, Chairperson, Board of Studies of B.Sc. Botany moved the subject 4 (x)

Subject 4 (x):

Approval for the third year syllabus of B.Sc. Botany passed in the Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1361-1373).

Resolution

The subject was considered and resolved to approve the third year syllabus for B.Sc. Botany passed in the Board of Studies Meeting.

Thiru V. Shanmugavelu, Chairperson Board of Studies of B.Sc. Zoology moved the subject 4 (xi)

Subject 4 (xi):

Approval for the third year syllabus for B.Sc. Zoology and the changes in the titles of the papers passed in the Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1374-1390).

Resolution

The subject was considered and resolved to approve both the third year syllabus for B.Sc. Zoology and the changes made in the title of the papers.

Dr. T. Kathirvalavakumar, Chairperson, Board of Studies of B.Sc. Computer Science moved the subject 4 (xii)

Subject 4 (xii):

Approval for the third year syllabus for B.Sc. Computer Science and changes in the syllabus of M.Sc. Computer Science and changes in the titles of the papers in B.Sc. Computer Science and the elimination of project and viva-voce in Certificate and Diploma in Internet and Web Designing passed in the Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1394-1414).

Resolution

The subject was considered and resolved to approve the third year syllabus for B.Sc. Computer Science and the changes made in the syllabus of M.Sc. Computer science, the changes made in the Career Oriented Programme and the title of the papers for B.Sc. Computer Science.

Thiru.T.Durai Anand, Chairperson, Board of Studies of B.Sc. Microbiology moved the subject 4(xiii)

Subject 4 (xiii):

Approval for the third year syllabus for B.Sc. Microbiology passed in the Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1460-1474).

Resolution

The subject was considered and resolved to approve the third year syllabus for B.Sc. Microbiology passed in the Board of Studies Meeting.

Thiru D. Rajkumar, Chairperson, Boards of Studies of BCA, and MCA moved the subject 4(xiv)

Subject 4 (xiv):

Approval for the third year syllabi for BCA, and MCA passed in the Board of Studies meeting held on 07.12.2013 as given in Annexure II (p. 1433-1459).

Resolution

The subject was considered and resolved to approve the third year syllabi for BCA, and MCA courses passed in the Board of Studies Meeting.

Mr.Z.Ramya Sushil, Chairperson, Board of Studies of B.Sc. IT and M.Sc. CS&IT moved the subject 4 (xv)

Subject 4 (xv):

Approval for the syllabus for third year B.Sc. IT and the changes in the existing syllabus of B.Sc. IT and M.Sc. CS&IT passed in the Board of Studies Meeting held on 07.12.2013 as given in Annexure II (p. 1415-1426).

Resolution

The subject was considered and resolved to approve the syllabus for third year B.Sc. IT and the changes in the existing syllabus of B.Sc. IT and M.Sc. CS&IT.

Dr.A.Sarathi, Dean - Internal Examinations moved the subject 4(xvi)

Subject 4(xvi)

Approval for the third year syllabus of B.Com. E-Commerce and changes in the syllabus of M.Com. with CA passed in the Board of Studies Meeting held on 07.12.2013 as given in Annexure II (p. 1281-1290).

Resolution

The subject was considered and resolved to approve both the third year syllabus for B.Com. E-Commerce and changes in the syllabus of M.Com. with CA.

Dr.T.Murugesan, Chairperson, Board of Studies of Physical Education moved the subject 4 (xvii)

Subject 4(xvii):

Approval for the changes in the syllabus of Certificate / Diploma / Advanced Diploma in Yoga Meditation of Holistic Health passed in the Board of Studies Meeting held on 07.12.2013 as given in Annexure II (p. 1300-1303).

Resolution

The subject was considered and resolved to approve the changes in the syllabus of Carrier Oriented Programme Yoga Meditation of Holistic Health passed in its Board of Studies Meeting.

Dr.R.Selvam, Chairperson, Board of Studies of Skill Based Subject **Employability Skills** moved the subject 4 (xviii)

Subject 4 (xviii):

Approval for the syllabus for the common Skill Based Subject **Employability Skills** passed in the Board of Studies Meeting held on 06.01.2014 as given in Annexure II (p.1475)

Resolution

The subject was considered and resolved to approve the syllabus for **Employability Skills** passed in the Board of Studies Meeting.

Dr.N.Alagumanikumar, Chairperson Board of Studies of **NME – NCC** moved the subject 4 (xix)

Subject 4 (xix):

Approval for the syllabus for the **Non Major Elective subject NCC** passed in the Board of Studies Meeting held on 06.01.2014 as given in Annexure II (p.1476-1477).

Resolution

The subject was considered and resolved to approve the syllabus for **NME – NCC** passed in the Board of Studies Meeting.

Thiru D. Rajkumar, Chairperson, Board of Studies of BCA and MCA moved the subject 5

Subject 5:

Approval for the exemption of first year subjects for students seeking admission to M.C.A. through lateral entry

Resolution


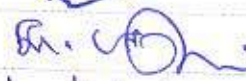
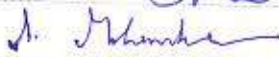
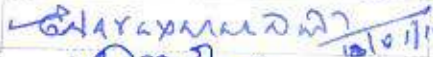

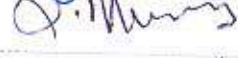


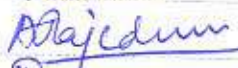


The subject was considered and resolved to exempt the M.C.A. students admitted through lateral entry from appearing for the 1 year subjects subject to the condition that they should earn the required credits of 90 at the end of the course.

All resolutions were unanimously passed.






Out of 40 members, 32 turned out for the meeting and 8 members got permission to absent.

Thiru R. Palaniappan, the Member Secretary proposed vote of thanks and the meeting came to an end.

Members Present:

S.No.	Name & Designation	Signature
1.	Dr. S. Jayaram, M.A.,M.Phil.,Ph.D.,P.G.Dip.in SS Mrs. S	
2.	Dr. K. Sridhar, M.A.,M.Phil.,Ph.D.,P.G.D.J.M.C	
3.	Dr. A. Mohan Kumar, M.A.,M.Phil.,Ph.D.	
4.	Dr. E. Narayanan Nadar, M.A.,M.Phil.,Ph.D.	
5.	Dr. G. Ravi, M.A.,M.Phil.,M.L.I.S.,Ph.D.	
6.	Thiru S. Muthuraj, M.Sc.,M.Phil.	
7.	Dr. S. Raja Singh, M.Sc.,M.Phil.,Ph.D.	
8.	Dr. R. Boominathan, M.Sc.,M.Phil.,Ph.D.	
9.	Dr. A. Rajendran, M.Sc.,M.Phil.,Ph.D.	
10.	Thiru V. Shanmugavelu, M.Sc.,M.Phil.	
11.	Dr. T. Kathirvalavakumar, M.Sc.,PGDCA.,M.Phil.,Ph.D.	
12.	Dr. M. Sakthivel, M.Com.,PGDCA.,Ph.D.	
13.	Dr.S.Sekar Subramanian, M.Com.,M.Phil.,MBA.,Ph.D.	

14.	Mr.R.Ayyamperumal, MBA., M.Phil.	R.A → 10/1/14
15.	Dr. R. Neelamegam, M.Com.,Ph.D.	
16.	Thiru Z. Ramya Sushil, M.Sc., M.B.A.,M.Phil.,M.Tech.	
17.	Thiru T. Durai Anand, M.Sc.,M.Phil.	
18.	Thiru D. Raj Kumar, M.C.A.,M.Phil.	
19.	Dr.T. Murugesan, MPES.,M.Phil.,PGDY.,PGDSM.,Ph.D.	
20.	Lt.N.Alagumanikumar, M.Sc.,M.Phil.	
21.	Mrs. T. Sasikala, M.A.(Hindi)	
22.	Dr. K. Rajarathinam, M.Sc.,Ph.D.	
23.	Dr. J. Samuel Kirubahar, M.A.,M.Phil.,Ph.D.,B.Ed.	
24.	Dr. N. Prithivikumar, M.Sc.,M.Phil.,Ph.D.,PBDCSA.	
25.	Thiru R. Ramesh Babu, M.Sc.,M.Phil.	
26.	Thiru K.C.Gurusamy, B.Sc.	
27.	Thiru S.P.G.C.Brindavan, M.B.A.	
28.	Thiru O.M.S.S.P.C.Marimuthu, M.Tech.	
29.	Dr. P. Elango,MBBS.,Dortho	
30.	Dr. M.Eyini, Ph.D.	
31.	Director Self-financing Courses (Ex-officio)	
32.	Dr. A. Mercy Pushpalatha, Principal, Lady Doak College (Autonomous), Tallakulam, Madurai - 625 002.	A. Mercy Pushpalatha 10/1/14
33.	Dr. G. Maris Kumar, Principal, S.V.N. College (Autonomous), Madurai - 625 021.	

34.	Dr. M. Kannan, Principal, S.N. College (Autonomous), Madurai.	Not present
35.	Thiru R. Palaniappan, M.C.A.,M.Phil. Controller of Examinations	
36.	Dr. R. Selvam, M.A.,M.Phil.,Ph.D. Dean - Arts	
37.	Dr. A. Sarathi, M.Sc.,M.Phil.,Ph.D. Dean - Internal Exams & Joint Controller of Examinations	
38.	Dr. P. Sami, M.Sc., M.Phil.,Ph.D. Dean - Student Services	
39.	Dr. P.Sundara Pandian, M.Com.,M.B.A.,M.A. M.Phil.,PGDPM&IR.,PGDCA.,DLLAL.,Ph.D.	



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Virudhunagar – 626 001

Course Name : B.A.
Discipline : Tamil Literature

	Part	Subject	Hour	Int.+Ext.=Total	Credit	Subject Code	Revision
V	Core 9	சிறுநிலக்கியம்	5	25+75=100	5	U1TAC51	Revised
	Core 10	பொருள் இலக்கணம் புறப்பொருள் வெண்பா மாலை	5	25+75=100	5	U1TAC52	Nochange
	Core 11	இக்கால மொழியியல்	5	25+75=100	5	U1TAC53	Interchange
	Core 12	தமிழ் இலக்கிய வரலாறு	5	25+75=100	5	U1TAC54	No Change
	Elective I	சுற்றுலாவியல்	6	25+75=100	5	U1TAE51	No Change
	SBE 4	பணிவாய்ப்புத் திறன்	2	25+75=100	2	U1PS51	No Change
	NME I	ஆளுமைத் திறன்	2	25+75=100	2	U1TAN51	Revised

VI	Core 13	சங்க இலக்கியம்	6	25+75=100	4	U1TAC61	Revised
	Core 14	இலக்கியத் திறனாய்வுக் கொள்கைகள்	6	25+75=100	4	U1TAC62	Interchange
	Elective 2	தமிழகக் கோயிற்கலைகள்	6	25+75=100	5	U1TAE61	No Change
	Elective 3	திரைப்படக் கலையும் விமர்சனமும்	6	25+75=100	5	U1TAE62	Revised
	SBE 5	பேச்சுக் கலை	2	25+75=100	2	U1TAS61	Revised
	SBE 6	படைப்புத்திறன்	2	25+75=100	2	U1TAS62	No Change
	NME 2	தமிழ் இலக்கிய வரலாறு	2	25+75=100	2	U1TAN61	No Change

பணிவாய்ப்புத் திறன்

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

1. 150 objective type questions with four alternatives for each question.
2. 30 questions to be asked from each unit.
3. Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries ½ mark.
3. Total marks to be reduced to 25.



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மூன்றாமாண்டு - ஐந்தாம் பருவம்

தரப்புள்ளி : 5

நேரம் - 5 மணி

மதிப்பெண் : 75

Subject Code : UITAC51

சிறறிலக்கியம்

நோக்கம் :

வலிமை வாய்ந்த பொருளாதார நிறுவனங்களான பேரரசையும் பெருங்கோயிலையும் சார்ந்து உருவான சிறறிலக்கியங்கள் பக்திச்சார்பு கொண்டு எழுந்தமையை உணர்த்துதல்.

பயன் :

பக்திச்சார்பு கொண்ட சிறறிலக்கியங்கள் தளச்சார்புடன் (Localised) தமிழர் பண்பாட்டு வரலாற்றில் பதிவு பெற்றிருப்பதை உணர்த்தல்.

கூறு-1 சிறறிலக்கியத்தின் தோற்றம்-வளர்ச்சி - வகைகள் - அமைப்பு - பாடுபொருள் - பாடியோர்

கூறு-2 தமிழ்விடு தூது (முழுவதும்)

கூறு-3 (i) திருச்செந்தூர் முருகன் பிள்ளைத் தமிழ் - இறுதி மூன்று பருவங்கள் (ஆண்பால் பிள்ளைத் தமிழ்ப் பகுதி)

(ii) மீனாட்சியம்மை பிள்ளைத் தமிழ் - இறுதி மூன்று பருவங்கள் (பெண்பால் பிள்ளைத் தமிழ்ப் பகுதி)

(iii) அண்ணாமலை ரெட்டியார் காவடிச் சிந்து (முழுவதும்)

கூறு-4 (i) முக்கூடற்பள்ளு - நாட்டுவளம், நகர்வளம், பள்ளியர் ஏசல் பகுதிகள்

(ii) திருக்குறறாலக் குறவஞ்சி - மலைவளம், நாட்டுவளம், குறத்தி குறி கூறும் பகுதிகள் (பாடல் 61-79)

கூறு-5 (i) கலிங்கத்துப்பரணி - களம் பாடியது

(ii) நந்திக்கலம்பகம் - கலம்பக உறுப்புக்களைக் கொண்ட பாடல்கள் மட்டும்.

நந்திக்கலம்பகம்

கலம்பக உறுப்புகள் கொண்ட பாடல்கள்:

1. புயம் (7)
2. இரங்கல் (8,9,46,59,102)
3. தூது (3,88)
4. ஆற்றுப்படை(23)
5. ஊசல் (29)
6. மடக்கு (25,40)
7. மடல் (18)
8. காலம் (35),112
9. சம்பிரதம் (64)
10. மதங்கு (70)
11. மறம்(77)
12. பாண் (13,101)
13. மேகம்(105)
14. வெறி விலக்கல் (46)



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15. அலர் (9)
16. கைக்கிளை (11)
17. கார் (13)
18. தென்றல் (14)

பாடநூல்கள்

1. தமிழ் விடு தூது, கழக வெளியீடு, சென்னை
2. திருக்குற்றாலக் குறவஞ்சி, கழக வெளியீடு, சென்னை
3. முக்கூடற்பள்ளு, கழக வெளியீடு, சென்னை
4. கலிங்கத்துப் பரணி, கழக வெளியீடு, சென்னை
5. திருச்செந்தூர் முருகன் பிள்ளைத் தமிழ், கழக வெளியீடு, சென்னை
6. மீனாட்சியம்மை பிள்ளைத் தமிழ், கழக வெளியீடு, சென்னை
7. நந்திக்கலம்பகம், விளக்க உரை சோ. அருணாசல தேசிகர், முல்லை நிலையம், சென்னை
8. சென்னிவலம் அண்ணாமலையாரின் காவடிச் சிந்து, இரா. திருமுருகன் (பதி.ப.), பாவலர் பண்ணை புதுச்சேரி.

பார்வை நூல்கள்

1. ந.வீ. செயராமன், சிற்றிலக்கியச் செல்வங்கள், மணிவாசகர் பதிப்பகம், சிதம்பரம்.
2. ந.வீ.செயராமன் சிற்றிலக்கியத் திறனாய்வு, மணிவாசகர் பதிப்பகம், சிதம்பரம்.
3. சிற்றிலக்கியச் சொற்பொழிவுகள், கழக வெளியீடு, சென்னை.
4. முத்துச் சண்முகம் & நிர்மலா மோகன், சிற்றிலக்கியங்களின் தோற்றமும் வகையும், முத்துப்பதிப்பகம், மதுரை
5. சௌந்திரபாண்டியன், தமிழில் கலம்பக இலக்கியம், ஸ்டார் பிரசுரம், சென்னை.
6. பன்னிருபாட்டியல், கழக வெளியீடு, சென்னை.
7. மு.அருணாசலம் (பதி.ப.) பிரபந்த மரபியல், அரசினர் கீழ்த்திசைச் சுவடிகள் நூலகம், சென்னை
8. மு. சண்முகம் பிள்ளை, சிற்றிலக்கிய வளர்ச்சி, மணிவாசகர் நூலகம், சிதம்பரம்.
9. அரங்க. சீனிவாசன், காவடிச் சிந்தும் கவிஞன் வரலாறும், அருள் பதிப்பகம், சென்னை.

பொருள் இலக்கணம் - புறப் பொருள் வெண்பாமாலை

தகுதிப் புள்ளிகள் - 5

Subject Code: UITAC52

காலம் -வாரம் - 5 மணிகள்

மதிப்பெண் :75

நோக்கங்கள்

விரிந்த இலக்கணப் பரப்பைக் கொண்ட தமிழ் மொழியை, தனி மனிதனின் கல்வி , ஈகை, புகழ் விரும் போன்றவற்றை மாணவர் உலகம் எளிதில் புரிந்து கொண்டு பயன் பெறவேண்டும்.

பயன்

தமிழரின் வாழ்வியல் நெறிமுறைகளைத் தெரிந்து கொள்ளுதல்

கூறு 1

வெட்சிப்படலம், கரந்தைப் படலம்

கூறு 2

வஞ்சிப் படலம், காஞ்சிப்படலம்

கூறு 3

நொச்சிப்படலம், உழிஞைப்படலம்

கூறு 4

தும்பைப்படலம், வாகைப் படலம்

கூறு 5

பாடாண்படலம் , பொதுவியல் படலம்



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பாடநூல்

புறப்பொருள் வெண்பா மாலை

- ஐயனாரிதனார்

கழக வெளியீடு, சென்னை

பார்வை நூல்

புறப்பொருள் வெண்பாமாலை

முனைவர் ச. திருஞானசம்பந்தம்

கதிர் பதிப்பகம்

தெற்கு வீதி,

திருவையாறு - 613204.

Subject Code : UITAC53

இக்கால மொழியியல்

தகுதிப்புள்ளிகள் - 5

காலம் - 5 மணிகள்

மதிப்பெண் : 75

நோக்கங்கள் :

1. மொழியின் அமைப்பைப் புரிந்து கொள்ளல்
2. வளமான இலக்கணப் பாரம்பரியமுள்ள தமிழ் இலக்கணத்தை மொழியியல் பார்வை மூலம் கண்டு கொள்வது
3. மொழியியலில் ஒலி ஒலியன்களின் நுட்பத்தை அறியச் செய்தல், இக்காலத் தமிழ் மொழியில் வழங்கும் ஒலியன்களைக் கண்டு கொள்வது.

பயன் :

தமிழ் மொழியில் - இலக்கணங்களில் - அமைந்துள்ள மொழியியல் நுட்பங்களை அறிதல்

கூறு-1

மொழியியலும் துறைகளும் - ஒலியியல் கொள்கைகள் - ஒலியுறுப்புக்களும் ஒலித் தொழில்களும் - மெய்யொலிகள் - உயிரொலிகள் - ஓசை இயல்புகள்

கூறு-2

ஒலியனியல் அறிமுகம் - ஒலியனியலில் சில அடிப்படை உண்மைகள் - ஒலியனியலில் சில செயல்முறைகள், ஒலியனியல் கொள்கைச் சிக்கல் - ஆக்கமுறை ஒலியனியல்

கூறு-3

உருபனியல் அறிமுகம் - உருபன்களைக் கண்டறிதல் - நைடாவின் ஆறு விதிகள் - உருபன்களின் வகையும், வருகையும், உருபன்களின் இணைப்பு

கூறு-4

உருபொலியனியல் - அமைப்பு முறைத் தொடரனியல் - மூவகைத் தொடரனியல் கொள்கைகள் - ஆக்கமுறை இலக்கண அறிமுகம் - அடிநிலைக் கூறு - மாற்றல் கூறு

கூறு-5

சுற்றுக் கொள்கை - ஒலியனியல் கூறும் பொருளனியல் கூறும் - தொடரனியல் வாதங்கள் - மாற்றல் விதிகளைக் கட்டுப்படுத்துதல் - ஆக்கமுறைப் பொருளனியல்

பாடநூல்

இக்கால மொழியியல் அறிமுகம்

கு. பரமசிவம்

அடையாளம் பதிப்பகம்

புத்தாந்தம் - 621 310

திருச்சி மாவட்டம்

2011

பார்வை நூல்

இக்கால மொழியியல்

டாக்டர் முத்துச் சண்முகம்

பாரி நிலையம்

சென்னை.



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தமிழ் இலக்கிய வரலாறு

மணிகள் : 5

SubjectCode: UITAC54

தரப்புள்ளிகள்: 5

மதிப்பெண்கள்: 75 நோக்கங்கள்:-

1. சங்கஇலக்கியம் முதல் இக்கால இலக்கியம் வரையிலான இலக்கியவகைகளின் அமைப்பு முறைகளைக்கற்றல்.
2. போட்டித்தேர்வுகளுக்கு மாணவர்களின் திறனை வளர்த்தல்.

பயன்:-

வேலைவாய்ப்பிற்கான திறனை மேம்படுத்தல்.

கூறு 1

முச்சங்கங்கள் - சங்க காலத்து இலக்கணநூல்கள் - எட்டுத்தொகைநூல்கள் - பத்துப்பாட்டு - சங்கஇலக்கிய மேன்மைகள்.

கூறு 2

பதினெண்கீழ்க்கணக்கு நூல்கள் - பிறஅறநூல்கள் - ஐம்பெருங்காப்பியங்கள் - ஐஞ்சிறு காப்பியங்கள் - கம்பராமாயணம்.

கூறு 3

பெளத்தமும் தமிழும் - சமணமும் தமிழும் - சைவமும் தமிழும் - வைணவமும் தமிழும் - கிறித்துவமும் தமிழும் - இசுலாமியமும் தமிழும்.

கூறு 4

சிற்றிலக்கியங்கள் - பிற்கால இலக்கணநூல்கள் - சித்தர் இலக்கியங்கள் - உரையாசிரியர்கள் - இயற்றமிழ் நூல்கள் (உரைநடை நூல்கள்) - நாடகத்தமிழ் நூல்கள் - 20-ஆம் நூற்றாண்டு மரபுக்கவிதை - சிறுகதை - புதினம் - புதுக்கவிதை - ஹைக்கூ - சென்றியூ - குக்கூ.

கூறு 5

தொல்லியல்துறைகள் - நாட்டுப்புற இயல் - பயணஇலக்கியங்கள் - வாழ்க்கை வரலாற்று இலக்கியங்கள் - கடித இலக்கியங்கள் - ஒப்பிலக்கியம் - ஒப்பிலக்கண மொழியியல் - திறனாய்வியல் - மொழிபெயர்ப்பியல் - அறிவியல் தமிழ் - பெண்ணியம் - தலித்தியம் - ஊடகஇயல்.

பாடநூல்

வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு

முனைவர் பாக்யமேரி

நியூசெஞ்சுரி புக்ஹவுஸ் (பி) லிட்

சென்னை - 600098.

பார்வை நூல்கள்

1. தமிழ் இலக்கிய வரலாறு
மு. வரதராசன்
சாகித்திய அக்காதெமி,
புதுதில்லி - 110001.
2. புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு
தமிழண்ணல்
மீனாட்சி புத்தகநிலையம்
மதுரை - 625001.
3. தமிழ் இலக்கிய வரலாறு
முனைவர் சி. பாலசுப்பிர மணியம்
பாவை பப்ளிகேஷன்ஸ்
சென்னை - 600014.

விருப்பப்பாடம் 1

சுற்றுலாவியல்

தரப்புள்ளிகள் 5

SubjectCode:UITAE51

காலம் (அ) மணிகள்: 6

மதிப்பெண்கள் 75

நோக்கங்கள்

நாடுகள் எல்லைகளை - அறிதல், சுற்றுலாவின் நன்மைகளைத் தெரிந்து கொள்ளுதல், நாட்டின் கலாச்சாரம் மற்றும் பண்பாட்டின் முக்கியத்துவத்தை மாணவர் உணரச்செய்தல்.



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பயன்

- பல்வேறுபட்ட மக்களுடனான ஒருமைப்பாட்டினை வளர்த்தல்
- அன்றாட வாழ்வின் சிக்கல்களிலிருந்து விடுபட்டு மன மகிழ்வு பெறுதல்.

கூறு 1

சுற்றுலா விளக்கம் - சுற்றுலாவின் வகைகள் - சுற்றுலாவின் நோக்கங்கள் - சுற்றுலாவைத் தூண்டும் காரணிகள் - சுற்றுலாத் தடைகள் - சுற்றுலாவிற்குரிய அடிப்படைக்கூறுகள் - உலகநாடுகள், இந்தியாவின் சுற்றுலா வளர்ச்சி.

கூறு 2

தமிழ்நாட்டில் சுற்றுலா வளர்ச்சி - பன்னாட்டுப்பயணிகள் - சுற்றுலாவின் விளைவுகள்

கூறு 3

சுற்றுலாப் பயணிகள் - திட்டமிடலும் மேம்படுத்துதலும் - சுற்றுலா விடுதிகள் - சுற்றுலாக் கழகங்கள் - பயண முகவர்கள்,

கூறு 4

சுற்றுலாவின் வணிகச் சந்தைகள் - சுற்றுலாவின் வழிகாட்டிகள் - தமிழ் இலக்கியத்தில் பயணநூல்கள் - சுற்றுலாவின் முக்கியத்துவம்.

கூறு 5

சுற்றுலா செல்வதற்குரிய இடங்கள்.

பாடநூல்

சுற்றுலாவியல் - முனைவர் ச. ஈஸ்வரன்

பாவை பப்ளிகேஷன்ஸ்

142, ஜானிஜான்கான் சாலை

இராயப்பேட்டை, சென்னை - 600 014.

பார்வை நூல்

சுற்றுலா - ஜெ. தர்மராஜ்

த. எபிஜேம்ஸ்

டென்சி பப்ளிகேஷன்ஸ்

டென்சிவில்லா, 6/244 5-வது தெரு

அண்ணாமலையார் காலனி

சிவகாசி - 626123

பருவம் -V பகுதி- திறன் சார் பாடம் – பணிவாய்ப்புத் திறன்

ஒரு வாரத்திற்கான தொடர்பு மணி நேரம் : 2

பாடக்குறியீடு : UIPS51

ஒரு பருவத்திற்கான தொடர்பு மணி நேரம் :30

மதிப்பு : 2

நோக்கங்கள்:

பணிவாய்ப்புத்திறனை மேம்படுத்த அளவுசார் இயற்கைத்திறன், பகுத்தாய்தல், மற்றும் பொது அறிவை வளர்த்தல்

அலகு -1 அளவு சார் இயற்கைத் திறன்

சராசரி, சதவிகிதம், லாபம் & நட்டம் , விகிதம் & விகிதாச்சாரம், காலம் & வேலை, காலம் & தொலைவு, கடிகாரம்.

அலகு -2 அளவுசார் இயற்கைத் திறன்

வயது குறித்த புதிர், படகு & நீரோடை, தனிவட்டி, கூட்டு வட்டி, பரப்பளவு , கூட்டுப் பங்காண்மை.

அலகு – 3 பகுத்தாய்தல்

சொல்சார் பகுப்பாய்வு – ஒத்ததன்மை, வகைப்படுத்துதல், வரிசை, குறியீட்டு முறை & குறிநீக்க முறை, ரத்த உறவு, திசை உணர்வு சோதனை.

அலகு- IV பகுத்தாய்தல்



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சொல்சார் பகுப்பாய்வு – எண் சோதனை, தரவரிசை இடுதல் & நேர வரிசை சோதனை, எழுத்து சோதனை, தர்க்க வெண் வரைபடம்.

அலகு- V பொது அறிவு:

சுருக்கக் குறியீடுகள், தலைப்பெழுத்துச் சொல் , பிரபலங்கள், முக்கிய நாட்கள், தலைநகரங்கள், நாணயங்கள், நூல்கள் அவற்றின் ஆசிரியர்கள், கண்டுபிடிப்புகள்.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
2. Quantitative Aptitude - R.S.Aggarwal
3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
4. Malayala Manorama Year Book, 2014

Subject Code : UITAN51

தரப்புள்ளி : 2
நேரம் - 2 மணி
மதிப்பெண் : 75

ஆளுமைத் திறன் - NME 1

நோக்கம் :

- ஆளுமை என்றால் என்னவென்று புரிய வைத்தல்
- ஆளுமை குறித்த விழிப்புணர்வை ஏற்படுத்தல்
- ஆளுமைத் திறனை வளர்த்தல் மற்றும் மேம்படுத்துதல்

பயன் :

- ஆளுமைத் திறன் உடையோராவதன் மூலம் மனஉறுதி பெறல்
- மனவலிமையுடைய மாணவச் சமுதாயம் உருவாதல்
- ஆற்றலுடைய மாணவராதல்

- கூறு - 1 காலம் அழைக்கிறது - வெளிச்சம் - வெற்றிக்கு வியர்வை - முன்னேற்றத்திற்கு வேண்டுவது - வழியெல்லாம் வெற்றி - புத்தகங்களில் புதையல் - பாராட்டு.
- கூறு - 2 போதி மரங்களைப் போற்றுவோம் - வாழ்வில் வெற்றி - வாழ்க்கை ஒரு கணிதம் - நினைப்பில் இருக்கிறது வெற்றி - நடைபோடு - அவமானம் தரும் வெகுமானம்.
- கூறு - 3 நீங்கள் சல்லடையா? முறமா? - சிரமங்களைத் தாண்டினால் சிகரம் - நான்கு எழுத்தில் நல்ல வாழ்க்கை - சாவி உன் கையில் - உன்னத நட்பு - இனிய சொல்.
- கூறு - 4 இளமைக்குள் இருக்கிறது - ஊனத்தை வென்றவர்கள் - தடுமாறும் வயசு - சேவை செய்யுங்கள் - சக்திக்குள் இருக்கும் ஒரு சக்தி - சுறுசுறுப்பு - தீதும் நன்றும் பிறர்தர வாரா
- கூறு - 5 உடலுக்குப் பயிற்சி - இலக்கை நோக்கிட - உயர்வுக்கு வேண்டுவன - விரக்தியை விரட்டி வாழ்க்கையை நேசியுங்கள் - உழைப்பில் இருக்கிறது - உனக்குள்ளே சக்தி இருக்கு - விடைபெறும் வேளை.

பாட நூல் :

‘உனக்குள்ளே சக்தி இருக்கு’
ஆசிரியர் - பேராசிரியர் க. இராமச்சந்திரன்,
பதிப்பகம் - குமரன் பதிப்பகம், முத்துக் கிருஷ்ணன் தெரு,
பாண்டி பஜார், சென்னை - 17

பார்வை நூற்கள் :

- 1) ‘தன்னம்பிக்கை’
ஆசிரியர் - ம. லெனின்
பதிப்பகம் - சிக்ஸ்த் சென்ஸ் பப்ளிகேஷன்ஸ், 10/2 (8/2) போலீஸ் குவார்ட்டர்ஸ் சாலை,
தி. நகர், சென்னை - 17.
- 2) மனதில் உறுதி வேண்டும்
ஆசிரியர் - முனைவர் அ. இராமசாமி



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பதிப்பகம் - நியூ செஞ்சரி புக ஹவுஸ் (பி) லிட்
41-B, சிட்கோ இண்டஸ்டிரியல் எஸ்டேட்
அம்பத்தூர், சென்னை - 600 098.

மூன்றாமாண்டு - ஆறாம் பருவம்

சங்க இலக்கியம்

Subject Code: UITAC61

தரப்புள்ளி:4

மதிப்பெண்: 75

நேரம்: 6

நோக்கங்கள்:

1. தமிழ்ச்செவ்வியல் இலக்கியங்களை மாணவர்களுக்கு அறிமுகப்படுத்துதல்
2. பழந்தமிழரின் பண்பாடு, நாகரிகங்களை அறிந்து கொள்ளச் செய்தல்
3. பழந்தமிழ் இலக்கியங்களில் காணப்படும் அகம், புறம் சார்ந்த கருத்துக்களை அறியச்செய்தல்

பயன்:

பண்டைய கால இலக்கியங்களை அறிவதன் வழி தமிழ் மொழியின் செழுமை.அக்கால மக்கள் வாழ்ந்த வாழ்க்கை முறைகளை அறிந்து கொள்ளுதல்.

தமிழர் பண்பாட்டு வளமையைப் புரிந்து கொள்ளுதல்

கூறு -1

குறிஞ்சிப்பாட்டு முழுவதும் -கபிலர்

கூறு -2

1. பொருநராற்றுப்படை (கரிகாலனின் வள்ளல் தன்மை) பழுமரம் உள்ளிய(64-130)
2. நெடுநல் வாடை- கூதிர்காலச் செயற்பாடுகள் (1-72)- வையகம் பனிப்ப - கூதிர் நின்றன்றால்

கூறு -3

I நற்றிணை

1. ஓக்கூர் மாசாத்தியார் பாடல்கள் (126,139,186,220,275,)5 பாடல்கள்
2. அம்மூவனார் (4,35,78,82,138)5 பாடல்கள்

II குறுந்தொகை

1. கொங்குதேர் - இறையனார்(2)
2. அகவன் மகளே - ஓளவையார் (23)
3. வன்பரல் - கோவூர் கிழார்(65)
4. பெருந்தண்மாரி - கதக் கண்ணனார் (94)
5. யாயாகியனே - கயமனர் (9)
6. குக்கூவென்றது கோழி - அள்ளூர்நன் முல்லையார் (15-1)
7. உள்ளார் கொல்லோ -ஊன் பித்தையார் (232)
8. உள்ளது சிதைப்போர் - பாலை பாடிய பெருங்கடுங்கோ (283)
9. மாரி ஆம்பல் - குன்றியனார் (117)
10. அம்மவாழி தோழி -அறிவுடை நம்பியார்

III ஐங்குறுநூறு

1. வேட்கைப் பத்து -மருதம் (1.1) -முழுவதும் ஓரம்போகியார்
2. செவிலி கூற்றுப் பத்து -முல்லை (5.1) -முழுவதும் பேயனார்

IV கலித்தொகை

1. பாலைக்கலி - பெருங்கடுங்கோன் - எறித்தருகதிர் தாங்கி (பாடல் 3)



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2. முல்லைக்கலி – சோழன் நல்லுருத்திரன் – மெல்லினார் (103)

கூறு -4

I அக நானூறு

1. குறிஞ்சி
2. கோழிலை வாழை – கபிலர் (பாடல் 2)
3. இரும்பிழி மகாஅர் – பரணர் (122)

II முல்லை

1. எவ்வளை நெகிழ – பாலை பாடிய பெருங்கடுங்கோ (185)
2. சிறியிலை நெல்லிக்காய் – இடைக்காடனார் (284)

III மருதம்

1. பெரும்பெயர் –மதுரைக் கூலவாணிகள் சீத்தலைச் சாத்தனார் (306)
2. துறைமீன் வழங்கும் – ஓரம் போகியார்(316)

IV நெய்தல்

1. அன்னை அறியினும் அறிக – போந்தைப் பசலையார் (110)
2. கானலும் கழறாது –மதுரை கள்ளிற்கிடையத்தர் வெண்ணாகனார்(170)

V பாலை

1. சிறுபைந்தாவி – நக்கீரர் (57)
2. நோகோயானே – சேரமான் இளங்குட்டுவன் (153)

II பரிபாடல்

1. திருமால் (பாடல் 3)
2. வையை (பாடல் 16)

கூறு -5

I புறநானூறு

1. அரசர்கள் பாடிய பாடல்கள்(71,72,73,74,75,182,183,185,,188,190,214,215,216,245,246)

II பதிற்றுப்பத்து

மூன்றாம் பத்து – முதல் மூன்று பாடல்கள் - பல்யானைச் செல்கெழுக்குட்டுவனைப் பாலைக் கௌதமனார் பாடியது.

பாடநூல்கள்:

1. பத்துப் பாட்டு
சைவசித்தாந்த நூற் பதிப்புக்கழகம் சென்னை
2. எட்டுத்தொகை
சைவசித்தாந்த நூற் பதிப்புக்கழகம்
சென்னை.

பார்வை நூல்கள் :

1. பத்துப் பாட்டுச் சொற்பொழிவுகள், கழக வெளியீடு, சென்னை.
2. எட்டுத் தொகைச் சொற்பொழிவுகள், கழகவெளியீடு, சென்னை
3. தமிழக்காதல்
வ.சு.ப.மாணிக்கம்.

இலக்கியத் திறனாய்வுக் கொள்கைகள்



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தரப்புள்ளி : 4

Subject code: UITAC62

மதிப்பெண் : 75

பயிற்றுக்காலம்: 6

நோக்கங்கள்

1. தமிழின் தற்காலத்திறனாய்வுப் போக்குகளை அறியச்செய்தல்.
2. திறனாய்வின் வகைகளை அறியச்செய்தல்.
3. இலக்கியத்தைத் திறனாய்வு செய்ய மாணவர்களுக்குப் பயிற்சி கொடுத்தல்.
4. திறனாய்வின் பயன்களை மாணவர்களுக்கு உணரச்செய்தல்.

பயன் -

மாணவர்கள் சிந்தித்துத் தெளிந்து, எதனையும் திறனாய்வு செய்யும் நிலையினைப் பெறல்

கூறு - 1

1. இலக்கிய ஆய்வு
2. திறனாய்வு
3. திறனாய்வின் இருவகைப்பணி
4. திறனாய்வு இலக்கியம்

கூறு - 2

1. இலக்கிய மதிப்பீடு
2. இலக்கியக்கலை
3. இலக்கிய உணர்ச்சிகள்
4. கற்பனை

கூறு - 3

1. மானிட உண்மைகள்
2. வடிவம்
3. கலை கலைக்காகவே
4. பாட்டு

கூறு - 4

1. காப்பியம்
2. நாடகம்
3. புதினம்
4. நனவோடைப்புதினம்

கூறு - 5

1. சிறுகதை
2. கட்டுரை
3. இலக்கிய இயக்கங்கள்

பாடநூல்

இலக்கியத்திறனாய்வியல்

தா.ஏ. ஞானமூர்த்தி

ஐந்திணைப் பதிப்பகம்

279, பாரதிசாலை

திருவல்லிக்கேணி

சென்னை - 600 005.

பார்வை நூல்கள்

1. இலக்கியத்திறனாய்வு இசங்கள், கொள்கைகள்
அரங்க சுப்பையா
பாவை பப்ளிகேஷன்ஸ்
142, ஜானி ஜான்கான் சாலை,
இராயப்பேட்டை
சென்னை - 6000014.
2. திறனாய்வுக்கலை
தி.சு. நடராசன்
நியூசெஞ்சுரி புக் ஹவுஸ் (பி) லிட்



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சென்னை - 600098.

3. இலக்கியத்திறனாய்வு
டாக்டர் ச. பாலச்சந்திரன்
நியூ செஞ்சுரி புக் ஹவுஸ் (பி) லிட்.
சென்னை - 600098.

தமிழகக் கோயிற்கலைகள்

தரப்புள்ளி : 5

பயிற்றுக்காலம் : 6

நோக்கங்கள்:

1. தமிழகக் கோயில்களின் மூலம் தமிழக வரலாற்றின் பின்புலத்தை உணர்த்துதல்
2. கோயில்களின் மூலம் தமிழகக்கலைகளின் அரிய வரலாற்றை மாணவர்கள் அறியச் செய்தல்.

பயன்:-

தமிழகக் கோயில்வழி தமிழரின் பண்பாட்டு, வரலாற்று நிகழ்வுகளை அறிதல்.

கூறு : 1

சங்ககாலக்கலைகள் - சங்ககாலக் கட்டிடக்கலை - ஓவியக்கலையின் தொன்மை - சிற்பக் கலை - இசைக்கலை - நடனக்கலை - நாடகக்கலை.

கூறு : 2

தமிழ்நாட்டுக் கோயில்கள் வரலாறு - பழங்காலக் கோயில்கள் - பல்லவர் காலக் குடைவரைக் கோயில்கள் - ஒற்றைக் கல் கோயில்கள் - கட்டுமானக் கோயில்கள் - சோழர்காலக் கோயில்கள்.

கூறு : 3

தமிழ் நாட்டுக் கோயில் கோபுரங்களின் அமைப்பு.

கூறு : 4

தமிழ் நாட்டுச் சிற்பங்கள் - மண் சிற்பங்கள் - சுதையாலான உருவங்கள் - கற்சிற்பங்கள் - செப்புத்திருமேனிகள்.

கூறு : 5

தமிழ் நாட்டு ஓவியங்கள் - பல்லவர் கால ஓவியங்கள் - பாண்டியர் கால ஓவியங்கள் - சோழர்கால ஓவியங்கள் - விஜய நகரகால ஓவியங்கள் - நாயக்கர் கால ஓவியங்கள் - பிற்கால ஓவியங்கள்.

பாடநூல்

தமிழகக் கோயிற்கலை

இரா. நாகசாமி

மா. சந்திர மூர்த்தி

தமிழ்நாடு அரசு தொல்பொருள் ஆய்வுத்துறை வெளியீடு.

சென்னை.

பார்வைநூல்:

1. தமிழர் வளர்த்த அழகுக்கலைகள்
மயிலை சீனி. வேங்கடசாமி, மணிவாசகர் பதிப்பகம், சென்னை - 600108.
2. தமிழகக் கோயிற் கலை வரலாறு
அம்பை மணிவண்ணன்
ஜே.ஜே. பதிப்பகம்
மதுரை -5

திரைப்படக் கலையும் விமர்சனமும்

தரப்புள்ளி : 5

நேரம் : 6

நோக்கம் :

1. தமிழ்ச் சமூகத்தின் அசைவோடு தொடர்புடைய தமிழ்த்திரைப்படங்களைப் புரிந்து கொள்ளுதல்.
2. திரைப்படங்களை விமர்சனப் பூர்வமாகப் புரிந்து கொள்ளும் முறைமையினை விளக்குதல்

பயன் :

1. 'திரைப்படம்' என்பதை எளிதாக விளங்கிக் கொள்ளுதல்.
2. திரைப்படத்தின் தாக்கத்தினை அறிவுப்பூர்வமாகப் புரிந்து கொள்ளல்.

கூறு 1.

அறிமுகம் : இந்திய - தமிழ்ச் சினிமா:- திரைப்படப் பார்வை பக்குவம் - சினிமா மொழியும்

SubCode: UITAE62

மதிப்பெண் : 75



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கட்டுடைப்பு - கணினி வரைகலைத் தமிழ்க் காட்சிகள் - தொல் ஊடகத் தொடர்புக் காட்சிகள்.

கூறு 2.

தமிழ்ச்சினிமா மனநோய்க் காட்சிகள் - சொல்லமற்றத் / மறுத்த கதைகள் - கம்யூனிஸம் + ஆன்மீகம் = அன்பே சிவம் - சக்ரன் - சந்திரமுகி .

கூறு 3.

பாய்ஸ் - படுத்தும் (பண்) பாடு - அந்நியதும் அன்னிய மாதலும் - தமிழ்த்திரைப்படங்களில் தொடரும் வன்முறைக் காட்சிகள்.

கூறு 4.

வறுமை துரத்திய சாதகப் பறவை - மக்கள் கலையின் முன்னோடி - அறிவித்துக்கொண்ட பகுத்தறிவுக் கலைகள் - புதுமைசெய்த சினிமாவின் தந்தை - புதிய சினிமாவின் சிற்பி - ஹாலிவுட் சினிமாவின் அரசன்.

கூறு 5.

எம்.ஜி.ஆர் சினிமாவின் நல்ல அடிப்படைகள் - கண்ணி அறுந்த மணிகள்- சினிமா பாடிய கடவுள் - முழுமையடையட்டும் இந்தப் பெருமை - பெண்ணுடல் வணிகமும் சினிமா ஊடகங்களும் - பஞ்சமில்லாத சென்டிமெண்ட் - ஏனிந்த லொகேஷன் பசி.

பாடநூல்கள்:

1. சினிமா மொழிக் கட்டுடைப்பு
முனைவர் நா. சந்திரசேகரன்
பாவை பப்ளிகேசன்ஸ்
142, ஜானிஜான் கான் சாலை, இராயப்பேட்டை
சென்னை-600014
2. சினிமா : சில மனிதர்களும் சில சர்ச்சைகளும்,
சோழ நாகராஜன்.
தழல் பதிப்பகம்
25, பாண்டியன் நகர் 3வது தெரு, கரிசல்குளம்
மதுரை-625 018.

பார்வை நூற்கள்

1. சுதந்திரப் போரில் தமிழ்த் திரைப்படம்
அறந்தை நாராயணன்
நியூ செஞ்சுரி புக் ஹவுஸ் (பி) லிட்
41 - பி ,சிட்கோ இண்டஸ் டிரியல் எஸ்டேட்
சென்னை 600 098.
2. சினிமா. . . . சினிமா. . .
பாலு மணிவண்ணன்
பாவை பப்ளிகேஷன்ஸ்
142, ஜானி ஜான் கான் சாலை, இராயப்பேட்டை
சென்னை. 600 014.
3. உலக சினிமா
பா. ராமமூர்த்தி
பாவை பப்ளிகேஷன்ஸ்
142, ஜானி ஜான் கான் சாலை,
இராயப்பேட்டை,
சென்னை - 600014.

Subject Code : U1TAS61

பேச்சுக்கலை

தகுதிப்புள்ளிகள் : 2
காலம் - 2 மணிகள்
மதிப்பெண் : 75

நோக்கங்கள் :

1. மாணவர்களை மேடையில் தயக்கமின்றிப் பேசப் பயிற்சி கொடுத்தல்
2. வெற்றி பெற்ற பேச்சாளர்களின் உத்திகளைத் தெரிந்து கொள்ளச் செய்தல்
3. அவை அறிதலும், சூழலும் பேச்சுக் கலையில் சிறப்பிடம் பெறுவதை உணரச் செய்தல்
4. பேச்சாளர்களின் உடல்மொழிகளை விளக்கிக் கூறுதல்

பயன் :

சிறந்த பேச்சாளர்களாக மாணவர்கள் உருவாதல்



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- கூறு-1** மேடைப் பேச்சு வரலாறு - மேடைப் பேச்சு வகைகள் - எழுத்தும் பேச்சும் - அவையச்சம் நீங்க அரிய வழிகள்
கூறு-2 சிறந்த பேச்சின் இலக்கணம் - பேச்சைத் தொடங்குவது எப்படி? - பொருள் விரிக்கும் முறை - பேச்சை முடிப்பது எப்படி?
கூறு-3 பாராட்டும் வாழ்த்தும், இரங்கலும் - சொற்போர் - அவைத்தலைமை - நன்றி நவிலல்
கூறு-4 நினைவாற்றலைப் பெருக்கும் வழிகள் - கவனத்தைக் கவர்தல் - மேடைத் தோற்றம் - மேடைப் பேச்சு நடை
கூறு-5 எழுத்தை ஒலிக்கும் முறை - பேச்சாளர்கள் செய்ய வேண்டியவை - கூட்ட அமைப்பாளர்கள் செய்ய வேண்டியவை - இளம் பேச்சாளர்களுக்கு இருபத்தொரு குறிப்புகள்

பாடநூல்

பேச்சாளராக

அ.கி. பரந்தாமனார்

பாரி நிலையம்

சென்னை - 600 108

பார்வை நூல்

1. பேச்சுக்கலை
ம. திருமலை
மீனாட்சி நிலையம்
மதுரை
2. நீங்களும் பேச்சாளராகலாம்
குமரி அனந்தன்
பாரிநிலையம்
சென்னை 108
3. வாருங்கள் பேச்சாளர் ஆகலாம்
முனைவர் உலகநாயகி பழனி
நியூசெஞ்சுரி புக் ஹவுஸ் (பி) லிட்
சென்னை - 600 098

Subject Code : UITAS62

படைப்புத் திறன்

தகுதிப்புள்ளிகள் : 2

காலம் - 2 மணிகள்

மதிப்பெண் : 75

நோக்கங்கள் :

1. படைப்பாற்றலின் தேவையையும் பயன்பாட்டையும் அறியச் செய்தல்
2. மாணவர்கள் தமது படைப்பாற்றலை வெளிப்படுத்துவதற்கான களத்தை அடையாளம் காட்டுதல்
3. மொழி அறிவின் தன்மையைப் பயன்பாட்டின் வாயிலாக உணரச் செய்தல்
4. படைப்பிலக்கியம் மூலம் தன் எண்ணத்தை வெளியிடும் ஆர்வத்தையும், கற்பனை, ஆற்றலின் வளர்ச்சியையும் தோற்றுவித்தல்

பயன் :

மாணவர்களிடையே காணப்படும் படைப்பாற்றலை வெளிக்கொணர்தல்

- கூறு-1** படைப்பிலக்கியம் என்றால் என்ன? - படைப்பிற்கான காரணம் - படைப்பிலக்கிய விதிகள் - தமிழ்ப் படைப்புகள்
- கூறு-2** மரபுக் கவிதை - கவிதைச் சுவை - கவிதை யாப்பு - எழுத்து - அசை - சீர் - தளை - அடி - தொடை - ஆசிரியப்பா - வெண்பா - வஞ்சிப்பா - கலிப்பா
- கூறு-3** புதுக்கவிதை - தமிழில் புதுக்கவிதை இயக்கம் முதல் கட்டம், இரண்டாம் கட்டம் - மூன்றாம் கட்டம் - புதுக்கவிதையும் யாப்பும், புதுக்கவிதை உருவம் - உத்திவடிவங்கள்
- கூறு-4** சிறுகதை - உத்திகள் - சிறுகதை உருவாக்கம் - கதையைச் சரிபார்த்தல்
- கூறு-5** நாவல், சிறுகதை, நாடகம் - வேறுபாடு - நாடகத்தின் வரலாறு - நடிக்கும் நாடகங்கள், படிக்கும் நாடகங்கள் வேறுபாடு - ஓரங்க நாடக வளர்ச்சி - ஓரங்க நாடக அமைப்பு - நாடக உருவாக்கம்

பாடநூல்

படைப்புக்கலை

முனைவர் மு. சுதந்திரமுத்து



VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE

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[Re-accredited with 'A' Grade by NAAC]

Virudhunagar – 626 001

அறிவுப் பதிப்பகம்

சென்னை - 600 014.

பார்வை நூல்கள்

1. கல்கி - அகிலன் படைப்புக் கலை
தா.வே. வீராசாமி
தமிழ்ப்புத்தகாலயம்
சென்னை
1977
2. பாரதி - பாரதிதாசன் படைப்புக்கலை
சிற்பி
பாரதியார் பல்கலைக்கழகம்
கோயம்புத்தூர்
1992
3. கவிதைக்கலை
நா. பார்த்தசாரதி
சீதை பதிப்பகம்
சென்னை 2010

Subject Code: UITAN61

மூன்றாமாண்டு - ஆறாம் பருவம்

மணிகள் - 2

மதிப்பெண் : 75

தமிழ் இலக்கிய வரலாறு - NME 2

நோக்கங்கள் :

1. சங்க இலக்கியம் முதல் இக்கால இலக்கியம் வரையிலான இலக்கிய வகைகளின் அமைப்பு முறைகளைக் கற்கச்செய்தல்
2. பல்வேறு இலக்கியப் படைப்பாளிகளின் படைப்புத் திறனையும், தனித்தன்மையையும் அறியச் செய்தல்

பயன் :

தமிழ் இலக்கியப் பரப்பை - வகைமையை உணர்தல்

கூறு-1

சங்க இலக்கியம்

சங்க கால வரலாறு - எட்டுத் தொகை - பத்துப்பாட்டு - சங்க காலம் தமிழ் இலக்கிய வரலாற்றில் ஒரு பொற்காலம்

கூறு-2

அறஇலக்கியமும் காப்பிய இலக்கியமும்

பதினெண் கீழ்க்கணக்கு நூல்களில் அறவொழுக்கம் பற்றிய நூல்கள் - அகப்பொருள் பற்றிய நூல்கள் - புறப்பொருள் பற்றிய நூல்கள் - ஐம்பெருங்காப்பியங்கள் - ஐஞ்சிறு காப்பியங்கள்

கூறு-3

பக்தி இலக்கியம்

சைவம் - வைணவம் - பௌத்தம் - சமணம்

கூறு-4

சிற்பிலக்கியமும் உரைநடையும்

சிற்பிலக்கியத்தின் தோற்றமும் வளர்ச்சியும் - உரைநடையின் தோற்றமும் வளர்ச்சியும்

கூறு-5

நவீன இலக்கியம்

மரபுக் கவிதை - புதுக்கவிதை தோற்றமும் வளர்ச்சியும், சிறுகதை - நாவல் தோற்றமும் வளர்ச்சியும்

பாடநூல்

தமிழ் இலக்கிய வரலாறு

முனைவர் சி. பாலசுப்பிரமணியன்

பாவை பப்ளிகேஷன்ஸ்

சென்னை - 600 014.

பாவையின் முதல் பதிப்பு - 2012

பார்வை நூல்கள்

1. தமிழ் இலக்கிய வரலாறு
மு. வரதராசன்
சாகித்திய அக்காடெமி, புதுதில்லி - 110 001.



VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE

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Virudhunagar – 626 001

1972

2. புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு
தமிழண்ணல்
மீனாட்சி புத்தக நிலையம், மதுரை - 625 001.
பதிமூன்றாம் பதிப்பு - 1995
3. தமிழ் இலக்கிய வரலாறு
எம்மார். அடைக்கலசாமி
ராசி பதிப்பகம்
சென்னை - 73.
1960



Course Name: B. A. English Literature

Discipline : English

Semester	Part	Subject	Hour	Credit	Int+Ext=Total	Subject code	Revision
V	Core 9	Indian Writing in English	5	5	25+75=100	U1ENC51	Revised
	Core 10	Twentieth Century Literature	5	5	25+75=100	U1ENC52	Revised
	Core 11	Journalism and Mass Communication	5	5	25+75=100	U1ENC53	Revised
	Core 12	Commonwealth Literature	5	5	25+75=100	U1ENC54	Revised
	Elective 1	Phonetics and Transcription	6	5	25+75=100	U1ENE51	Revised
	SBE - 4	Employability Skills	2	2	25+75=100	U1PS51	New
	NME - 1	Communication Skills	2	2	25+75=100	UNENN51	Revised

Semester	Part	Subject	Hour	Credit	Int+Ext=Total	Subject code	Revision
VI	Core 13	Indian Diaspora Writing	6	4	25+75=100	U1ENC61	New
	Core 14	Women's Writing	6	4	25+75=100	U1ENC62	Revised
	Elective 2	English Language Teaching	6	5	25+75=100	U1ENE61	Revised
	Elective 3	English for Competitive Examinations	6	5	25+75=100	U1ENE62	New
	SBE -5	Creative Writing	2	5	25+75=100	U1ENS61	Revised
	SBE -6	Translation: Theory and Practice	2	2	25+75=100	U1ENS62	Revised
	NME - 2	Spoken English	2	2	25+75=100	U1ENN61	Revised

Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

1. 150 objective type questions with four alternatives for each question.
2. 30 questions to be asked from each unit.
3. Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries ½ mark.
3. Total marks to be reduced to 25.



FIFTH SEMESTER
CORE SUBJECT PAPER IX
INDIAN WRITING IN ENGLISH

Contact hours per week: 5

Subject Code: U1ENC51

Contact hours per semester: 75

Credits : 5

Objectives:

- To have a thorough understanding of Indian Writing in English
- To study the rich cultural heritage of India through the literary texts
- To learn the social and political changes that influenced Indian Writing in English.

Unit I-Poetry

(15 Hours)

Henry Derozio	: To India, My Native Land
Arun Kolatkar	: An Old Woman
Vikram Seth	: Sonnet No. 1.1-1.5 from <i>The Golden Gate</i>

Unit-II Prose

(15 Hours)

R.K.Narayan	: Better Late
Nirad Chaudhuri	: On Marriages

Unit-III-Short Story

(15 Hours)

Chitra Bannerjee Divakaruni	: The Word Love
Shashi Deshpande	: My Beloved Charioteer

Unit-IV-Drama

(15 Hours)

Mahesh Dattani	: Seven Steps Around the Fire
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Unit-V-Fiction

(15 Hours)

Anita Nair	: Ladies Coupe
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Reference Books:-

1. Deshpande, Shashi. **Collected Stories**. India: Penguin Books, 2003. Print.Vol.1
2. Devakaruni, Chirita Bannerjee, **Arranged Marriage**.USA: Anchor Books,1996.
3. Paranjape, Makarand, ed. **Indian Poetry in English**.Madras: Macmillan India Ltd., 1993.Print.
4. Prabhakar.T, ed. **A New Anthology of English Prose**.Madras: Emerald Publishers, 1983.Print.
5. Mahesh Dattani: **Collected Plays Vol.2**

CORE SUBJECT PAPER X
TWENTIETH CENTURY LITERATURE

Contact hours per week : 5

Subject Code: U1ENC52

Contact hours per semester : 75

Credits : 5

Objectives:

- To have a comprehensive study of 20th century literature
- To study various literary texts of different authors belonging to 20th century
- To learn social and literary movements and political changes that influenced 20th century literature

Unit I Poetry I

(15hours)

G.M.Hopkins	: God's Grandeur
W.B.Yeats	: The Circus Animals' Desertion
Rupert Brooke	: Helen and Menelauss
Edwin Muir	: The Horses

Unit II Poetry II

(15hours)

E.E.Cummings	: What If a Much of a Which of a Wind
Dylan Thomas	: Fern Hill
Philip Larkin	: Ambulances



Ted Hughes : The Thought Fox

Unit III Prose (15hours)

Hilaire Belloc : Comfortable Words

John Arlott : An English Cricketer

A.G.Gardiner : A Fellow Traveller

J.B.Priestly : Lectures

Unit IV Fiction (15hours)

Rudyard Kipling : Kim

Unit V Drama (15hours)

T.S.Eliot : The Family Reunion

Recommended Text Books:

1. **Twentieth Century Verse: An Anglo American Anthology**
ed.C.T.Thomas
2. **A Galaxy of English Essayists**
3. **Twentieth Century Prose 1940-1960** ed. A.C.Ward

CORE SUBJECT PAPER XI

JOURNALISM AND MASS COMMUNICATION

Contact hours per week : 5

Subject Code: U1ENC53

Contact hours per semester : 75

Credits : 5

Objectives:

- To familiarize the students with different aspects of mass communication.
- To help the students understand the skill, technology and knowledge required for media studies.

Unit I Introduction to Journalism (15hours)

- i. Definition of Journalism
- ii. Growth of Journalism in India
- iii. Growth of Journalism in Tamilnadu
- iv. News and News value

Unit II Mass Communication (15hours)

- i Definition of Mass Communication
- ii Growth and development of Mass Communication in India
- iii Photo Journalism and Investigative Journalism

Unit III News paper Organisation (15hours)

- i. Reporting
- ii. Editing
- iii. Printing
- iv. Distribution

Unit IV Radio Journalism (15hours)

- i. Broadcasting in India
- ii. Popular Radio Genres
- iii. Broadcasting Policy

Unit V Television Journalism (15hours)

- i. Growth of Television in India
- ii. Educational Television
- iii. Cable TV

Reference books:

1. Shulka, A.S: **Journalism Today Concepts and Practices**, Rajat Publications, New Delhi, 2010.



2. Choudhary.R: **Journalism Ethics**, Centrum Press, New Delhi, 2010.
3. Pandey, Pramod: **Modern Journalism at a Glance**, Sublime Publications, Jaipur, 2011.

**CORE SUBJECT PAPER XII
COMMONWEALTH LITERATURE**

Contact hours per week : 5 **Subject Code: U1ENC54**
Contact hours per semester : 75 **Credits : 5**

Objectives:

- To familiarize students with the different genres of Commonwealth Literature.
- To cultivate in the students the necessary impetus to study representative writers of Commonwealth Literature.

Unit I Prose (15hours)

V.S. Naipaul : The Skyscrapers and the Chawls

Unit II Poetry (15hours)

Gaberial Okara : Once Upon a Time
Ahmed Ali : The Year of Rat: 1984
Razia Khan : My Daughter's Boy Friend
Kirpal Singh : To a Visit to Singapore

Unit III Short Stories (15hours)

Roderick Finlayson : Another Kind of Life
G.R.Gilbert : A Girl With Ambition

Unit IV Drama (15hours)

Wole Soyinka : The Strong Breed

Unit V Fiction (15hours)

Arun Joshi : The Strange Case of Billy Biswas

Recommended Text Books:

- Narasimhaiah, C.D. *An Anthology of Commonwealth Poetry*. Chennai: Macmillan India Ltd., 1990.
- O'Sullivan, Vincent, ed. *The Oxford Book of New Zealand Short Stories*. Oxford: Oxford University Press, 1992.
- Naipaul, V.S. *India: A Wounded Civilization*. London: Picador, 2002.

**ELECTIVE SUBJECT PAPER I
PHONETICS & TRANSCRIPTION**

Contact hours per week : 6 **Subject Code: U1ENE51**
Contact hours per semester : 90 **Credits : 5**

Objectives:

- To get training in standard pronunciation
- To classify and describe various sounds in English
- To acquire basic competence in phonetic transcription

Unit-I (18 hours)

Organs of speech and Speech Mechanism

Unit –II (18 hours)

Classification and Description of Vowel sounds in English

Unit-III (18 hours)

Classification and Description of consonant sounds in English

Unit-IV (18 hours)

Word- Accent: Certain guidelines



Unit –V

(18 hours)

Transcription of words and short sentences

Text Book:

A Text book of English Phonetics for Indian Students- T. Balasubramanian (Macmillan)

SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code: U1PS51

Contact Hours per Semester: 30

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I : Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. **(6-hours)**

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. **(6-hours)**

Unit III: Reasoning **(6-hours)**

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning **(6-hours)**

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V: **(6-hours)**

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
2. Quantitative Aptitude - R.S.Aggarwal
3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
4. Malayala Manorama Year Book, 2014

**NON MAJORELECTIVE SUBJECT PAPER I
COMMUNICATION SKILLS**

Contact hours per week : 2

Sub. Code: UNENN51

Contact hours per semester : 30

Credits : 2

Objectives:

- To help students to communicate correctly, effectively and intelligibly
- To train the students in the subtleties of group discussion and interviews
- To encourage creative use of language.

Unit –I **(6hours)**

Language and Communication - Linguistic Communication -Barriers to Communication - Importance of Communication.

Unit- II **(6hours)**

Non-verbal Communication- Personal appearance - posture - Gestures - Facial expression - Eye contact - Space distancing 10.

Unit – III **(6hours)**

Dyadic communication -Face to face conversation -Telephonic conversation - Interviews - Instruction – Dictation



Unit – IV

(6hours)

Seminars and conferences -Types of discussion groups - Regulating speech – Conducting seminars - Organizing conferences.

Unit – V

(6hours)

Meetings and Group discussions - Purpose - Procedure - Chairmanship and Participation in meetings Group dynamics - Purposes and Organization of group discussions.

Text Book :

Krishna Mohan & Meera Banerji - **Developing Communication Skills.**Macmillan

**SIXTH SEMESTER
CORE SUBJECT PAPER XIII
INDIAN DIASPORA WRITING**

Contact hours per week

: 6

Subject Code : U1ENC61

Contact hours per semester : 90

Credits : 4

Objectives:

1. To study and appreciate the literature of diaspora
2. To understand the ethnicity, and the resultant social, political and cultural clash.
3. To apprehend and identify the diasporic elements like emigrant, migrant, immigrant, expatriate, nostalgia, loneliness and exile.

Unit-I-Poetry

(18 hours)

R.Parthasarathy

: Exile

Nissim Ezekiel

: Background Casually.

Unit-II-Prose

(18 hours)

Bapsi Sidhwa

: Why do I Write?

Nirad Chaudhri

: An Autobiography of an Unknown Indian

Unit-III Short Story

(18 hours)

Jhumpa Lahiri

: The Interpreter of Maladies

Bharathi Mukherjee

: Buried Lives

Unit-IV-Fiction

(18 hours)

Amitav Ghosh

: The Glass Palace

Unit-V-Drama

(18 hours)

Uma Parameswaran

: Rootless but Green are the Boulevard Trees

Reference Books:

1. **Dislocation and Multiculturalism** ed. Jasbir Jain
2. **Writers of the Indian Diaspora** ed. Jasbir Jain

**CORE SUBJECT PAPER XIV
WOMEN'S WRITING**

Contact hours per week

: 6

Subject code: U1ENC62

Contact hours per semester : 90

Credits : 4

Objectives

- To introduce students to women's voice articulated in literature from various countries.
- To introduce them to the evolution of the feminist movement, familiarize them with the various issues addressed by feminism.
- To sensitize them to issues like marginalization and subjugation of women.

Unit I Prose

(18 hours)

Kamala Das : My Story (Chapters 1 – 5)

Shashi Deshpande : Writing from the Margins – Masks & Disguises.



Unit II Poetry (18 hours)

Sarojini Naidu	:	Song of Radha : The Milkmaid
Maya Angelou	:	Phenomenal Woman
Alice Walker	:	Am I Blue?
Judith Wright	:	Clock and Heart

Unit III Short Story (18 hours)

Nadine Gordimer	:	A Correspondence Course.
Anita Desai	:	A Devoted Son

Unit IV Drama (18 hours)

Dina Mehta	:	Brides are Not for Burning
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Unit V Fiction (18 hours)

Margaret Atwood	:	The Edible Woman
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Reference Books:

1. Eagleton, Mary ed., **Feminist Literary Theory : A Reader** Oxford: Basil Blackwell, 1986.
2. Gilbert, Sandra, M., and Susan Gubar, ed. **The New Feminist Criticism : Essays on Women, Literature and Theory.** London: Virago Press, 1981.
3. Spencer, Jane. **The Rise of the Woman Novelist** Oxford: Basil Blackwell, 1986.

**ELECTIVE SUBJECT PAPER II
ENGLISH LANGUAGE TEACHING**

Contact hours per week: 6

Subject Code: U1ENE61

Contact hours per semester: 90

Credits : 5

Objectives:

- (i) To make the learners aware of the various language– learning methods.
- (ii) To enable the learners to learn the art of teaching.
- (iii) To encourage the learners to study the types of tests.

Unit – I: Methods in English Language Teaching (18hours)

- (i) Grammar Translation Method
- (ii) Direct Method.

Unit – II: Art of Teaching (18hours)

- (i) The teaching of prose and poetry
- (ii) The teaching of Extensive Reader and Grammar.

Unit – III: Language Skills (18hours)

- (i) The Teaching of Listening and Speaking
- (ii) The Teaching of Reading and Writing.

Unit – IV: Language Activities (18hours)

- (i) Activities in English Language Teaching
- (ii) Audio – Visual Aids

Unit – V: Assessment and Solution (18hours)

- (i) Testing and Evaluation
- (ii) Remediation in the Teaching of English

Prescribed Text Book

Dr.S.Vincent, **The Teaching of English**

(Madurai: Soundra Publications, 2007)

References:

1. M.L.Tickoo **English Language Teaching**
(Hyderabad: Orient Long man , 2003)
2. Dr.Joseph C. Mukalel **Approaches to English Language Teaching**
(New Delhi: Discovery Publishing House, 2006)



ELECTIVE SUBJECT PAPER III

ENGLISH FOR COMPETITIVE EXAMINATIONS

Contact hours per week : 6

Subject Code: U1ENE62

Contact hours per semester : 90

Credits : 5

Objectives:

- To prepare the students for various competitive examinations
- To make the students aware of various tools that are essential for competitive examinations

Unit -I (18 Hours)

Grammar: Articles – Prepositions - Tenses - Subject Verb Agreement –
Clauses - Verbs - Adverbs and Adjectives

Unit-II (18 Hours)

Spotting Errors – Abbreviations

Unit-III (18 Hours)

Letter Writing - Sentence Completion

Unit-IV (18 Hours)

Synonyms, Antonyms, Words often confused or misused

Unit-V (18 Hours)

Comprehension, Precis Writing and Note Making.

Text Book:

English for Competitive Examination, Ed. R.P.Bhatnagar, Rajul Bhargava,
Macmillan.

SKILL BASED SUBJECT PAPER V

CREATIVE WRITING

Contact hours per week : 2

Subject Code: U1ENS61

Contact hours per semester : 30

Credits : 5

Objectives:

- To introduce the concept of creative writing
- To understand the nuances of writing process and creativity
- To familiarize the students with the process of writing poetry, prose and stories

Unit I: Fundamentals of Good Writing (6hours)

Thought - Ideas - View points - Arguments - Assessments - correct language - Collection of facts - knowledge - presentation.

Unit II: Freewheeling writing (6hours)

Free verse - Jingles - Hailer - Jokes - Developing Blogs - Advertisement - Captions - Slogan writing - Headlines - Diary entry

Unit III: Essay writing (6hours)

Descriptive - Expository - Narrative – Argumentative

Unit IV: Story Writing (6hours)

Hints Developing - story completion - Theme based stories

Unit V: Writing poetry – Practice (6hours)

Imagination - Selection of words - combination of ideas - Appreciation of Beauty - Sonorous effects

Text Books:

1. Devi P. Karthik: **A Freewheeling Writing**, Virudhunagar : Karitha publishers.
2. Panicker, Somanatha M.K. **Develop Your Creative Skills** Chennai. First edition, 2009.



SKILL BASED SUBJECT PAPER VI

TRANSLATION – THEORY AND PRACTICE

Contact hours per week : 2 **Subject Code: U1ENS62**

Contact hours per semester: 30 **Credits: 2**

Unit I Introduction to Translation (6hours)

- i. Translation – Definition
- ii Types of Translation

Unit II Central issues in Translation (6hours)

- i. Decoding and Recoding
- ii Problems of Equivalence

Unit III History of Translation (6hours)

- i. History of Translation
- ii. Bible Translation

Unit IV Problems of Literary Translation (6hours)

- i. Translating poetry
- ii Translating prose

Unit V Translation in practice (6hours)

Translating proverbs, statements, poetry and prose passages from English to Tamil

Books for Reference

1. *Translation Studies* by Susan Bassnett – Routledge New Accents Series
2. *The Art of Translation* by Savoury Theodore

NON MAJORELECTIVE SUBJECT PAPER II

SPOKEN ENGLISH

Contact hours per week : 2 **Subject Code: U1ENN61**

Contact hours per semester: 30 **Credits : 2**

Objectives:

- To communicate clearly and fluently
- To listen to and respond appropriately to the contributions of others
- To articulate experience and express what is thought and felt and imagined

Unit-1 [Ch.1-4, 32-A, B] (6hours)

Greeting - Introducing - Inviting Someone – Making Requests – Some Common Errors : i. Un-Necessary use of prepositions – Omission of prepositions.

Unit- II [Ch.5-8, 32 - C,D] (6hours)

Offering Help – Seeking Permission – Asking for Advice – Expressing Gratitude – Some Common Errors: i. Use of Wrong Prepositions

Unit –III [Ch.9-12, 32, E, F] (6hours)

Asking about remembering – Persuading – Complimenting/Congratulating – Expressing Sympathy – Some Common Errors: i. Un-necessary use of Articles.
ii. Use of wrong tenses

Unit – IV [Ch.13 – 16, 32- G,H] (6hours)

Complaining – Apologising – Making suggestions – Warning Someone – Some Common Errors: i. Use of wrong forms of words. ii. Use of Wrong words.

Unit- V [Ch.17-20, 32-I] (6hours)

Starting a Conversation with a stranger – Leaving someone for a short time – Ending a Conversation – Asking for information – Some Common Errors: i. Wrong order of words.

Text Book:

G.Radhakrishna Pillai, K. Rajeevan – **Spoken English for You**. Emerald Publishers.



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Course Name: Bachelor of Arts

Discipline : Economics

Semester	Part	Subject	Hour	Credit	Int+Ext=Tot	Subject Code	Revision
V	Core 9	Monetary Economics	5	5	25+75=100	U1ECC51	Revised
	Core 10	International Economics	5	5	25+75=100	U1ECC52	Revised
	Core 11	Fiscal Economics	5	4	25+75=100	U1ECC53	No Change
	Core 12	Indian Economy	5	4	25+75=100	U1ECC54	Revised
	Elective 1	Research Methodology	6	5	25+75=100	U1ECE51	Revised
	SBE- 4	Employability Skills	2	2	25+75=100	U1PS51	New
	NME-1	Elementary Economics	2	2	25+75=100	U1ECN51	New

Semester	Part	Subject	Hour	Credit	Int+Ext=Tot	Subject Code	Revision
VI	Core 13	Planning and Growth	6	5	25+75=100	U1ECC61	Revised
	Core 14	Computer Science	6	5	25+75=100	U1ECC62	Revised
	Elective 2	Labour Economics	6	5	25+75=100	U1ECE61	Revised
	Elective 3	Economics of Marketing	6	5	25+75=100	U1ECE62	Revised
	SBE-5	Personality development	2		25+75=100	U1ECS61	Revised
	SBE-6	Tax management	2	2	25+75=100	U1ECS62	Revised
	NME-2	Population Studies	2	2	25+75=100	U1ECN61	New

Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

- 150 objective type questions with four alternatives for each question.
- 30 questions to be asked from each unit.
- Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

- 100 objective type questions with four alternatives for each question.
- Each question carries ½ mark.
- Total marks to be reduced to 25.

V- SEMESTER

CORE PAPER – 9, MONETARY ECONOMICS

(For those who joined from June 2012 onwards))

Contact Hours Per Week: 05

Contact Hours per Semester:75

CREDITS: 5

Subject Code:U1ECC51

Objectives:

To enable the students to

- Understand the importance of monetary and credit system of India
- prepare for higher studies on this field
- Prepare for various competitive examinations.

Unit I : An Introduction to Money

(15 Hours)



Barter System: meaning and its inconveniences – Money: origin - evolution – meaning - definition – characteristics – kinds – functions – significance and evil of money – Role of money in a capitalist and socialist economy.

Unit II : Value of Money and Monetary Theories (15 Hours)

Value of Money: Meaning and measurement : Index numbers – meaning – usefulness – problems involved in the construction of Index numbers – Quantity Theory of Money : Cash Transaction Approach (Fisher's Equation of Exchange) – Cash Balance Approach (Cambridge Equation) .

Unit III : Analysis of Inflation and Trade Cycles (15 Hours)

Inflation: Meaning –kinds –causes – effects – Anti-inflationary measures

Trade Cycle : Meaning – Phases – causes – Anti-cyclical measures.

Unit IV : Commercial Banking (15 Hours)

Functions of a commercial bank – Nationalisation of Commercial Banks – Role of Commercial Banks in the economic development of India – Lead Bank Scheme.

Unit V: Central Banking (15 Hours)

Functions of a Central Bank – Credit Control Methods : Quantitative and Qualitative – Role of the RBI in the economic development of India.

Text Books:

1. **Narayanan Nadar, E.,(2013)** “Money and Banking”, PHI Learning Private Ltd., New Delhi,.
2. **Mithani, D. M, (2000)** Money, Banking, International Trade and Public Finance, Himalaya Publishers, Delhi,.

Reference Books:

1. **Sethi, T.T.,(1992)** Monetary Economics, S. Chand and Company, New Delhi,.
2. **Sethi, M.L.(2008)** Monetary Economic, Lakshmi Narain Agarwal, Agra.

CORE PAPER – 10 INTERNATIONAL ECONOMICS

(For those who joined from June 2012 onwards)

Contact Hours per Week: 05

Subject Code: U1ECC52

Contact Hours per Semester: 75

CREDITS: 5

Objectives:

To enable the students to

1. understand the importance of foreign trade.
2. prepare for higher studies on this field.
3. prepare for various competitive examinations.

Unit I : Introduction (15 Hours)

International Trade: Meaning – Similarities and Dissimilarities between inter-regional and international trade – production possibility curve and community indifference curve (meaning and simple explanation with diagram) – Absolute Cost Theory of Adam Smith – Comparative Cost Theory of Ricardo – Opportunity Cost Theory of Haberler.

Unit II : Gains from International Trade (15 Hours)

Meaning of gains from International trade – potential and actual gain (meaning only) – Static and Dynamic gain from trade – factors determining gains from international trade.

Terms of Trade: Meaning- factors affecting terms of trade.

Unit III : Trade Policy (15 Hours)

State Trading: Objectives - merits and demerits - Free trade and protection: Meaning - Advantages and disadvantages.

Tariff: Meaning – types – effects

Quota : Meaning – Objectives –types with merits and demerits

Exchange Control: meaning – objectives – methods of exchange control.

Unit IV : Balance of Trade and Payments (15 Hours)

Balance of Trade: Meaning – Favourable and unfavourable balance of trade.



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Balance of Payments: Meaning – Current, capital and official settlements account of Balance of Payments – disequilibrium in the Balance of Payments: Meaning – causes – measures to correct the disequilibrium.
Foreign Exchange Rate: Meaning – determination of equilibrium exchange rate.

Unit V: International Organisations

(15 Hours)

Objectives and Functions of WTO, UNCTAD, ADB, SAARC, NIEO, IMF, IBRD (World Bank), EXIM Bank and IFC.

Text Book:

1. **Jhingan, M.L.,(2009)** “International Economics ”, Vrinda Publications, (P) Ltd., Delhi, Sixth Edition.

Reference Book:

1. **Mannur H.G.,(2001)** “International Economics”, Vikas Publishing House Pvt., Ltd., New Delhi, Second Revised Edition, 2001.

CORE PAPER 11 FISCAL ECONOMICS

(For those who joined from June 2012 onwards)

Contact Hours Per Week: 05

Subject Code: (U1ECC53)

Contact Hours per Semester: 75

CREDITS:5

Objectives:

To enable the students to

1. Understand the importance of financial administration of the Government
2. Prepare for higher studies on this field.
3. Prepare for various competitive examinations.

Unit I: Nature and Scope of Public Finance

(15 Hours)

Meaning and Scope of Public Finance – Functions of a Modern State – Objectives of Fiscal Operations – Comparison of Public and Private Finance – The Principle of Maximum Social Advantage: Views of Dalton and Musgrave.

Unit II: Public Expenditure

(15 Hours)

Public Expenditure: Public and Private Expenditure – Reasons for The Growth of Public Expenditure- Objectives of Public Expenditure – Canons of Public Expenditure – Classification of Public Expenditure – Effects of Public Expenditure.

Unit III: Public Revenue

(15 Hours)

Public Revenue: Sources of Public Revenue – Classifications of Public Revenue – Canons of Taxation – Taxable Capacity – Factors determining Taxable Capacity – Direct and Indirect Taxes – Progressive and Proportional Taxation – Shifting and Incidence of Taxes – Value Added Tax.

Unit IV: Public Debt

(15 Hours)

Public Debt – Meaning – Causes – Public; and Private Debt – Objects Of Public Debt – Classification Of Public Debt – Effects Of Public Debt – Redemption of Public Debt

Unit V: Federal Finance

(15 Hours)

Federal Finance – Problem of Federal Finance – Principles of Federal Finance – Finance Commission – Functions of Finance Commissions – Budget – Preparation and Presentation.

Text Book:

1. **Cauvery et al., (2008)**“Public Finance”, S.Chand and Company Ltd. New Delhi.

Reference Books:

- 1 **Tyagi, B.P. (2009)** “Public Finance”, Jai Prakash Nath and Co. Meerut. New Delhi.
2. **Dalton (1957)**, Public Finance,

CORE PAPER 12 INDIAN ECONOMY

(For those joined from June 2012 onwards)

Contact Hours per Week: 05

Subject Code: (U1ECC54)



Contact Hours per Semester: 75

CREDITS:5

Objectives:

To enable the students to

1. understand the nature and structure of the Indian Economy
2. prepare for higher studies on this field
3. Prepare for various competitive examinations.

Unit: I Nature and Structure of Indian Economy

(15 Hours)

Features of Indian Economy – India as a developing economy – Indian as a mixed economy – Resource profile of the Indian Economy: Natural Resources (Land, Water, Forest, Mineral and Energy) and Human Resources (Population).

Unit II : Balanced Regional Development

(15 Hours)

Regional disparities – indicators of regional disparities – causes for regional disparities – policy measures to remove regional disparities – poverty and unemployment in India.

Unit III: Public Sector and issues of privatisation

(15 Hours)

Public Sector – role of public sector in India – growth – performance - shortcomings – measures to improve the performance – Privatisation : meaning – scope, disinvestment – privatization in India.

Unit IV: Foreign Capital

(15 Hours)

Foreign Capital – forms of foreign capital – need for foreign capital – Government policy towards foreign capital – foreign collaboration in the post independence period - The impact of foreign aid on India's economic development.

Unit V: Parallel Economy

(15 Hours)

Parallel economy – estimate of black income in India – Factors responsible for generation of black money – measures to unearth black money – corruption – causes.

Text Books:

1. **Gaurav Datt and Ashwani Mahajan (2013)** “ Indian Economy”, S. Chand and Ltd, New Delhi
2. **Mirsa S.K. and Puri, V.K. (2011)** “Indian Economy”, Himalaya Publishing House Mumbai.

Reference Books:

- 1 **Dhingra I.C.,(2010)**“Indian Economy”, Sultan Chand and Son , Pvt Ltd., New Delhi.
- 2 **Pratiyogitadarpan (2009)**“General Studies of Indian Economy”

ELECTIVE PAPER – 1 RESEARCH METHODOLOGY

(For those who joined from June 2012 onwards)

Contact Hours per Week: 06

Subject Code :(U1ECE51)

Contact Hours per Semester: 90

CREDITS: 5

Objectives:

To enable the students to

1. Understand the research process, problem and research design.
2. Gain knowledge of collection, processing and analysis of data.
3. Familiar with the preparation of a research report.

Unit I: Introduction to Research

(18 Hours)

Research: Meaning – Objectives –Characteristics – Significance – Approaches to Research – Types of Research - Research Process: Meaning - Steps involved in a Research Process.

Unit II: Research Problem

(18 Hours)

Research Problem: Meaning – Importance of formulating a research problem - Sources – Consideration in Selecting a research problem – steps involved in formulating a research problem

Unit III: Sampling Design

(18 Hours)

Sampling : Concepts – Steps in Sample Design or Sampling process – Criteria of selecting procedure – Characteristics a good sampling design - Probability (or Random) and Non – Probability (Nonrandom) sampling.



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Unit IV: Data Collection

(18Hours)

Data Collection: Primary Vs Secondary Data – Methods of Collecting Primary Data – Sources of Secondary Data – Questionnaire Vs Schedule – Features of a good Questionnaire.

Unit V: Presentation and Analysis of Data

(18 Hours)

Presentation of Data: Classification – Tabulation – Diagram – Graphical representation of data

Analysis of Data: using statistical tools – preparation of the layout of a research report

Text Books:

1. **Kothari, C.R. (2009)** “Research Methodology; Methods and Techniques”, New Age International (P) Limited Publishers, New Delhi.
2. **Narayanan Nadar, E., (2011).** “Statistics”, Prentice Hall of India Learning Pvt, Ltd., New Delhi.

Reference Books:

1. **R. Panneerselvam (2009)** “Research Methodology”, Prentice Hall of India Private Ltd., New Delhi, 7.
2. **Ranjith Kumar,(2012)** Research Methodology, Vage Publication India, Private Ltd., New Delhi. 2012.

SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code: UIPS51

Contact Hours per Semester: 30

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I: Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. **(6-hours)**

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. **(6-hours)**

Unit III: Reasoning

(6-hours)

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning

(6-hours)

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V:

(6-hours)

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
2. Quantitative Aptitude - R.S.Aggarwal
3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
4. Malayala Manorama Year Book, 2014

NME5 ELEMENTARY ECONOMICS

(For those who joined from June 2012 onwards)

Contact Hours per Week: 02

Subject Code:(U1ECN51)

Contact Hours per Semester: 30

CREDITS:2

Objectives:

To enable the students to

1. Understand the fundamentals of Economics.
2. prepare for higher studies on this field



3. Prepare for various competitive examinations.

Unit I : An Introduction to Economics

(6 Hours)

Definitions of Economics: Wealth definition of Adam Smith – Welfare Definition of Alfred Marshall – Scarcity Definition of Lionel Robbins – Growth Definition of Paul A. Samuelson.

Basic Concepts of Economics : Wants, Goods, Utility, Price and Value, Market, Equilibrium. Scope of Economics: Consumption, Production, Exchange, Distribution and Public Finance.

Unit II : Demand and Supply Analysis

(6 Hours)

Meaning of Demand - Law of Demand – Law of Diminishing Marginal Utility – Law of Equi-marginal Utility – Concept of Consumer's Surplus – The Concepts of Elasticity of Demand: Meaning and Types

Meaning of Supply – law of Supply – the Concept of Elasticity of Supply : Definition Only.

Unit III: Product Pricing Analysis

(6 Hours)

Factors of Production: Meaning and Characteristics – meaning and features of perfect competition – Monopoly – Duopoly - Monopolistic Competition – Oligopoly.

Unit IV : Factor Pricing Analysis

(6 Hours)

Meaning of Rent – Wages – Interest and Profit

Ricardian Theory of Rent – Marginal Productivity Theory of Wages – Liquidity Preference Theory of Interest – Innovation Theory of Profit.

Unit V : Public Finance

(6 Hours)

Public Revenue : Taxation – Meaning – Kinds – Direct and Indirect Tax : Merits and Demerits

Public Expenditure : Meaning - Causes for increasing Government Expenditure

Public Debt : Meaning – Methods of redemption of public debt.

Text Books:

1. Dewett, K.K.,(2011) “Modern Economic Theory,
2. Loganathan, Principles of Economics

Reference Books:

- 1 Chopra, P.N., (1990) Principles of Economics, Kalyani Publishers, New Delhi.
- 2 Ahuja, H.L.,(1992) Advanced Economic Theory, S.Chand and Company Pvt., Ltd., New Delhi.

VI –SEMESTER CORE PAPER - 13

PLANNING AND GROWTH

(For those who joined from June 2012 onwards)

Contact Hours Per Week: 06

Subject Code :(U1ECC61)

Contact Hours per Semester: 90

CREDITS: 5

Objectives:

To enable the students to

1. Understand the importance of five year plans and economic development of India.
2. prepare for higher studies on this field
3. Prepare for various competitive examinations.

Unit I: Introduction

(18Hours)

Planning: Meaning – Definition - Role of planning in developing countries – Characteristics of a successful plan – Types of planning : Physical and financial planning, short term, medium term and perspective planning, imperative, totalitarian and democratic planning, centralized and decentralized planning.

Unit II: Formulation and Controls of Plan

(18 Hours)

Problems of plan making – Controls in a Planned economy. Meaning of physical and financial control – Types of physical controls: Price control, controls in agricultural sector, controls in manufacturing sector, controls in foreign trade and foreign exchange control.



Unit III: Planning in India

(18 Hours)

Features of Indian Plans – Objectives, Achievements and Failures of Five Year Plans of India – Agricultural Development under planning in India – Industrial progress during the plan period – Investment pattern of Indian Plans

Unit IV: Economic Development and Growth

(18 Hours)

Growth: meaning and definition – difference between growth and development – measurement of economic development: GNP, Per Capital Income, Welfare and Social Indicators – Human Development Index : Meaning and simple explanation of its components – Obstacles of economic development.

Unit V : Theories of Economic Growth

(18 Hours)

Factors of Economic Growth (Economic and non-Economic) – Theories of Economic Growth: Malthusian Theory , Marxian Theory, Rostow's Stages of growth, Lewis Theory of unlimited supply of Labour, Critical minimum Effort Theory of Leibenstain - Theory of Balanced growth and Theory of Unbalanced growth.

Text Books:

1. **S.K. Mirsa and V.K. Puri,(2006)** “Economic of Development and Planning ”, Himalaya Publishing House Mumbai, 12th Edition.
2. **M.L. Jhingan,(2011)** “Economic of Development and Planning ”, Vrindha Publishing House New Delhi, 40th Edition.

Reference Book:

- 1 **Taneja M.L. and Sharma L R, (1983)** “Economic of Development and Planning ”, Shoban Lal Nagin Chand and Co, Jalandhar.

CORE PAPER-14[COMPUTER SCIENCE]

(For those who joined from June 2012 onwards)

Contact Hours per Week: 06

Subject Code:[U1ECC62]

Contact Hours per Semester: 90

CREDITS: 5

Objectives:

To enable the students to

1. Understand the importance of Computer
2. prepare for higher studies on this field
3. Prepare for various competitive examinations.

Unit I: Fundamentals of Computer

(18 Hours)

Computer: Importance – Types – Major features – Organisation – binary Number System – Hardware and Software –Computing Concepts – Input devices – Processing units – Output devices – External Storage Devices

Unit II : Application in Windows 2003

(18 Hours)

Introduction and features – basic components – Customizing Windows – accessories, Notepad – Paint Brush – Control panel – Windows Explorer – Internet Explorer

Unit III: Ms – Word

(18 Hours)

Introduction to word processing – starting Ms-word – Customizing the work place – Types of views and styles – file management tools – Columns – Tables – Mail merge.

Unit IV : Ms- Excel

(18 Hours)

Introduction to spread sheets – Basic skills for working with spread sheet – Shortcut menus – entering, editing – Protecting spread sheets – moving deleting – copying cells and ranges – Creating and working with formulae – Data base in excel – Graphs and charts.

Unit V : Ms – Power Point

(18 Hours)

Presentation – Creating and manipulating presentation – Enhance presentations – Inserting Objects – Templates – Integrating with other software.

Text Book:



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1. **BalaGurusamy (1995)**, "Programming in Basic", Tata MC Graw, hill Publishing Company Limited, New Delhi.

Reference Book:

1. **Bysons Gotfried (1991)** "Schaums Outline Series Theory and Problems of Programming with basic Including Expanding Micro Computer Basic Section"; Tata MC Graw, hill Publishing Company Limited, New Delhi.

ELECTIVE- 2

LABOUR ECONOMICS

(For those who joined from June 2012 onwards)

Contact Hours per Week: 06

Subject Code :(UIECE61)

Contact Hours per Semester: 90

CREDITS: 5

Objectives:

To enable the students to

1. Understand the importance of labour problems and labour welfare in India.
2. Prepare for higher studies on this field.
3. Prepare for various competitive examinations.

Unit I : Nature of Labour Problems

(18 Hours)

Labour: meaning – factors which give rise to labour problems – characteristics of labour – migration : meaning – causes – effects – characteristics of Indian Industrial workers – causes for absenteeism and labour turnover.

Unit II: Industrial Disputes

(18 Hours)

Industrial Disputes – meaning – forms of industrial disputes – causes for industrial disputes – effects – preventions of industrial disputes – methods for settlement of industrial disputes.

Unit III: Wage and Workers Participation in Management

(18 Hours)

Wages – Causes for wage difference – methods of wage payment

Workers participation in management in India : Meaning – works committee – joint management councils – workers directors, - workers participation in Industry and in Public sector.

Unit IV: Social Security Measures

(18 Hours)

Social Security – Meaning – need – benefits Provided under social security – social security measures in India – Workmen Compensation Act – Maternity Benefit Act – Employees State Insurance Scheme and some other social security measures in India

Unit V: Trade Union Movement

(18 Hours)

Trade union : meaning – objectives – Forms: INTUC, AITUC, CITU and HMS - structure of trade union in India – Functions of trade unions – factors affecting the growth of trade unions – growth of trade union in India – ILO: Aims and Functions.

Text Book:

1. **Tyagi B.P. (2011)**"Labour Economics and Social Welfare" Jain Prakesh Nath and Co Meerut 2011.

Reference Books:

- 1 **Punekar, Deodhar, Sankaran,(2007)** " Labour Welfare, Trade Unionism and Industrial Relations," Himalaya Publishing House Mumbai,
2. **R.C. Saxena, S.R. Saxena(2007)** "Labour Relation in India, Asia Printer's mata Ghat Road, Khurja

ELECTIVE PAPER – 3 ECONOMICS OF MARKETING

(For those who joined from June 2012 onwards)

Contact Hours per Week: 06

Subject Code: (UIECE62)

Contact Hours per Semester: 90

CREDITS: 5

Objectives:



To enable the students to

1. Understand various aspects of marketing.
2. Prepare for higher studies on this field.
3. Prepare for various competitive examinations.

Unit I : An Introduction to Marketing

(18 Hours)

Marketing : Meaning and Definition – Objectives – Importance – Approaches to the study of marketing – Role of Marketing in Economic development.

Unit II : Marketing Functions

(18 Hours)

Functions of Exchange – Functions of Physical supply – Facilitating functions – the Concept of Buying, Assembling and Selling – Buying : Meaning – Kinds of buyers - problems in buying – Assembling : Meaning – Advantages – Problems in assembling – Selling : meaning – kinds of sales.

Unit III : Transportation

(18 Hours)

Transport: Functions – Classification / Types of transport – benefits of transport – Storage and warehousing: meaning and benefits – Grading and standardization: meaning and definition –advantages and disadvantages.

Unit IV : Advertising and Sales Promotion

(18 Hours)

Advertising : meaning – objectives – functions – advantages - kinds.
Sales Promotion : meaning – objectives – kinds.

Unit V : Channels of Distribution

(18 Hours)

Meaning – Types – Middlemen in distribution channel – functions of middlemen – kinds of middlemen – types of retailer.

Text Book:

Pillai, R.S.N. and Bhagawati,(2011) “Modern Marketing”, S. Chand and Company Ltd, New Delhi,

Reference Books

1. **Rajan Nair., (2010)** Marketing, Sultan Chand and Sons, New Delhi.
2. **Thirunavukkarasu and Kathiresan.(1985)** Marketing, Annai Pathipagam, Chennai.

SBE-5 PERSONALITY DEVELOPMENT)

(For those who joined from June 2012 onwards)

Contact Hours Per Week: 02

Subject Code :(UIECS61)

Contact Hours per Semester:30

CREDITS:5

Objectives:

To enable the students to

1. Understand various aspects of personality development.
2. prepare for higher studies on this field
3. Prepare for various competitive examinations.

Unit I: Meaning and Determinants of Personality

(6 Hours)

Meaning of Personality – Determinants of Personality: Biological Factors – Cultural Factors – Family Factors – Social and Situational Factors

Unit II: Personality Traits

(6 Hours)

Personality Traits – Kinds Of Personality Traits – Personality Theories: Fruedian Theory Of Personality – Types Of Personality

Unit III: Perception, Attitude and Values

(6 Hours)

Perception: Meaning- Nature –Factors Influencing Perception – Attitude: Nature – Sources- Values: meaning, Types, Sources

Unit IV: Leadership

(6 Hours)

Leadership: Meaning, Character – Functions, Types – Goal Setting – Time Management

Unit V: Communication Skill

(6 Hours)



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Communication Skill – Participation in Group Discussion – Interview – Emotional Intelligence

Text Book:

1. **R.Machakkalai, L.Saraswathi**, “Personality Development – A Need”, Spark Publication, Madurai

Reference Books:

1. **L.M.Prasad**, “Business Management”, Sultan Chand and Sons, New Delhi
2. **Stephen P.Robbins**, “Organisational Behaviour”, Prentice Hall of India, New Delhi.

SBE-6 TAX MANAGEMENT

(For those who joined from June 2012 onwards)

Contact Hours per Week: 02

Subject Code :(UIECS62)

Contact Hours per Semester: 30

CREDITS: 5

Objectives:

To enable the students to

1. understand the importance taxation
2. prepare for higher studies on this field
3. prepare for various competitive examinations.

Unit I : Meaning and Types of Tax

(6 Hours)

Tax: Meaning – Progressive Tax, Proportional Tax, Direct Tax and Indirect Tax.

Unit II: Assessment

(6 Hours)

Meaning of assessee – Previous year – Assessment year – Capital and revenue receipts – Capital expenditure and revenue expenditure.

Unit III: Income Heads

(6 Hours)

Income Heads – Salary – House Property – Capital Gains – Other Sources of Income.

Unit IV: Vales Added Taxes

(6 Hours)

Sales Tax – Central Excise Duty – Customs Duty - Wealth Tax.

Unit V: Total Income

(6 Hours)

Deductions from total income –Calculation of total Income

Text Books:

1. **Dr. H.C. Mehrotra and Dr. S. P. Goyal (2011)** “ Income Tax Law and Accounts”, Sahitsa Bhawan Publication, New Delhi
2. **N. Hariharan (2012)** “Income Tax Law and Practice”, Vijay Nicole Imprint Private Limited Chennai.

Reference Books:

1. **T.S. Reddy and Y. Hari Prasad Reddy,()** “ Income Tax”, Margham Publications.
2. **C. Malhotra ()** “Income Tax Law and Practice”, Sultan And Chand Sons, New Delhi.

NME2 POPULATION STUDIES

(For those who joined from June 2012 onwards)

Contact Hours per Week: 02

Subject Code: (UIECN61)

Contact Hours per Semester: 30

CREDITS: 5

Objectives:

To enable the students to

1. Understand various aspects of population of India.
2. Prepare for higher studies on this field.
3. Prepare for various competitive examinations.

Unit I : Nature and Scope of Population Studies

(6 Hours)

Population Studies: meaning - Nature and Scope – Interrelationship between population studies and other disciplines – sources of population data – Development of population studies in India.

Unit II: Theories of Population

(6 Hours)

Theory of Demographic Transition – Malthusian Theory of Population – Optimum Theory of Population.

Unit III: Fertility and Mortality

(6 Hours)



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Fertility: meaning – factors affecting fertility

Mortality: meaning – factors influencing mortality

Infant Mortality: meaning - factors affecting infant mortality

Unit IV: Migration

(6 Hours)

Migration: meaning – types – causes – effects – Internal Migration – International Migration.

Unit V: Indian Population

(6 Hours)

Trends in Indian population since 1951 – Causes for the growth of population – Measure to control the growth of population – recent population policy of India – Indian population 2011.

Text Book:

1. **Bhande, A and T. Kanitkar(2003)** “Principles of Population Studies” Himalaya Publishing House, Mumbai.

Reference Books:

1. **Punekar, Deodhar, Sankaran (2007)**, “ Labour Welfare, Trade Unionism and Industrial Relations,” Himalaya Publishing House Mumbai.
 2. **R.C. Saxena, S.R. Saxena(2010)** “Labour Relation in India, Asia Printer’s mata Ghat Road, Khurja.
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Course Name : Bachelor of Arts

Discipline : History

Semester	Part	Subject	Credit	Hour	Int+Ext=Tot	Subject Code	Revision
V	Core 9	ஐரோப்பிய வரலாறு (1453-1789)	5	5	25+75=100	UIHSC51	Revised
	Core 10	அறிவியல் தொழில் நுட்ப வரலாறு	5	5	25+75=100	UIHSC52	Revised
	Core 11	வரலாற்று வரைவியலின் அடிப்படை கூறுகள்	4	5	25+75=100	UIHSC53	Revised
	Core 12	பெண்ணியல்	4	5	25+75=100	UIHSC54	Revised
	Elective	இந்திய அரசியலமைப்பு வரலாறு (1861-1950)	5	6	25+75=100	UIHSE51	New
	SBE – 4	பணிவாய்ப்புத் திறன்	2	2	25+75=100	UIPS51	New
	NME- 1	இந்திய விடுதலைப் போராட்ட வரலாறு 1885-1947	2	2	25+75=100	UIHSN51	Interchange and Revised

Semester	Part	Subject	Hour	Credit	Int+Ext=Tot	Subject Code	Revision
VI	Core 13	ஐரோப்பிய வரலாறு 1789 - 1945 A.D.	6	5	25+75=100	UIHSC61	Interchange & Revised
	Core 14	பன்னாட்டு உறவுகள் 1945 - 2005 A.D.	6	5	25+75=100	UIHSC62	Revised
	Elective 2	அமெரிக்க ஐக்கியநாடுகளின் வரலாறு 1865 - 1945 A.D.	6	5	25+75=100	UIHSE61	Revised
	Elective 3	மனித உரிமைகள்	6	5	25+75=100	UIHSE62	Revised
	SBE - 5	தற்கால அரசியல் சிந்தனைகள்	2	2	25+75=100	UIHSS61	Revised
	SBE - 6	இந்திய கட்டிடக்கலை வரலாறு	2	2	25+75=100	UIHSS62	Revised
	NME - 1	தற்கால தமிழ்நாட்டு வரலாறு 1916-2000 AD	2	2	25+75=100	UIHSN61	New

பணிவாய்ப்புத் திறன்

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

1. 150 objective type questions with four alternatives for each question.
2. 30 questions to be asked from each unit.
3. Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries ½ mark.
3. Total marks to be reduced to 25.

ஐந்தாம் பருவம்

ஐரோப்பிய வரலாறு (1453-1789)

Contact Hours per Semester: - 75
Hours per week: 5

Credits: 5

Subject Code: UIHSC51



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- ❖ ஐரோப்பிய கண்டத்தில் ஏற்பட்ட அரசியல், சமய, சமூக மாற்றங்களையும் உலக நாடுகளில் அதன் தாக்கத்தினையும் மாணவர்களுக்குப் புரிய வைத்தல்.
- ❖ போட்டித்தேர்வுகளுக்கு மாணவர்களை தயார்படுத்துதல்.

அலகு 1

(15 மணி நேரம்)

இடைக்கால இறுதியில் ஐரோப்பா - புவியியல் கண்டுபிடிப்புகள் - காரணங்கள் - விளைவுகள் - 1453ம் ஆண்டின் முக்கியத்துவம்.

அலகு 2

(15 மணி நேரம்)

இத்தாலியில் மறுமலர்ச்சி-இலக்கிய மறுமலர்ச்சி - பிரான்சிஸ் பெட்ரார்ச் - பொக்காஷியோ ஓவியத் துறையில் மறுமலர்ச்சி - லியாண்டோ-டா-வின்சி-மைக்கேல் ஆஞ்சலோ மறுமலர்ச்சியின் தாக்கம்.

அலகு 3

(15 மணி நேரம்)

சமயசீர்திருத்த இயக்கம்-மார்டின் லூதர்-இங்கிலாந்தின் எட்டாம் ஹென்றி-ஐந்தாம் - சார்லஸ்-ஸ்பெயில்-இரண்டாம் பிலிப் -சமயசீர்திருத்த மறுப்பு இயக்கம் -முப்பதாண்டு போர்.

அலகு 4

(15மணி நேரம்)

14ம் லூயியின் சாதனைகள்-வெளிநாட்டு கொள்கைகள்- டச்சுப்போர் - ஸ்பானிய வாரிசுரிமை போர் - 1713ம் ஆண்டு உட்ரெக்ட் உடன்படிக்கை- மகாபிரடெரிக்.

அலகு 5

(15 மணி நேரம்)

ஆஸ்திரிய வாரிசுரிமை போர் - மரியதெரசா - ஜோசப் II - சீர்திருத்தங்கள் மகாபீட்டர்- உள்நாட்டு சீர்திருத்தங்கள் - வெளிநாட்டு கொள்கை - இரண்டாம் கேதரின் - சீர்திருத்தங்கள் - வெளிநாட்டுக் கொள்கை ஐரோப்பாவில் அமைதியின்மை - பிரான்சின் பதினாறாம் லூயி. நூற்பட்டியல்

- 1) T.S.ராமலிங்கம் - ஐரோப்பிய வரலாறு (1453-1789)
- 2) ஆலால சுந்தரம் - ஐரோப்பிய வரலாறு (1453-1789)
- 3) ஜெயபாலன் - ஐரோப்பிய வரலாறு (1453-1789)
- 4) சுவாமிநாதன் - ஐரோப்பிய வரலாறு (1453-1789)
- 5) J. தர்மராஜ் - ஐரோப்பிய வரலாறு (1453-1789)

BOOKS FOR REFERENCE:

- 1.A.J.Grant : Outlines of European History
- 2.K.Ruckmani : History of Europe (1453-1715)
- 3.K.Dharmarajan : History of Europe (1453-1789)

அறிவியல் தொழில் நுட்ப வரலாறு

Contact Hours per Semester: - 75

Hours per week: 5

Credits: 5

Subject Code: UIHSC52

நோக்கங்கள்:

- ❖ அறிவியல் கண்டுபிடிப்புகளை பற்றிய செய்திகளை மாணவர்கள் தெரிந்து கொள்ளுதல்
- ❖ அறிவியல் தொழில் நுட்ப வளர்ச்சியை மாணவர்கள் புரிந்து கொள்ளுதல்.

அலகு 1

(15 மணி நேரம்)

ஐரோப்பாவில் நவீனகால அறிவியல் தொழில் நுட்பத்தின் தோற்றம் -15 மற்றும் 16 நூற்றாண்டில் : ஐரோப்பாவில் மறுமலர்ச்சி - வானவியலில் ஏற்பட்ட வளர்ச்சி - நிக்கோலஸ் கோபர் நிக்கஸ் - ஜோகன்னஸ் கெப்ளர் - கலிலியோ - மருத்துவத்துறையில் ஏற்பட்ட வளர்ச்சி ஆண்ட்ரீபஸ் வெசாலியஸ் - அம்புருவாஸ் பாரே - தொழில் நுட்ப இயலில் ஏற்பட்ட வளர்ச்சி ஜோகன் கூட்டன்பர்க் - லியோனர்டோ டாவினஸ்.



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அலகு 2

(15 மணி நேரம்)

17-ம் நூற்றாண்டில் அறிவியல் தொழில் நுட்ப வளர்ச்சி இயற்பியலும் கணிதமும்- ஐசக் நியூட்டன் - வேதியியல் - ராபர்ட் பாயில் - மருத்துவம்- வில்லியம் ஹார்வி-மாரசலோ மால்பிகி.

18- ம் நூற்றாண்டில் அறிவியல் கண்டுபிடிப்புகள் - நூற்பு மற்றும் நெசவுத் தொழில் - நீராவி இன்ஜின்- வேதியியல் துறையில் வளர்ச்சி- ஹென்றி கேவன்டிஸ் - ஜோசப் பிரிஸ்ட்லி - லவாய்சியர் - மருத்துவ துறையில் வளர்ச்சி - ஜான் ஹன்டர் - எட்வர்ட்ஜென்னர்.

அலகு 3

(15 மணி நேரம்)

19-ம் நூற்றாண்டில் அறிவியல் தொழில் நுட்ப வளர்ச்சி உயிரியல் துறையில் வளர்ச்சி- சார்லஸ் டார்வின் - இயற்பியல் மற்றும் கணிதத் துறையில் வளர்ச்சி - மைக்கேல் பாரடே- ஜேம்ஸ் கிளார்க்மாக்க்ஸ்வெல் - வேதியியல் துறையில் வளர்ச்சி - ஜான்டால்டன் - மெண்டலீவ் மருத்துவ துறையில் வளர்ச்சி - லூயி பாஸ்டர் வெடிமருந்து கண்டுபிடிப்பு-ஆல்பிரட் நோபல் போக்குவரத்து துறையில் ஏற்பட்ட முன்னேற்றம் - நீராவி கப்பல் -மோட்டார் கார்- சைக்கிள்- தகவல், செய்தித்தொடர்பு - சாமுவேல் மோர்ஸ் - அலெக்சாந்தர் கிராகாம் பெல் - தாமஸ் ஆல்வா எடிசன்.

அலகு 4

(15 மணி நேரம்)

20-ம் நூற்றாண்டில் அறிவியல் தொழில் நுட்ப வளர்ச்சி - ஆல்பர்ட் ஐன்ஸ்டீன்- ராண்ட்ஜென்- மேரிகியூரி - ரூதர்போர்டு தகவல், செய்தித்தொடர்பில் வளர்ச்சி- மார்க்கோனி - ராடார்- தொலைக்காட்சி-கம்ப்யூட்டர் - உளவியல் - சிக்மாண்ட் பிராய்டு

அலகு 5

(15 மணி நேரம்)

நவீன இந்தியாவில் தொழில் நுட்ப வரலாறு - விண்வெளி ஆய்வு - அணுசக்திக்கழகம்- வெண்மைப் புரட்சி - இந்தியாவின் முன்னோடி அறிவியலறிஞர்கள் ஜெகதீச சந்திர போஸ் - பிரபுல்ல சந்திரராய்- ஸ்ரீனிவாச ராமானுஜம் - c.v.ராமன் - ஹோமி ஜஹாங்கிர் பாபா - ஹர் கோவிந்த குரானா - M.S. சுவாமி நாதன் - அப்துல் கலாம்.

நூற்பட்டியல்:

1. கோமதி நாயகம் - அறிவியல் தொழில் நுட்ப வரலாறு
2. வைரவேல் - அறிவியல் தொழில் நுட்ப வரலாறு
3. J. தர்மராஜ் - அறிவியல் தொழில் நுட்ப வரலாறு.

BOOKS FOR REFERENCE:

- 1.Abro A.D. :The evolution of scientific thought from Newton to Einstein
- 2.Forbes : Studies in Ancient Technology
- 3.Philip Leonard Stafford :Great men of Science
- 4.Ray Spangenburg and Diane K.Moser :The History of Science 5 Volumes
- 5.S.Varghese Jeyaraj :History of Science and Technology

வரலாற்று வரைவியலின் அடிப்படை கூறுகள்

Contact Hours per Semester: -

75

Credits: 4

Hours per week: 5

Subject Code: UIHSC53

நோக்கங்கள்

1. பல்வேறு கால கட்டங்களில் வரலாறு எழுதக்கூடிய முறையில் ஏற்பட்ட மாற்றங்களை மாணவர்களுக்கு உணர்த்துதல்.
2. வரலாற்று ஆய்வின் முக்கியத்துவத்தை மாணவர்களுக்குப் போதித்தல்.

அலகு 1

(15 மணி நேரம்)

வரலாற்றின் பொருள் விளக்கம் - தன்மை - வரலாற்றின் எல்லை: வரையறையும், நோக்கமும் - வரலாறும் அதன் தொடர்புடைய பாடங்களும்: புவியியல்- அரசியல் -



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பொருளாதாரம் இலக்கியம்- சமூகவியல் -வரலாற்றின் பிரிவுகள் - அரசியல் - சமூதாயம் - பொருளாதாரம்- பண்பாடு மற்றும் அரசியலமைப்பு.

அலகு 2

(15 மணி நேரம்)

வரலாறு - கலையா அல்லது அறிவியலா-வரலாறு கலை என்பதற்கான- காரணங்கள் - வரலாறு அறிவியல் என்பதற்கான காரணங்கள்- வரலாற்றின் பயன்களும் - கெடுபயன்களும் - வரலாற்றுப் படிப்பினைகள்.

அலகு 3

(15 மணி நேரம்)

அயல்நாட்டு வரலாற்றாளர்களும் அவர்களின் பங்களிப்பும் ஹெரோடோட்டஸ் - தூசி டைடஸ் - கிப்பன் - கார்ல்மார்க்ஸ் - டாயன்பி.

அலகு 4

(15 மணி நேரம்)

இந்திய வரலாற்றாளர்களும் அவர்களின் பங்களிப்பும் : கல்கணர் - அபுல்பாசல் - ஜடுநாத் சர்க்கார் - மஜீம்தார்- நீலகண்ட சாஸ்திரி - கிருஷ்ணசாமி ஐயங்கார் - ராஜ்யயன்- ரணசித் குகா.

அலகு 5

(15 மணி நேரம்)

வரலாற்றாய்வு - ஆய்வாளரின் முன்தேவைகள்- ஆய்விற்கான தலைப்பினை தேர்ந்தெடுத்தல் - சான்றுகள்- நடுநிலைநோக்கு - திறனாய்வு - ஒருங்கிணைத்தல் - ஆய்வுக்கட்டுரையாக்கத்தின் படி நிலைகள் - அடிக்குறிப்புகள் - நூற்பட்டியல்.

நூற்பட்டியல்:

- 1) ராஜ்யயன் - வரலாற்றுக் கோட்பாடும்,முறையியலும்
- 2) வெங்கடேசன் - வரலாற்று வரைவியல்
- 3) கணபதி - வரலாற்று வரைவியல்
- 4) தங்கசாமி - வரலாற்று வரைவியல்
- 5) தர்மராஜ் - வரலாற்று வரைவியல்

BOOKS FOR REFERENCE :

- 1.Sheik Ali,B. : History: Its Theory and Method
- 2.Rajayyan,K, : History in Theory and Method
- 3.S.Manickam : Theory of History and Method of Research
- 4.G.Venkatesan : A Study of Historiography

பெண்ணியல்

Contact Hours per Semester: - 75

Credits: 4

Hours per week: 5

Subject Code: UIHSC54

நோக்கங்கள்:

- 1) பெண்ணியம் பற்றி மாணவர்கள் தெரிந்து கொள்ளுதல்
- 2) பெண்களின் உரிமைகள், பாதுகாப்புச்சட்டங்கள் பற்றி மாணவர்கள் புரிந்து கொள்ளுதல்
- 3) விடுதலை போராட்டத்திலும் அரசியலிலும் பெண்கள் பங்கு பற்றி மாணவர்களுக்கு எடுத்து சொல்லுதல்.

அலகு 1

(20 மணி நேரம்)

பெண்ணியல் கல்வி - பெண்ணியம் - பொருள், விளக்கம் - பெண்ணியவாதி - விளக்கம் - பெண்ணியக் கருத்தாக்கங்கள் - பெண்ணியத்தின் வகைகள் - இந்தியப் பெண்களின் சமூக நிலை ஒரு வரலாற்றுப் பார்வை

அலகு 2

(10 மணி நேரம்)



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Virudhunagar – 626 001

இந்திய விடுதலை போராட்டத்தில் பெண்கள்- ஜான்சிராணி லட்சுமிபாய்- அன்னிபெசன்ட் - சரோஜினி நாயுடு - பண்டித ரமாபாய் - விஜயலட்சுமி பண்டிட் - கேப்டன் லட்சுமி - முத்துலெட்சுமி ரெட்டி-சௌந்தரம்மாள், தில்லையாடிவள்ளியம்மாள், அஞ்சலையம்மாள்.

அலகு 3

(15 மணி நேரம்)

பெண்ணிய அமைப்புகள் - பெண்ணடிமைக்கு காரணமான சமுதாயசீர்கேடுகள் - பெண்கள் வாக்குரிமைப் போராட்டம் - அரசியலில் பெண்களின் பாட்டு.

அலகு 4

(15 மணி நேரம்)

பெண்களின் உரிமைகள் - பெண்ணுரிமைப் பாதுகாப்பு சட்டங்கள் - ஐநாசபையும் பெண்ணுரிமையும் - பெண்கள் மீதான அனைத்து வகை பாகுபாட்டிற்குகெதிரான உடன்படிக்கை

அலகு 5

(15 மணி நேரம்)

பெண்களின் மேம்பாட்டுக்கான அரசுத் திட்டங்கள் - பெண்களும் சுற்றுச் சூழலும் - பெண்கள் சுய உதவிக் குழுக்கள் - பெண்களும் மக்கள் தகவல் தொடர்பு சாதனங்களும் - தற்கால பெண்கள் எதிர் கொள்ளும் பிரச்சனைகள்.

நூற்பட்டியல்

- 1) பிரேமா - பெண்ணியம்
- 2) S. பழனிச்சாமி - பெண்கல்வி
- 3) J. தர்மராஜ் - பெண்ணியல்

BOOKS FOR REFERENCE:

1. Tara Ali Baig : Women of India
2. Shilaja Nagendra : Women's Rights
3. Mohini Chatterjee : Feminism and Women Rights Two Volumes
4. Krisnammal : Women Studies

இந்திய அரசியலமைப்பு வரலாறு (1861-1950)

Contact Hours per Semester: - 90

Credits: 5

Hours per week: 6

Subject Code: UIHSE51

நோக்கங்கள்:

- 1) இந்திய அரசியலமைப்பின் வளர்ச்சியினை மாணவர்களுக்குப் போதித்தல்.
- 2) இந்திய அரசியலமைப்பின் சிறப்புத்தன்மைகளை மாணவர்களுக்கு உணர்த்துதல்.

அலகு 1

(20 மணி நேரம்)

1861-ம் வருட இந்திய கவுன்சில் சட்டம் -1892-ம் வருடம் இந்திய கவுன்சில் சட்டம் - மின் டோ மார்லி சீர்திருத்தங்கள் 1909-மாண்டேகு செம்ஸ்போர்டு சீர்திருத்தங்கள் -1919- மாகாணத்தில் இரட்டையாட்சி.

அலகு 2

(20 மணி நேரம்)

1935-ம் வருட இந்திய அரசாங்க சட்டம் - இந்திய அரசியலமைப்பு வளர்ச்சி 1935 முதல் 1950 வரை - அரசியலமைப்பு நிர்ணய சபை - 1947ம் ஆண்டு சட்டம் - இந்திய அரசியலமைப்பு உருவாகுதல்.

அலகு 3

(20 மணி நேரம்)

இந்திய அரசியலமைப்பின் சிறப்புத்தன்மைகள் - அரசியலமைப்புத்திருத்தும் முறை - இந்தியக் கூட்டாட்சி அடிப்படை உரிமைகள் - அரசுக் கொள்கையின் வழிகாட்டு நெறிகள் - அடிப்படைக் கடமைகள்.

அலகு 4

(15 மணி நேரம்)



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Virudhunagar – 626 001

குடியரசுத் தலைவர் - துணைக் குடியரசுத்தலைவர் - அமைச்சரவை - பிரதம மந்திரி - மாநிலங்களவை - மக்கள் சபை - சட்டமியற்றும் முறை - பாராளுமன்றக் குழுக்கள் - தலைமை நீதி மன்றம்.

அலகு 5

(15 மணி நேரம்)

அரசியல் கட்சிகள் - அரசுப்பணிகள் - செல்வாக்குக் குழுக்கள் - மாநில அரசாங்கம் - மத்திய அரசுக்கும் மாநில அரசுகளுக்கும் இடையேயான உறவுகள் - நெருக்கடி நிலை - அரசியலமைப்பு திருத்த முறைகள் - தேர்தல் ஆணையம்.

நூற்பட்டியல்

- 1) G. வெங்கடேசன் - இந்திய விடுதலைப் போராட்ட வரலாறு
- 2) T.S. ராமலிங்கம் - இந்திய வரலாறு(1857-1984)
- 3) A. சுவாமிநாதன் - இந்திய அரசியலமைப்பு வரலாறு
- 4) J. தியாகராஜன் - இந்திய வரலாறு (1773-1950)
- 5) J. தர்மராஜ் - இந்திய அரசியலமைப்பு வரலாறு (1773-1950)
- 6) S. சிங்க ராசன் - இரட்டையாட்சி

BOOKS FOR REFERENCE:

1. Agarwal, A.C., : Constitutional Development and National Movement of India.
2. Basu, D.D., : Constitutional Law of India.
3. Kapoor, A.C., : Constitutional History of India.
4. Pylee, M.V., : Constitutional History of India

பருவம் -V பகுதி- திறன் சார் பாடம் - பணிவாய்ப்புத் திறன்

ஒரு வாரத்திற்கான தொடர்பு மணி நேரம் : 2

பாடக்குறியீடு : UIPS51

ஒரு பருவத்திற்கான தொடர்பு மணி நேரம் :30

மதிப்பு : 2

நோக்கங்கள்:

பணிவாய்ப்புத்திறனை மேம்படுத்த அளவுசார் இயற்கைத்திறன், பகுத்தாய்தல், மற்றும் பொது அறிவை வளர்த்தல்,

அலகு -1 அளவு சார் இயற்கைத் திறன்

சராசரி, சதவிகிதம், லாபம் & நட்டம் , விகிதம் & விகிதாச்சாரம், காலம் & வேலை, காலம் & தொலைவு, கடிகாரம்.

அலகு -2 அளவுசார் இயற்கைத் திறன்

வயது குறித்த புதிர், படகு & நீரோடை, தனிவட்டி, கூட்டு வட்டி, பரப்பளவு , கூட்டுப் பங்காண்மை.

அலகு -3 பகுத்தாய்தல்

சொல்சார் பகுப்பாய்வு - ஒத்ததன்மை, வகைப்படுத்துதல், வரிசை, குறியீட்டு முறை & குறிநீக்க முறை, ரத்த உறவு, திசை உணர்வு சோதனை.

அலகு- IV பகுத்தாய்தல்

சொல்சார் பகுப்பாய்வு - எண் சோதனை, தரவரிசை இடுதல் & நேர வரிசை சோதனை, எழுத்து சோதனை, தர்க்க வென் வரைபடம்.

அலகு- V பொது அறிவு:

சுருக்கக் குறியீடுகள், தலைப்பெழுத்துச் சொல் , பிரபலங்கள், முக்கிய நாட்கள், தலைநகரங்கள், நாணயங்கள், நூல்கள் அவற்றின் ஆசிரியர்கள், கண்டுபிடிப்புகள்.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
2. Quantitative Aptitude - R.S.Aggarwal
3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal



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4. Malayala Manorama Year Book, 2014

இந்திய விடுதலை போராட்ட வரலாறு 1885-1947 வரை

Contact Hours per Semester: - 30

Credits: 2

Hours per week: 2

Subject Code: UIHSN51

நோக்கங்கள்

- 1) இந்திய விடுதலை போராட்டம் பற்றி மாணவர்களுக்கு உணர்த்துதல்
- 2) TNPSK காவல்துறை, மற்றும் ஆசிரியர் தகுதித் தேர்வுக்கு மாணவர்களை தயார்படுத்துதல்.

அலகு 1

(6 மணி நேரம்)

இந்திய தேசியத்தின் தோற்றம் - காரணங்கள் - இந்திய தேசிய காங்கிரஸின் தோற்றமும் வளர்ச்சியும் - மிதவாதிகள் - கோகலே - சாதனைகள் - தீவிரவாதிகள் - திலகர் - சூரத் மாநாடு.

அலகு 2

(6 மணி நேரம்)

வங்கப்பிரிவினையும் சுதேசி இயக்கமும் - பயங்கரவாதிகள் - புரட்சி இயக்கங்கள் - முஸ்லீம் லீக்கின் தோற்றம் - மாநாடுகள் - லக்னோ ஒப்பந்தம் - சுயாட்சி இயக்கம் - தோற்றம் - வளர்ச்சி முக்கியத்துவம் - ஆகஸ்ட் பிரகடனம்-1917,

அலகு 3

(6 மணி நேரம்)

ஜாலியன் வாலாபாக் படுகொலை - கிலாபத் இயக்கம் - ஒத்துழையாமை இயக்கம் -செளரி செளரா நிகழ்ச்சி - தோல்விகான காரணம் - சுயராஜ்யக் கட்சி - சைமன் குழு - நேரு அறிக்கை,

அலகு 4

(6 மணி நேரம்)

சட்ட மறுப்பு இயக்கம் - வட்ட மேஜை மாநாடுகள் - காந்தி இர்வின் ஒப்பந்தம் - வகுப்பு வாரி தீர்வு - பூனா உடன்பாடு - இரண்டாவது உலகப்போரும் - இந்திய சுதந்திரப் போராட்டமும் - ஆகஸ்ட் சலுகை - தனிநபர் சட்ட மறுப்பு இயக்கம் -வகுப்பு வாத உணர்வின் தோற்றமும் வளர்ச்சியும் - கிரிப்ஸ் குழுவின் திட்டம்.

அலகு 5

(6 மணி நேரம்)

வெள்ளையனே வெளியேறு இயக்கம் - சுபாஷ் சந்திர போசும் இந்திய தேசிய ராணுவமும் - வேவல் திட்டம் - அமைச்சரவைத் தூதுக் குழு - அட்வியின் அறிக்கை - இந்திய விடுதலை.

நூற்பட்டியல்:

- 1) இந்திய விடுதலைப் போராட்ட வரலாறு - வெங்கடேசன்-சந்திரபிரபு
- 2) இந்திய விடுதலைப் போராட்ட வரலாறு - தர்மராஜ்
- 3) இந்தியாவின் சிறப்பு வரலாறு III - R.C. மஜீம்தார்

BOOKS FOR REFERENCE:

1. Bipin Chandra : India's Struggle for Independence, 1857-1947.
2. Majumdar. R.C., : History of Freedom Movement in India Volume 1-3.
3. Rajayyan, K., : Freedom Struggle in India
4. Vengatesan, G., : History of Freedom Struggle in India.
5. Tara Chand : History of Freedom Movement in India Volume 1-5

ஆறாம் பருவம்

ஐரோப்பிய வரலாறு (1789-1945)

Contact Hours per Semester: - 90

Credits: 5

Hours per week: 6

Subject Code: UIHSC61

நோக்கங்கள்

பிரெஞ்சுப் புரட்சியின் தாக்கம் உலக ஐனநாயகத்திற்கு வழி வகுத்ததை மாணவர்களுக்கு உணர்த்துதல்.



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Virudhunagar – 626 001

ஐரோப்பிய அரசியலில் ஏற்பட்ட மாற்றங்கள் உலக வரலாற்றில் எதிரொலித்ததை மாணவர்களுக்கு உணர்த்துதல்.

அலகு 1

(20 மணி நேரம்)

பிரெஞ்சு புரட்சி - காரணங்கள் மற்றும் விளைவுகள் - நெப்போலியன் போனபார்ட் - போர்கள் கண்டத்திட்டம்- உள்நாட்டு சீர்திருத்தங்கள்.

அலகு 2

(20 மணி நேரம்)

வியன்னா மாநாடு - புனிதக் கூட்டணி மெட்டர்நிக் சாகாப்தம் - 1830, 1848ம் வருட புரட்சி - இத்தாலிய இணைவு - மாஜினிகவுர்- ஜெர்மனியின் இணைவு பிஸ்மார்க் - மூன்றாம் பிரெஞ்சு குடியரசு.

அலகு 3

(15 மணி நேரம்)

கிழக்கத்தியப் பிரச்சனை - முதல் உலகப்போர் காரணங்கள் - போக்கு - விளைவுகள் - வெர் செய்லஸ் உடன்படிக்கை - சர்வதேச சங்கம் - சாதனைகள்.

அலகு 4

(15 மணி நேரம்)

ரஷ்யப்புரட்சி காரணங்கள், போக்கு - விளைவுகள் - லெனின் - புதிய பொருளாதாரக் கொள்கை துருக்கியின் முஸ்தபா கமால் பாஷா.

அலகு 5

(20 மணி நேரம்)

இத்தாலியல் பாசிஸம்,ஹிட்லரின் நாசிஸம்- இரண்டாம் உலகப் போர் - வெய்மார் குடியரசு - ஐக்கிய நாடுகள் சபை.

நூல்கள்:

- 1) T.S. ராமலிங்கம் - ஐரோப்பிய வரலாறு (1789-1945)
- 2) ஆலாலசுந்தரம் - ஐரோப்பிய வரலாறு (1789-1945)
- 3) ஜெயபாலன் - ஐரோப்பிய வரலாறு (1789-1945)
- 4) A. சுவாமிநாதன் - ஐரோப்பிய வரலாறு (1789-1945)
- 5) J. தர்மராஜ் - ஐரோப்பிய வரலாறு (1789-1945)

BOOKS FOR REFERENCE:

- 1.Hayes C.J.H., : Contemporary Europe Since 1870.
- 2.David Thompson, : Europe Since Napoleon
- 3.Ketelbey,C.D.M., : A History of Modern Times from 1789
- 4.Nanda,S.P., : History of Modern Europe and the World

பன்னாட்டு உறவுகள் 1945- 2005

Contact Hours per Semester: - 90

Hours per week: 6

நோக்கங்கள்:-

- 1) ஐக்கிய நாடுகள் அமைப்பை பற்றியும் உலக அமைதிக்கு அதன் பங்களிப்பை பற்றி மாணவர்களுக்கு உணர்த்துதல்.
- 2) உலகின் பல்வேறு பகுதியில் அமைந்துள்ள பிராந்திய அமைப்புகளின் நோக்கத் தையும், செயல்பாடுகளையும் மாணவர்களுக்கு போதித்தல்.

அலகு 1

(20 மணி நேரம்)

ஐக்கிய நாடுகள் அமைப்பு தோற்றம் - அமைப்பு - செயல்பாடுகள் - சிறப்பு அமைப்புகள் - சாதனைகள் - பொதுநல அமைப்பு - கூட்டுச்சேரா கொள்கை.

அலகு 2

(20 மணி நேரம்)

பனிப்போர் - காரணங்கள் - பிராந்திய அமைப்புகள் - நேட்டோ(NATO) - சீட்டோ(SEATO) - சென் டோ(CENTO)- வார்சா ஒப்பந்தம் - பனிப்போரின் விளைவுகள்.

அலகு 3

(20 மணி நேரம்)



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பிராந்திய அமைப்புகள் : அமெரிக்க நாடுகள் கழகத்தின் அமைப்பு (OAS)-ஆப்ரிக்க ஒற்றுமை கழகம் (OAU) - அரபு கூட்டமைப்பு - ஐரோப்பிய பொருளியல் கூட்டுறவு நிறுவனம் (EEC) - சாரக் (SAARC) - பெட்ரோலிய ஏற்றுமதி செய்யும் நாடுகளின் நிறுவனம் (OPEC).

அலகு 4

(15 மணி நேரம்)

மத்திய கிழக்குப் பிரச்சனை - பாலஸ்தீனப் பிரச்சனை - அரபு - இஸ்ரேல் போர்கள் - வளைகுடாப்போர்.

அலகு 5

(15 மணி நேரம்)

அமெரிக்கா, இங்கிலாந்து, ரஷ்ய நாடுகளின் வெளியுறவு கொள்கை - உலக வர்த்தக நிறுவனம்- இந்திய வெளியுறவுக் கொள்கை.

நூற்பட்டியல்:

- 1) J. தியாகராஜன் - பன்னாட்டு உறவுகள்.
- 2) J. தர்மராஜ் - பன்னாட்டு உறவுகள்.

BOOKS FOR REFERENCE:

- 1.Palmer and Perkins : International Relations power politics and International Organisations.
- 2.Samarsen : Power politics and International organizations
- 3.L.N. Srivastava : International Relations
4. N. Jeyabalan : International Relations

அமெரிக்க ஐக்கிய நாடுகளின் வரலாறு (1865-1945)

Contact Hours per Semester: - 90

Credits: 5

Hours per week: 6

Subject Code: UIHSE61

நோக்கங்கள்:

- 1) அமெரிக்க ஐக்கிய நாடுகள் பற்றிய அறிவினை மாணவர்கள் வளர்த்துக் கொள்ள உதவுகிறது.
- 2) அமெரிக்கா உலக வல்லரசு எப்படி ஆனது என்பதை மாணவர்கள் அறிந்து கொள்ள உதவுகிறது.
- 3) அமெரிக்க ஆட்சியாளர்களை மாணவர்கள் தெரிந்து கொள்ள உதவுகிறது.

அலகு 1

(20 மணி நேரம்)

உள்நாட்டுப்போர்- காரணங்கள் -போக்கு - விளைவு - புனரமைப்பு - குடியரசு தலைவர்களின் புனரமைப்பு - காங்கிரசின் புனரமைப்பு - கருப்பர் புனரமைப்பு - விளைவுகள் - குடியானவர் இயக்கங்கள் - பெரும் வாணிப வளர்ச்சி - தொழிலாளர் இயக்கங்கள்.

அலகு 2

(15 மணி நேரம்)

குடியரசுத்தலைவர்கள் ஜான்சன் முதல் மெக்கன்லி வரை - ஸ்பானிய அமெரிக்கப் போர்- அமெரிக்கா உலக வல்லரசாதல்.

அலகு 3

(20 மணி நேரம்)

முற்போக்கு காலம் - தியோடர் ரூஸ்வெல்ட் - நேர்மையான ஏற்பாடு - வெளிநாட்டுக் கொள்கை - வில்லியம் டாப்டின் நிர்வாகம்-முதல் உலகப்போர் -முதல் உலகப் போரில் அமெரிக்கா இறங்குவதற்கான சூழ்நிலை - உட்ரோவில்சன்- அமைதி மாநாடு சர்வதேச சங்கம் - நடுநிலை போக்கு - பெரும் பொருளாதார மந்தமும் அதன் தாக்கமும் - ஹூவரின் நிர்வாகம்.

அலகு 4

(20 மணி நேரம்)

பிராங்ளின்.டி. ரூஸ்வெல்ட் - புதிய சீரமைப்புத் திட்டம் - வெளிநாட்டுக் கொள்கை - இரண்டாம் உலகப்போர் - அமெரிக்காவின் நிலை-இரண்டாம் உலகப் போரில் அமெரிக்க பங்கேற்றல் - போர் நடவடிக்கைகள்,



VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE

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Virudhunagar – 626 001

அலகு 5

(15 மணி நேரம்)

போர்க்கால அமைதி மாநாடுகள் - அமைதிக்கு அமெரிக்கா எடுத்த நடவடிக்கைகள் - சக்தி சமநிலையில் மாற்றம்- அட்லாண்டிக் சாசனம் - சான்பிரான்ஸிஸ்கோ மாநாடும் ஐக்கிய நாடுகள் சபையின் உருவாக்கமும்.

நூற்பட்டியல்

1. K. ராஜய்யன் - அமெரிக்க ஐக்கிய நாடுகளின் வரலாறு
2. முத்து ராஜ் - அமெரிக்க ஐக்கிய நாடுகளின் வரலாறு
3. J. தாமராஜ் - அமெரிக்க ஐக்கிய நாடுகளின் வரலாறு
4. ஆலாலசுந்தரம் - அமெரிக்க ஐக்கிய நாடுகளின் வரலாறு

BOOKS FOR REFERENCE:

1. Hill, C.P., : A History of United States.
2. Allen Noveins : A Brief History of the United States.
3. Rajayyan, K., : History of the United States.

மனித உரிமைகள்

Contact Hours per Semester: - 90

Credits: 5

Hours per week: 6

Subject Code: UIHSE62

நோக்கங்கள்:-

- மக்களுக்கு என்னென்ன உரிமைகள் அரசாங்கத்தால் வழங்கப்பட்டிருக்கின்றது என்பதை உணர்த்துதல்.
- மனித உரிமைகளை பாதுகாக்கும் நிறுவனங்களை மாணவர்களுக்கு அறிமுகப்படுத்துதல்.

அலகு 1

(20 மணி நேரம்)

மனித உரிமைகள் தோற்றமும் வளர்ச்சியும் : மனித உரிமைகள் தோற்றம் -விளக்கம்- கோட்பாடுகள் - இயற்கை உரிமை கோட்பாடு - சமூகநல உரிமைக் கோட்பாடு - சட்ட உரிமை கோட்பாடு - வரலாற்று உரிமைக்கோட்பாடு - பொருளாதார உரிமைக்கோட்பாடு- உரிமைகளின் தன்மைகள் -வாழும் உரிமைகள் - அரசியல் உரிமைகள் - பொருளாதார உரிமைகள்.

அலகு 2

(20 மணி நேரம்)

ஐக்கிய நாடுகள் சபையும் மனித உரிமைகள் பாதுகாப்புச்சட்டமும்: ஐ. நாவும் மனித உரிமை ஆணையமும் - அனைத்துலக மனித உரிமைகள் பிரகடனம் - வாழ்வியல் மற்றும் அரசியல் உரிமைகளின் மீதான சர்வதேச ஒப்பந்தம் 1966 - பொருளாதார, சமூக மற்றும் கலாச்சார உரிமைகளின் மீதான சர்வதேச ஒப்பந்தம் - 1966 - மனித உரிமைகள் மீதான ஐரோப்பிய ஒப்பந்தம் - ஹல்சிங்கி சாசனம்.

அலகு 3

(20 மணி நேரம்)

இந்தியாவும் மனித உரிமைகளும்: மனித உரிமைபற்றிய காந்தியடிகளின் சிந்தனைகள்- சுதந்திரப் போராட்டமும் அடிப்படை உரிமைகளும் - இந்திய அரசியலமைப்பின் அடிப்படை உரிமைகள் - அரசு வழிகாட்டி நெறிமுறை கோட்பாடுகள் - அடிப்படை கடமைகள்.

அலகு 4

(15 மணி நேரம்)

பெண்ணுரிமைகளும் சமகால பிரச்சனைகளும் பெண்ணுரிமைகள் - சிசுக்கருவதை- சிசுவதை- குழந்தை திருமணம் - பாலியல் பலாத்காரம் - வரதட்சனை மற்றும் வேறு சில பிரச்சனைகள்.

குழந்தைகள் உரிமைகள் - குழந்தை தொழிலாளர்கள் - கொத்தடிமை தொழிலாளர்கள்,

அலகு 5

(20 மணி நேரம்)



VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

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Virudhunagar – 626 001

மனித உரிமைகளை பாதுகாப்பதில் அரசு சாரா அமைப்புகள் மற்றும் தகவல் தொடர்பு சாதனங்களின் பங்கு - மனித உரிமை மீறப்படுவதற்கான காரணங்களும், தீர்வுகளும் - சர்வதேச பொதுமன்னிப்பு நிறுவனம் (Amnesty International) -ஆசியா கண்காணிப்பு (Asia Watch)- மனித உரிமைகளுக்கான பன்னாட்டுத் தொண்டு நிறுவனம் (International service for human Rights) (ISHR) வாழ்வியல் உரிமைகளுக்கான மக்கள் ஒற்றுமை அமைப்பு (peoples Union for civil liberties) (Pull) ஐநாயக உரிமைக்கான மக்கள் ஒற்றுமை அமைப்பு (People Union for Democratic Rights) (PUDR) - மக்கள் கண்காணிப்பகம் (Peoples Watch).

நூற்பட்டியல் :

- 1) மனித உரிமைகள் - C. ஐயாத்துரை
- 2) மனித உரிமைகள் வினாக்களும், விடைகளும் - Tr..M. சேதுராமலிங்கம்
- 3) மனித உரிமைகள் - முத்திருளாண்டி
- 4) மனித உரிமைகள் - J. தர்மராஜ்

BOOKS FOR REFERENCE:

1. Jaganath Mohenty : Teachings of Human Rights
2. Prakash Mishra : Human Rights in India
3. Kaushlendra Mishra : NGO's in the Human Rights Movement

தற்கால அரசியல் சிந்தனைகள்

Contact Hours per Semester: -

30

Credits: 2

Hours per week: 2

Subject Code: UIHSS61

நோக்கம்

- 1) மாணவர்கள் தற்கால அரசியல் சிந்தனை பற்றி அறிந்து கொள்ளுதல்.
- 2) அரசியல் சிந்தனையின் பரிநாம வளர்ச்சியை அறிந்துகொள்ளுதல்
- 3) சமதர்மத்தின் மற்றும் மக்களாட்சியின் கோட்பாடுகளை அறிந்துகொள்ளுதல்

அலகு 1

(6 மணி நேரம்)

இறைமை- தாமஸ் ஹாப்ஸ் - ஜான்லாக் - ஜீன் ஜேக்கஸ் ரூசோ வின் அரசியல் தத்துவங்கள் - மாண்டஸ்க்யூ - டேவிட் ஹியூம் - எட்மண்ட்பர்க்.

அலகு 2

(6 மணி நேரம்)

பயனுடமை தத்துவம் - ஜெரமிபெந்தாம் - ஜேம்ஸ்மில் - ஜான் ஸ்டுவர்ட் மில் - அரசு பற்றிய இலட்சியக் கோட்பாடு இம்மானுவேல் காண்ட் - ஹெர்பர்ட் ஸ்பென்சர்.

அலகு 3

(6 மணி நேரம்)

சமதர்மம் - சமதர்மவாதம் பற்றிய பொருள் விளக்கம் - சமதர்மத்தின் வகைகள் - கூட்டு பொதுவுடைமை - வாணிகக் கழகப் பொதுவுடைமை - தொழிற்சங்கப் பொதுவுடைமை - ஆட்சி குலைந்த நிலைக் கோட்பாடு கார்ல் மார்க்ஸ் -லெனின்.

அலகு 4

(6 மணி நேரம்)

மக்களாட்சி - மக்களாட்சியின் பொருள் விளக்கம், லிபரலிசம் - தேசியம் - பன்னாட்டியல்- ஏகாதிபத்தியம் - பாசிசம் - நாசிசம்.

அலகு 5

(6 மணி நேரம்)

பன்மை வாதிகள் - ஹெரால்ட் லாஸ்கி - பெட்ராண்ட்ரசல் இந்திய அரசியல் சிந்தனை - மகாத்மாகாந்தி.

நூற்பட்டியல்

- 1) போ. வள்ளுவன் கிளாரன்சு அரசியல் அமைப்புகள் ஒர் ஒப்பீடு
- 2) S.E.ஸ்டிராங் தற்கால அரசியல் அமைப்புகள்



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- 3) பெ. நடராசன் அரசியல் கோட்பாடுகள்
- 4) சீனுவாசன் சந்திரபோஸ் - அரசியல் சிந்தனை
- 5) தர்மராஜ் - தற்கால அரசியல் சிந்தனைகள்

BOOKS FOR REFERENCE:

- 1) 1.Amal kumar : Western Political thought
- 2) 2.Bhandari,D.R., : History of European Political Philosophy
- 3) 3.Ebenstein ,W., : Great Political Thinkers
- 4) 4.Das,P.G., : History of Political Thought

இந்தியக் கட்டிடக்கலை வரலாறு

Contact Hours per Semester: -

30

Credits: 2

Hours per week: 2

Subject Code: UIHSS62

நோக்கம்:

- 1) மாணவர்களுக்கு இந்திய கட்டிடக்கலை சிறப்பினைப் புரிய வைத்தல்.
- 2) இந்திய கட்டிடக்கலையின் பரிணம வளர்ச்சியை உணர்த்துதல்.

அலகு 1

(6 மணி நேரம்)

கட்டிடக்கலை - பொருள் விளக்கம் - தோற்றம் மற்றும் வளர்ச்சி - சிந்து சமவெளி நாகரீக கால கட்டிடக்கலை - வேதகாலத்தில் கட்டிடக்கலை - கட்டிடக்கலை பாணிகள் - நாகரப்பிரிவு - வேசராப் பிரிவு - திராவிடப்பாணி.

அலகு 2

(6 மணி நேரம்)

மௌரியக் கட்டிடக்கலை - அசோகர் காலத்தில் கட்டிடக்கலை -ஸ்தூபிகள் - கல்தூண்கள் அசோகர் கால குடைவரைகள் - மௌரிய கட்டிடக் கலையில் அந்நிய சாயல்கள்.

அலகு 3

(6 மணி நேரம்)

புத்தசமயக் கட்டிடக்கலை - புத்த வழிபாட்டு மண்டபங்கள் - புத்த மடாலயங்கள் - ஸ்தூபிகள் சமணசமயக் கட்டிடக்கலை.

அலகு 4

(6 மணி நேரம்)

விஜயநகரக் கட்டிடக்கலை - கோவில்கள் கட்டிடக்கலை வளர்ச்சியில் தமிழக அரசர்கள் - பல்லவர் - சோழர் - பாண்டியர்கள்.

அலகு 5

(6 மணி நேரம்)

டில்லி அடிமை வமிச அரசர்களின் கட்டிடக் கலை - கில்ஜி துக்ளக் ஆட்சிக்கால கட்டிடக்கலை - சையது லோடி கட்டிடங்கள் - முகலாயர்கள் காலக் கட்டிடக் கலை பாபர் - ஹிமாயூன் - அக்பர்-ஜஹாங்கீர் - ஷாஜகான் ஒளரங்கசீப் - ஷெர்ஷா - ஆங்கிலேயர் காலத்தில் கட்டிடக்கலை.

நூற்பட்டியல்

- 1) N. சுப்பிரமணியன் - தமிழக வரலாறு 1336 வரை
- 2) K. I. நீலகண்ட சாஸ்திரி - தென்னிந்திய வரலாறு பாண்டியர்கள் ராஜ்யம்
- 3) G. தங்கவேலு - இந்தியக்கலை வரலாறு இரண்டு தொகுதிகள்
- 4) C. ராமகிருஷ்ணன் - இந்திய மரபு சுற்றுலா
- 5) Dr. N. சுப்பிரமணியன் - இந்திய வரலாறு

BOOKS FOR REFERENCE:

- 1) 1.A.L.Basham : Wonder that was India
- 2) 2.K.A.Nilakanda Sastri : The History of South India
- 3) 3. K.A.Nilakanda Sastri : The Pandyan Kingdom
- 4) 4.K.A.Nilakanda Sastri : The Colas



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5) 5.N.Subramaniyan : History of Tamilnadu Upto 1336

தற்கால தமிழ்நாட்டு வரலாறு 1916-2000

Contact Hours per Semester: - 30

Credits: 2

Hours per week: 2

Subject Code: UIHSN61

நோக்கங்கள்

- 1) சமூக ஏற்றத்தாழ்வுகளையும் அதனைப்போக்குவதற்கு பாடுபட்ட திராவிட இயக்கங்களைப் பற்றியும் மாணவர்களுக்குப் போதித்தல்.
- 2) தமிழகத்தை ஆண்ட பல்வேறு முதலமைச்சர்களின் நிர்வாகத்திறன் மற்றும் சாதனைகளை மாணவர்களுக்கு போதித்தல்.

அலகு 1

(6 மணி நேரம்)

நீதிக்கட்சியின் தோற்றம் - வளர்ச்சி - நீதிக்கட்சியும் இரட்டை ஆட்சியும் - ஒத்துழையாமை இயக்கம் - சுயராஜ்யக்கட்சி - நீதிக்கட்சி ஆட்சி (1920-1937) மதிப்பீடு - சுயமரியாதை இயக்கம் - பெரியார் ஈ.வெ. ராமசாமி- திராவிடர் கழகம்.

அலகு 2

(6 மணி நேரம்)

ராஜாஜி ஆட்சி (1937-1939)- இந்தி எதிர்ப்புப் போராட்டம் - ஆளுநர் ஆட்சி (1939-1946) பிரகாசம் ஆட்சி (1946-1947) - ஓமந்தூரார் ஆட்சி (1947-1949) முதலமைச்சர் -பி.எ. குமாரசாமி ராஜா ஆட்சி, (1949-1952) - வாழ்க்கைக் குறிப்பு - சாதனைகள் - ராஜாஜி ஆட்சி - நிர்வாகச் சாதனைகள்.

அலகு 3

(6 மணி நேரம்)

கு. காமராசர் ஆட்சி (1954-1963) - ஆட்சிச் சாதனைகள் - பதவித் துறப்பு - எம்.பக்தவத்சலம் ஆட்சி (1965-1967) - ஆட்சிப்பிரச்சனைகள் - இந்தி எதிர்ப்புப் போராட்டம் - அண்ணாதுரை ஆட்சி (1967-1969) - திராவிடமுன்னேற்றக்கழகம் - அண்ணாதுரையின் சாதனைகள்.

அலகு 4

(6 மணி நேரம்)

மு. கருணாநிதி ஆட்சி (1969-1976) - அண்ணா திமுகவின் எழுச்சி - எம்.ஜி.ராமச்சந்திரனின் ஆட்சி (1977-1987) - வி. என். ஜானகியின் - 24 நாள் ஆட்சி - ஆளுநர் நிர்வாகம், (1988 -1989).

அலகு 5

(6 மணி நேரம்)

மு. கருணாநிதி ஆட்சி (1989-1991) மீண்டும் முதலமைச்சர் - சாதனைகள் - மக்கள் நலத் திட்டங்கள் - ஆட்சிக்கலைப்பு (1991), - ஜெ. ஜெயலலிதா ஆட்சி (1991-1996) - ஆட்சிக்கால சாதனைகள் - மு. கருணாநிதி ஆட்சி (1996-2001) - அமைச்சரவை -சாதனைகள் மதிப்பீடு.

நூற்பட்டியல்

- 1) மங்கள முருகேசன் - சுயமரியாதை இயக்கங்கள்
- 2) A. ராமசாமி - என்று முடியும் இந்த மொழிப்போர்
- 3) க. வெங்கடேசன் - தற்கால தமிழ்நாட்டு வரலாறு (1600-2011)
- 4) A. சுவாமிநாதன் - தமிழக வரலாறு
- 5) J. தர்மராஜ் - தமிழக வரலாறு

BOOKS FOR REFERENCE:

1. Baker, C.J., : The Politics of South India (1920-1937)
2. Rajaraman, P., : The Justice party
3. Nambi Aroran., : Tamil Renaissance and Dravidian Nationalism (1905-1944)
4. David Arnold., : The Congress in Tamilnadu: Nationalist Politics in South India (1919-1937)



Course Name: **Bachelor of Commerce**

Discipline: **Commerce**

Semester	Part	Subject	Hours	Credit	Int+Ext=Tot	Subject Code	Revision
V	III	Financial Accounting – V	5	4	25 + 75 = 100	U1CMC51	Revised
	III	Financial Markets and Services	5	4	25 + 75 = 100	U1CMC52	Revised
	III	Auditing	5	4	25 + 75 = 100	U1CMC53	Revised
	III	Business Law	5	4	25 + 75 = 100	U1CMC54	Revised
	III	Elective – II - Income Tax	6	5	25 + 75 = 100	U1CME51	Revised
	IV	NME – I – Business Accounting	2	2	25 + 75 = 100	U1CMN51	Revised
	IV	SBE – IV – Employability Skills	2	2	25 + 75 = 100	U1PS51	Revised

Semester	Part	Subject	Hours	Credit	Int + Ext= Total	Subject Code	Revision
V1	III	Management Accounting	6	4	25 + 75 = 100	U1CMC61	Revised
	III	Business Environment	6	4	25 + 75 = 100	U1CMC62	No Change
	III	Industrial Law	6	4	25 + 75 = 100	UICMC63	New
	III	Elective – III – Financial Management	6	5	25 + 75 = 100	U1CME61	Revised
	IV	NME – II – Insurance	2	2	25 + 75 = 100	UICMN61	New
	IV	SBE – V – Tally	2	2	25 + 75 = 100	U1CMS61	New
	IV	SBE – VI – Lab: Tally	2	2	40 + 60 = 100	U1CMS6P	New

Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

1. 150 objective type questions with four alternatives for each question.
2. 30 questions to be asked from each unit.
3. Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries ½ mark.
3. Total marks to be reduced to 25.



V – SEMESTER

FINANCIAL ACCOUNTING

Hours: 5hrs/week 75 Hrs

Subject Code: U1CMC51

Credits: 4

Objectives

To provide knowledge on Company Accounts.

Unit – 1

(15-hours)

Issue of shares – accounting procedures for issue of equity and preference shares at par, at discount and at premium – ESOP - Calls-in-arrear – Calls-in-advance – forfeiture and reissue – rights issue – bonus issue – buy-back of shares – redemption of redeemable preference shares

Unit – 2

(15-hours)

Issue of debentures – accounting procedure for issue of debentures – debentures issued as collateral security – redemption of debentures – methods – installment – lottery – sinking fund – purchase of own debentures – Ex-interest and Cum-interest quotations – purchase of own debentures as investment - conversion of debentures into equities - cancellation of own debentures.

Unit – 3

(15-hours)

Underwriting of shares and debentures – marked and unmarked applications – firm underwriting – profit and loss prior to incorporation – final accounts of joint stock companies

Unit – 4

(15-hours)

Valuation of Goodwill – methods – simple profit – super profit – capitalization method – valuation of shares – methods – intrinsic value – yield value – fair value – liquidation – statement of affairs – deficiency account – liquidator's final statement of account

Unit – 5

(15-hours)

Amalgamation, absorption and reconstruction (Internal & External) of joint stock companies

Text Books

1. Advanced accountancy – R.L.Gupta & Radhaswamy
2. Advanced accounts – S.P.Jain & K.L.Narang
3. Advanced accountancy – M.A.Arulanandam & K.S.Raman
4. Advanced accountancy – S.N.Maheswari & S.K.Maheswari
5. Advanced accountancy – P.C.Tulsian

Reference Books

Advanced accounts – M.C.Shukla and T.S.Grewal

1. Advanced accountancy – T.S.Reddy and A.Murthy
2. Introduction to accountancy – T.S.Grewal

Note: the questions should be asked in the ratio of 80% for problems and 20% for theory.

FINANCIAL MARKETS AND SERVICES

Hours: 5hrs/week 75 Hrs

Subject Code: U1CMC52

Credits: 4

Objectives

To provide knowledge on financial system including money market, Capital market, Mutual funds and Merchant banking.



Unit – 1

(15-hours)

Financial system – meaning – function – financial concepts- financial assets – financial intermediaries – financial markets – financial rate of returns – financial instruments – classification of financial markets – Development of Financial System in India – strengths and weaknesses of Indian Financial System

Unit – 2

(15-hours)

Money Market – Definition – Features – Objectives – Characteristic features of a developed money market – Importance of money market – composition of money market – Money market instruments - call money market – commercial bills market – Certificate of Deposits, GDRs and ADRs – Treasury bill market – discount market

Unit – 3

(15-hours)

Capital market – Capital market Vs Money Market - New issue market – New issue market Vs Secondary market – importance of new issue markets – methods of floating new issues – Secondary market – stock exchange – functions – Listing of securities – Demat and Remat - Registration of stock brokers – methods of trading in stock exchange – defects of Indian capital markets

Unit – 4

(15-hours)

Merchant banking – meaning – service of merchant banks – SEBI Guidelines – Scope for Merchant Banking in India

Factoring: Meaning – functions – benefits - types – Factoring Vs Discounting – Forfeiting – Factoring Vs Forfeiting.

Unit – 5

(15-hours)

Mutual fund – meaning – importance – risks – classification of funds – Open ended funds – close-ended funds: income funds, Growth funds, and balanced funds, Money Market Mutual fund – tax savings funds – organization of the fund – Net asset value

Text Books

1. Indian Financial System – P.N.Varshney & D.K.Mittal
2. The Indian Financial System – Vasant Desai
3. Financial Market and Services – Gordon and Natarajan
4. Indian Financial System – H.R.Machiraju
5. Financial Services – S. Gurusamy
6. Financial Services – B. Santhanam

Reference Books

1. Financial Institutions and Markets – L.M.Bhole
2. Management for Indian Financial Institutions – R.M.Srivastava
3. Financial Institutions and Markets – Meri kohn
4. Foundations of Financial Markets and Institutions – Fabozzi

AUDITING

Hours: 5hrs/week 75 Hrs

Subject Code: U1CMC53

Credits: 4

Objectives

To create awareness on Auditing, audit programmes, internal control and liabilities of auditor

Unit – 1

(15-hours)

Audit – meaning and definition – objects – types – advantages – audit vs investigation – qualities of an auditor – rights and duties – company audit – qualifications, appointment and removal of auditors – types of auditors.



Unit – 2 (15-hours)
Audit programme – audit notes – audit files – working papers – procedure for audit – submission of qualities/clean audit report.

Unit – 3 (15-hours)
Internal control – internal check – auditor's duty as regards internal check.

Unit – 4 (15-hours)
Vouching – meaning – definition – importance – duties of an auditor – vouching of cash transactions and of trading transactions – verification and valuation of assets and liabilities – duties of an auditor.

Unit – 5 (15-hours)
Liabilities of an auditor – liabilities for negligence – liabilities misfeasance – criminal liability – liability to third parties – legal positions.

Text Books

1. Practical auditing – B.N.Tandon
2. Principles and practice of auditing – R.G.Saxena
3. Principles and practice of auditing – Kishnadwala and Shetti
4. Practical auditing – S.Vengadamani
5. Auditing – S.K.Basu

Reference Books

1. Practical audition – S.C.Ghatalia
2. Auditing – Rup Ram Gupta
3. Auditing – principles and practice – Jagedish prakesh
4. Principles and practice of auditing – dinkar pagare

BUSINESS LAW

Hours: 5hrs/week 75 Hrs

Subject Code: U1CMC54

Credits: 4

Objectives

To enhance the student's knowledge in basic business law.

Unit – 1 (15-hours)
Law of contracts – definition – essential elements of a valid contract – classification of contracts – offer – acceptance – communication and revocation of offer and acceptance – consideration – capacity of parties – consent – free consent – coercion – undue influence – fraud – misrepresentation – mistake

Unit – 2 (15-hours)
Performance of contracts – various modes of discharge of contracts – breach of contracts – remedies for breach of contracts – Quasi contracts

Unit – 3 (15-hours)
Bailment – definition – essentials – rights and duties of bailor and bailee – bailee's lien – finder of lost goods – discharge of bailment contracts

Unit – 4 (15-hours)
Negotiable Instruments Act – Definition – Notice of dishonor – Noting – Protest – Punishments in case of dishonor of cheques

Unit – 5 (15-hours)
Consumer Protection Act – Competition Act

Text Books

1. Business law – R.S.N.Pillai & Bagawathi
2. Elements of mercantile law – N.D.Kapoor
3. Business law – M.R.Sreenivasan
4. Mercantile law – M.C.Kuchal



Reference Books

- Hand book of mercantile law – E.Venkatesan
Business law – Shukla & Saxena
Business law – S.S.Gulshan & G.K.Kapoor
-

INCOME TAX

Hours: 6hrs/week 90 Hrs

Subject Code: U1CMC51

Credits: 5

Objectives

To provide working knowledge on Income Tax to develop the skills in computation of taxable income and tax.

Unit – 1

(18-hours)

Income Tax Act, 1961 – definition – income – assessment – assessment year – previous year – person – assessee – resident – resident but not ordinarily resident – Non-resident – deemed income – capital receipts and revenue receipts – capital expenditure and revenue expenditure - Exempted incomes U/s 10

Unit – 2

(18-hours)

Computation of taxable income – income from salary – income from house property.

Unit – 3

(18-hours)

Profits and gains from business or profession – depreciation and allowable and disallowable deductions

Unit – 4

(18-hours)

Capital gains – income from other sources

Unit – 5

(18-hours)

Clubbing of income – set-off and carry forward of losses – deductions from gross total income. Sec 80C, 80D, 80E, 80G, 80U.

Books for study

1. Income Tax Law and Practice –B.B. Lal
2. Income Tax Law and Practice – Bhagavathi Prasad
3. Students Guide to Income Tax – Vinod K. Singhania

Books for Reference

1. Income Tax Law and Practice – H.C. Mahrotra
2. Law and Practice of Income Tax – Dinkar Pagate
3. Income Tax Law and Practice – V.P. Gaur and D.B. Narang

Note: The Questions should be asked in the ratio of 60% for problems and 40% for theory.

NME: BUSINESS ACCOUNTING

Hours: 2hrs/week 30 Hrs

Subject Code: U1CMN51

Credits: 2

Objectives

To provide basic accountancy knowledge to Non-Commerce students.

Unit – 1

(6-hours)

Introduction – Book keeping – Accountancy – Double entry system – Classification of accounts – Rules – Scope, Advantages and limitations of Double entry system

Unit – 2

(6-hours)

Books of original entry – journal – Ruling of journal book – Compound entry – Advantages of Journal

Unit – 3

(6-hours)

Subsidiary books – Purpose – Simple Cash Book – Purchase, sales and their returns books



Unit – 4

(6-hours)

Ledgers – posting – purpose – ruling and balancing of the ledger account – preparation of Trial Balance from the given balances

Unit – 5

(6-hours)

Final accounts of sole trading concerns with simple adjustments namely closing stock, outstanding expense, outstanding income, depreciation

Text Books

1. Double entry book keeping – T.S.Grewal
2. Principles and practice of accounting – R.L.Gupta and V.K.Gupta
3. Principles of accounting – Nagarajan and Vinayagam
4. Fundamentals of advanced accounting (Financial accounting) – R.S.N.Pillai & Bagawathi
5. Advanced accounting – S.P.Iyengar

Reference Books

1. Advanced accounts – M.C.Shukla and T.S.Grewal
2. Advanced Accountancy – T.S.Reddy and A.Murthy
3. Introduction to accountancy – T.S.Grewal

Note: The questions should be asked in the ratio of 60% for problem and 40% of theory

SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code: U1PS51

Contact Hours per Semester: 30

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I : Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. **(6-hours)**

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. **(6-hours)**

Unit III: Reasoning (6-hours)

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning (6-hours)

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V: (6-hours)

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
2. Quantitative Aptitude - R.S.Aggarwal
3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
4. Malayala Manorama Year Book, 2014



**VI – SEMESTER
MANAGEMENT ACCOUNTING**

Hours: 6hrs/week 90 Hrs

Subject Code: U1CMC61

Credits: 4

Objectives

To provide knowledge on accounts which are followed by the management on decision making.

Unit – 1

(18-hours)

Management accounting – meaning – definition – characteristics – scope – objectives and functions – distinction between financial accounting and management accounting – distinction between management accounting and cost accounting – tools and techniques of management accounting – advantages and limitations.

Unit – 2

(18-hours)

Ratio analysis – meaning – advantages – limitations – classification of ratios – computation of profitability ratios – turnover ratios – solvency ratios

Unit – 3

(18-hours)

Fund flow statement – importance – limitations – preparation of schedule of changes in working capital – calculation of funds from operations – simple funds flow statements (Simple problems only)

Unit – 4

(18-hours)

Cost –volume-profit analysis: marginal cost and break-even analysis (Excluding the application of marginal costing for managerial decisions)

Unit – 5

(18-hours)

Budgeting and budgetary control – meaning – objectives – advantages – limitations – essentials of successful budgetary control – classification of budgets – preparation of sales budget, production budget, cash budget, flexible budget and master budget.

Text Books

1. Management accounting and financial control – S.N.Maheswari
2. Management accounting – T.S.Reddy & Y.Hari Prasad reddy
3. Management accounting – Manmohan & Goyal
4. Accounting for management – S.K.Bhattacharya
5. Management accounting – C. Horngren

Reference Books

1. Management accounting – R.N.Anthony
2. Management accounting – N.K.Kulshrestha
3. Principles and practice of management accounting – R.K.Gupta
4. Management accounting – M.Y.Khan and P.K.Jain
5. Management accounting – Hingorani & A.R.Ramanathan

Note: The questions should be asked in the ratio of 60% for problem and 40% of theory

BUSINESS ENVIRONMENT

Hours: 6hrs/week 90 Hrs

Subject Code: U1CMC62

Credits: 4

Objectives

To enhance the student's knowledge on Environments in Business.

Unit – 1

(18-hours)

Business – meaning – scope – characteristics of modern business – changing business objectives – business environment – meaning – features – need for environmental analysis – benefits and limitations



Unit – 2 (18-hours)

External factors affecting business – economic, political, legal, social and cultural, competitive, ecological and technological factors

Unit – 3 (18-hours)

New Industrial Policy, 1991 – Recent changes in industrial licensing – privatization of public sector undertakings – arguments for and against privatization – social responsibilities of business

Unit – 4 (18-hours)

Foreign private investment – forms – merits – demerits – Government policy on foreign capital – Multinational Corporation in India

Unit – 5 (18-hours)

Industrial sickness – definitions – causes – small scale sector – problems of small scale industries – incentives to small scale sector

Text Books

1. Business Environment – Dr. V.Alagappan & Dr. K.Chidambaram
2. Business Environment – Francis Cherunilam
3. Essential of Business Environment – K.Aswhathappa

Reference Books:

1. Business and Society – Lokanathan & Lakshmi Ratan
2. Economic Environment of Business – M.A. Dikay
3. Business Environment – Viswajeet Prasad

INDUSTRIAL LAW

Hours: 6hrs/week 90 Hrs

Subject Code: U1CMC63

Credits: 4

Objectives

To provide knowledge on law which relating to Industries.

Unit – I (18-hours)

The Factories Act, 1948

Unit – II (18-hours)

The Workmen's Compensation Act, 1923

Unit – III (18-hours)

The Payment of Wages Act, 1936 – The Minimum Wages Act, 1948

Unit – IV (18-hours)

The Industrial Disputes Act, 1947

Unit – V (18-hours)

The Employee's State Insurance Act, 1948 – Employee's Provident Fund Act

Text Books

1. Elements of mercantile law – N.D.Kapoor
2. Mercantile law – M.C.Kuchal

Reference Books

1. Hand book of mercantile law – E.Venkatesan

FINANCIAL MANAGEMENT

Hours: 6hrs/week 90 Hrs

Subject Code: U1CME61

Credits: 5

Objectives

To provide working knowledge to students on financial management.



Unit-I

(18-hours)

Financial Management – Meaning – Nature – Scope – Objectives – Finance Functions – Profit Maximization Vs Wealth Maximization – Role and Responsibilities of a Finance Manager

Unit – II

(18-hours)

Financing Decisions – Capital Structure – Determinants of Capital Structure – Theories of capital structure - Optimum Capital Structure – Leverages – Types – Financial Leverage – Operating Leverage – Combined Leverage – calculation.

Unit – III

(18-hours)

Investments decisions – Planning and Control of Capital Expenditure – Capital Budgeting – Appraisal – Methods – Traditional – Payback Period – Average Rate of Return – Discounted Methods – Net Present Value - Internal Rate of Return – Profitability Index.

Unit – IV

(18-hours)

Working Capital – Meaning – Types – Concept – Need and Influencing Factors – Estimation of working capital requirements.

Unit – V

(18-hours)

Dividend Policy – Dividend Policy Decisions – Dividend Theories – Modigliani and Miller's approach – Walter's Approach – Determinants of Dividend Policy – Stability of Dividend – Forms of Dividend.

Text Books

1. Financial Management – S. N. Maheswari
2. Financial Management – M. Y. Khan and P. K. Jain
3. Financial Management – I. M. Pandey
4. Financial Management – S. C. Kuchal
5. Financial Management – Prasanna Chandra

Reference Books

1. Financial Management – R. M. Srivastava
2. Financial Management – Shasti K. Gupta & R. K. Sharma
3. Financial Management – Shavan

(60% Theory 40% Problem)

NME: INSURANCE

Hours: 2hrs/week 30 Hrs

Subject Code: UICMN61

Credits: 2

Objectives

To provide basic knowledge about insurance sector to non-commerce students.

Unit– 1

(6-hours)

Origin – Meaning – Types of Insurance – Insurances Vs Assurance – Fundamental principles of insurance – Functions and importance of insurance

Unit – 2

(6-hours)

Life Insurance – Fundamental Principles of Life Insurance – Types of Life Insurance policies – Procedure for taking a Life Policy – Premium Computation – Investment of Life Insurance fund..

Unit – 3

(6-hours)

Life Insurance Policy conditions – lost policies – Assignment – Nomination – Settlement of claim – Lapse of Life Insurance policy – Revival of policy – Redating – Surrender value – Loan on Life Insurance policies – Specimen of Loan application form – proposal form – personal statement – Agent Report



Unit – 4

(6-hours)

Marine Insurance – Meaning – Types of Marine policies – conditions of marine policy – Marine losses – Payment of claims

Unit – 5

(6-hours)

Fire Insurance – Meaning – Types of Fire Insurance policies – Conditions of Fire insurance Policy – Payment of claim – Reinsurance – Miscellaneous insurance – Kinds of Miscellaneous Insurance

Text Books

1. Marine Insurance – Smith
2. Fire Insurance – Godwin
3. Life insurance in India – Drd. R.M.Ray
4. Principles and practice of insurance – Dr. N.R. Nagarajan
5. Life Insurance year book

Reference Books

1. Insurance – principles and practice – M.N.Mishra
2. Principles practice & Law of Insurance – Gosh & Agarwal
3. Insurance Law in India – Venkopa Rao
4. Principles and practice of insurance – Young and Bacon

TALLY

Hours: 2hrs/week 30 Hrs

Subject Code: U1CMS61

Credits: 2

Objectives

To enhance the knowledge of the students regarding Tally usage in accounting.

Unit-I

(6-hours)

Configuration – Single & Multiple User – Tally Opening Screen – Company creation and maintenance – Company features – Language configuration – Keyboard conventions & Key Combinations – Quitting Tally.

Unit-II

(6-hours)

Groups – Multiple Groups – Ledger accounts – Multiple ledgers – Cost categories and centres – vouchers – pre-defined vouchers – Creating and customizing vouchers – Reports – Trial balance – Balance Sheet, Profit and Loss account, Stock summary, ratio analysis, Day books, cash and fund flow, BRS.

Unit-III

(6-hours)

Stock Groups – Stock categories – Stock items – Unit of measurement – Godowns – Inventory vouchers – sales order – purchase order – reorder level – movement analysis – inventory statement – Outstanding payables and receivables – Interest calculations using simple parameters

Unit-IV

(6-hours)

TDS Enabling Ledgers – voucher creation – Reports – computation – payables – outstandings – VAT – terminologies – TIN Enabling Ledgers – Stock item with VAT - Vouchers entry with VAT computations..

Unit-V

(6-hours)

Common printing options – different printing format – Cheque printing – Using security control & security levels – ODBC – Back-up & restore – splitting company data – Export and Import of data.

Text Books:

1. Dr. Namrata Agarwal, Tally 9, Comdex.
2. Accounting Software – TCPS



TALLY - LAB

Hours: 2hrs/week 30 Hrs

Subject Code: U1CMS6P

Credits: 2

1. Create a new company with 15 ledger accounts with opening balance.
 2. Enter the following transactions in the various vouchers in Tally

Payment of salaries by cheque	Rs.4000
Collection from Chand & Co	Rs.10000
Payment to Prem	Rs. 9000
Payment to Kumar	Rs. 6000
Obtained cheque from Prabu	Rs.10000
Paid rent by cheque	Rs. 500
Paid to Suguna by cheque	Rs. 4000
Purchased goods from Kumar	Rs.10000
Sold goods to Mukunth	Rs.15000
Purchased goods from Ramu	Rs. 12000
Sold goods to Sivaranjani	Rs. 7000
Payment of commission	Rs. 500
Amount withdrawn from Bank	Rs. 5000
Other expenses during the period	Rs. 2500
Returned goods to Kumar	Rs. 500
Mukunth returned goods	Rs. 1000
Bank charges	Rs. 300
Babu Bros Settled account by paying	Rs. 7250
Purchased machine from Norton&Co	Rs.25000
Paid Norton & Co	Rs.20000
 3. Extract Trial balance, profit and loss account and Balance sheet of the business after entering the above transactions, with as many details as possible.
 4. Prepare all subsidiary books, and parties' accounts with whom there were transactions, bank account and nominal accounts
 5. Prepare a Bank Reconciliation Statement
 6. Create Stock groups with stock items in various godowns
 7. Prepare Purchase and sales order book
 8. Prepare TDS statement
 9. Make sales invoice with VAT calculation
 10. Demonstrate Restore and data backup
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**VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE***(An Autonomous Institution Affiliated to Madurai Kamaraj University)*

[Re-accredited with 'A' Grade by NAAC]

Virudhunagar – 626 001

Course Name: **Bachelor of Commerce**Discipline: **Commerce - Computer Application**

Semester	Part	Subject	Hours	Credit	Int. + Ext. =Total	Subject Code	Revision
V	III	Financial Accounting – V	5	5	25 + 75 = 100	U1CCC51	Revised
	III	Java Programming	5	4	25 + 75 = 100	U1CCC52	New
	III	Java Programming Lab	5	3	40 + 60 = 100	U1CCC5P	New
	III	Business Law	5	4	25 + 75 = 100	U1CCC53	Revised
	III	Elective – II - Income Tax	6	5	25 + 75 = 100	U1CCE51	Revised
	IV	NME – I – Business Accounting	2	2	25 + 75 = 100	U1CCN51	Revised
	IV	SBE – IV – Employability Skills	2	2	25 + 75 = 100	U1PS51	New

Semester	Part	Subject	Hours	Credit	Int. + Ext. = Total	Subject Code	Revision
V1	III	Management Accounting	6	3	25 + 75 = 100	U1CCC61	Revised
	III	Internet and Web Technologies	6	3	25 + 75 = 100	U1CCC62	Revised
	III	Industrial Law	6	5	25 + 75 = 100	U1CCC63	New
	III	Web Design - Lab	6	4	40 + 60 = 100	U1CC6PV	New
	IV	NME – II – Insurance	2	2	25 + 75 = 100	U1CCN61	New
	IV	SBE – V – Tally	2	2	25 + 75 = 100	U1CCS61	Interchnage d
	IV	SBE – VI – Lab: Tally	2	2	40 + 60 = 100	U1CCS6P	New

Employability Skills**Question Pattern****Summative Examination**

Maximum marks : 75

Duration of the Examination 3 hrs

4. 150 objective type questions with four alternatives for each question.
5. 30 questions to be asked from each unit.
6. Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

4. 100 objective type questions with four alternatives for each question.
5. Each question carries ½ mark.
6. Total marks to be reduced to 25.

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**V – SEMESTER
FINANCIAL ACCOUNTING****Hours: 5hrs/week 75 Hrs****Subject Code: U1CCC51****Credits: 5****Objectives****Objectives**

To provide knowledge on Company Accounts.



Unit – 1

(15-hours)

Issue of shares – accounting procedures for issue of equity and preference shares at par, at discount and at premium – ESOP - Calls-in-arrear – Calls-in-advance – forfeiture and reissue – rights issue – bonus issue – buy-back of shares – redemption of redeemable preference shares

Unit – 2

(15-hours)

Issue of debentures – accounting procedure for issue of debentures – debentures issued as collateral security – redemption of debentures – methods – installment – lottery – sinking fund – purchase of own debentures – Ex-interest and Cum-interest quotations – purchase of own debentures as investment - conversion of debentures into equities - cancellation of own debentures.

Unit – 3

(15-hours)

Underwriting of shares and debentures – marked and unmarked applications – firm underwriting – profit and loss prior to incorporation – final accounts of joint stock companies

Unit – 4

(15-hours)

Valuation of Goodwill – methods – simple profit – super profit – capitalization method – valuation of shares – methods – intrinsic value – yield value – fair value – liquidation – statement of affairs – deficiency account – liquidator's final statement of account

Unit – 5

(15-hours)

Amalgamation, absorption and reconstruction (Internal & External) of joint stock companies

Text Books

6. Advanced accountancy – R.L.Gupta & Radhaswamy
7. Advanced accounts – S.P.Jain & K.L.Narang
8. Advanced accountancy – M.A.Arulanandam & K.S.Raman
9. Advanced accountancy – S.N.Maheswari & S.K.Maheswari
10. Advanced accountancy – P.C.Tulsian

Reference Books

1. Advanced accounts – M.C.Shukla and T.S.Grewal
2. Advanced accountancy – T.S.Reddy and A.Murthy
3. Introduction to accountancy – T.S.Grewal

Note: the questions should be asked in the ratio of 80% for problems and 20% for theory.

JAVA PROGRAMMING

Hours: 5hrs/week 75 Hrs

Subject Code: U1CCC52

Credits: 4

Objectives

1. To learn the Java Programming Language fundamentals: its Syntax, idioms, patterns and styles.
2. To learn object oriented programming concepts.
3. To learn the essentials of Java Class Library.

UNIT – I An overview of Java:

(15-

hours)

Object oriented programming – Java features – Java environment - Data types, variables and arrays. Operators- Expressions - Control Statements: Branching statements – Iteration statements – Jump statements – Sample java program.



UNIT – II Class and Objects: (15-hours)

Classes – Objects – Methods – Constructors – The this keyword – finalize () method – Overloading methods – Returning objects – Recursion – Static – Final – Nested inner classes – Command line arguments – **String:** String Buffer Classes - String Handling.

UNIT – III Packages, Inheritance and Interfaces and Exception Handling (15-hours)

Packages – Access protection – Importing packages – **Inheritance:** overriding methods – Polymorphism - Interfaces – **Exception handling:** Fundamentals – Exception types – Try and catch – Multiple catch – Nested try – throw – throws – finally – Build in exception.

UNIT – IV Multithread programming: (15-hours)

Threading: Thread model –Life cycle of thread – Creating thread – Multiple threads – Thread priorities – Synchronization – Inter thread Communication – Suspending, Resuming and Stopping threads – **I/O Packages:** InputStream – OutputStream – Reader – Writer Classes

UNIT – V The Applet Class: (15-hours)

Basics – Building applet code – Applet life cycle – Creating an executable applet – Designing a web page – Running the applet – Getting input from the user – **Graphics programming:** The graphic class – Lines and rectangles – Circles and ellipses.

Text Books

Programming with Java, 4th Edition, E. Balagurusamy, Tata McGraw Hill Pub. Ltd., New Delhi.

Reference Books

The Complete Reference Java2, 3rd Edition, Patrick Naughton, Herbert Schildt, Tata McGraw Hill Pub. Ltd., New Delhi.

JAVA PROGRAMMING LAB

Hours: 5hrs/week 75 Hrs

Sub Code: U1CCC5P

Credits: 3

Objectives:

1. Understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc.
2. Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
3. Be able to use the Java SDK environment to create, debug and run simple java programs.
4. Understand how to create graphical interfaces and Java applets for a Web page.

List of Programs

1. Write a java program to find out the biggest number among the given three numbers using if...else statement.
2. Write a Program to create an account with a Bank and Deposit ₹20,000. The minimum Balance in the account shall be ₹ 500. Use switch case statement for Deposit, Withdrawal and Balance enquiry.
3. Write a java program to perform multiplication of two given numbers using classes and objects.
4. Write a java program to reverse a given number.
5. Write a java program to generate Fibonacci series.



6. Write a java program for sorting an array.
7. Write a java program to find the given element in an array and its position.
8. Write a program to display the title, authors' name and price of a book using the method of overriding.
9. Write a program to generate employee pay slip using interface.
10. Write a java program to demonstrate Built-in exception.
11. Write a program to create a window with three color options namely red, green and blue. The applet should change the colors according to the selection.
12. Write a program to perform bouncing ball animation using Applet.

BUSINESS LAW

Hours: 5hrs/week 75 Hrs

Subject Code: U1CCC53

Credits: 4

Objectives

To enhance the student's knowledge in basic business law.

Unit – 1

(15-hours)

Law of contracts – definition – essential elements of a valid contract – classification of contracts – offer – acceptance – communication and revocation of offer and acceptance – consideration – capacity of parties – consent – free consent – coercion – undue influence – fraud – misrepresentation – mistake

Unit – 2

(15-hours)

Performance of contracts – various modes of discharge of contracts – breach of contracts – remedies for breach of contracts – Quasi contracts

Unit – 3

(15-hours)

Bailment – definition – essentials – rights and duties of bailor and bailee – bailee's lien – finder of lost goods – discharge of bailment contracts

Unit – 4

(15-hours)

Negotiable Instruments Act – Definition – Notice of dishonor – Noting – Protest – Punishments in case of dishonor of cheques

Unit – 5

(15-hours)

Consumer Protection Act – Competition Act

Text Books

5. Business law – R.S.N.Pillai & Bagawathi
6. Elements of mercantile law – N.D.Kapoor
7. Business law – M.R.Sreenivasan
8. Mercantile law – M.C.Kuchal

Reference Books

- Hand book of mercantile law – E.Venkatesan
- Business law – Shukla & Saxena
- Business law – S.S.Gulshan & G.K.Kapoor

INCOME TAX

Hours: 6hrs/week 90 Hrs

Subject Code: U1CCE51

Credits: 5

Objectives

To provide working knowledge on Income Tax to develop the skills in computation of taxable income and tax.

Unit – 1

(18-hours)

Income Tax Act, 1961 – definition – income – assessment – assessment year – previous year – person – assessee – resident – resident but not ordinarily resident – Non-resident –



deemed income – capital receipts and revenue receipts – capital expenditure and revenue expenditure - Exempted incomes U/s 10

Unit – 2 (18-hours)

Computation of taxable income – income from salary – income from house property

Unit – 3 (18-hours)

Profits and gains from business or profession – depreciation and allowable and disallowable deductions

Unit – 4 (18-hours)

Capital gains – income from other sources

Unit – 5 (18-hours)

Clubbing of income – set-off and carry forward of losses – deductions from gross total income. Sec 80C, 80D, 80E, 80G, 80U.

Books for study

4. Income Tax Law and Practice –B.B. Lal
5. Income Tax Law and Practice – Bhagavathi Prasad
6. Students Guide to Income Tax – Vinod K. Singhania

Books for Reference

4. Income Tax Law and Practice – H.C. Mahrotra
5. Law and Practice of Income Tax – Dinkar Pagate
6. Income Tax Law and Practice – V.P. Gaur and D.B. Narang

Note: The Questions should be asked in the ratio of 60% for problems and 40% for theory.

NME: BUSINESS ACCOUNTING

Hours: 2hrs/week 30 Hrs

Subject Code: U1CCN51

Credits: 2

Objectives

To provide basic accountancy knowledge to Non-Commerce students.

Unit – 1 (6-hours)

Introduction – Book keeping – Accountancy – Double entry system – Classification of accounts – Rules – Scope, Advantages and limitations of Double entry system

Unit – 2 (6-hours)

Books of original entry – journal – Ruling of journal book – Compound entry – Advantages of Journal

Unit – 3 (6-hours)

Subsidiary books – Purpose – Simple Cash Book – Purchase, sales and their returns books

Unit – 4 (6-hours)

Ledgers – posting – purpose – ruling and balancing of the ledger account – preparation of Trial Balance from the given balances

Unit – 5 (6-hours)

Final accounts of sole trading concerns with simple adjustments namely closing stock, outstanding expense, outstanding income, depreciation

Text Books

6. Double entry book keeping – T.S.Grewal
7. Principles and practice of accounting – R.L.Gupta and V.K.Gupta
8. Principles of accounting – Nagarajan and Vinayagam
9. Fundamentals of advanced accounting (Financial accounting) – R.S.N.Pillai & Bagawathi
10. Advanced accounting – S.P.Iyengar

Reference Books



4. Advanced accounts – M.C.Shukla and T.S.Grewal
5. Advanced Accountancy – T.S.Reddy and A.Murthy
6. Introduction to accountancy – T.S.Grewal

Note: The questions should be asked in the ratio of 60% for problem and 40% of theory

SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code:

U1PS51

Contact Hours per Semester: 30

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I: Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. (6-

hours)

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. (6-

hours)

Unit III: Reasoning (6-

hours)

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning (6-

hours)

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V: (6-

hours)

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

5. Verbal & Non Verbal Reasoning - R.S.Aggarwal
6. Quantitative Aptitude - R.S.Aggarwal
7. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
8. Malayala Manorama Year Book, 2014

**VI – SEMESTER
MANAGEMENT ACCOUNTING**

Hours: 6hrs/week 90 Hrs

Subject

Code:

U1CCC61

Credits: 3

Objectives

To provide knowledge on accounts which are followed by the management on decision making.

Unit – 1

(18-hours)

Management accounting – meaning – definition – characteristics – scope – objectives and functions – distinction between financial accounting and management accounting –



distinction between management accounting and cost accounting – tools and techniques of management accounting – advantages and limitations.

Unit – 2 (18-hours)

Ratio analysis – meaning – advantages – limitations – classification of ratios – computation of profitability ratios – turnover ratios – solvency ratios.

Unit – 3 (18-hours)

Fund flow statement – importance – limitations – preparation of schedule of changes in working capital – calculation of funds from operations – simple funds flow statements (Simple problems only)

Unit – 4 (18-hours)

Cost –volume–profit analysis: marginal cost and break-even analysis (Excluding the application of marginal costing for managerial decisions)

Unit – 5 (18-hours)

Budgeting and budgetary control – meaning – objectives – advantages – limitations – essentials of successful budgetary control – classification of budgets – preparation of sales budget, production budget, cash budget, flexible budget and master budget.

Text Books

6. Management accounting and financial control – S.N.Maheswari
7. Management accounting – T.S.Reddy & Y.Hari Prasad reddy
8. Management accounting – Manmohan & Goyal
9. Accounting for management – S.K.Bhattacharya
10. Management accounting – C. Horngren

Reference Books

6. Management accounting – R.N.Anthony
7. Management accounting – N.K.Kulshrestha
8. Principles and practice of management accounting – R.K.Gupta
9. Management accounting – M.Y.Khan and P.K.Jain
10. Management accounting – Hingorani & A.R.Ramanathan

Note: The questions should be asked in the ratio of 60% for problem and 40% of theory

INTERNET AND WEB TECHNOLOGIES

Hours: 6hrs/week 90 Hrs

Subject Code: U1CCC62

Credits: 3

Objectives:

1. To learn the fundamental concepts of Computer Networks
2. To learn the advanced topics in HTML to include: Formatted Lists, Cascading Style Sheets, Tables, Frames and Forms
3. To learn the process of developing dynamic web pages.

Unit – I: (18-hours)

Computer Networks – Basic of Computer Networks – Topologies of Computer Networks – layers in Networking – Switching in the Networks – Bridges, Routers, Gateways – Types of Networks.

Unit – II (18-hours)

Introduction to internet and HTML: Web Page – Web Site – Web Browser – WWW – Overview of HTML – Structure of HTML – **HTML Markup Tags:** Tag – definition – Classification of Tags – **Basic Tags:** HTML – HEAD – TITLE – BODY – **Formatting**



Tags: Paragraph Tags, List tags, Horizontal Rule Tag, Headings Tags, Blockquote Tags, FONT Tag, PRE tag, DIV tags, SPAN tag and other formatting tags. **Linking Tag:** URL – Meaning – Anchor Tag – IMG Tag – using Images as Links

Unit – III (18-hours)

Tables: Introduction - TABLE, TR, TH, TD - Rowspan, Colspan, Cellspacing, Cellpadding. **Frames:** Overview of Frame – Frame Set – use of <noframe> tag – **Forms:** outline of Form tag – attributes of form tag – Form Controls: Text Field, Password Field, Multiline Text Area, Drop Down List, Check Box, Radio Button, Scrolled List, Reset Button, Submit Button.

Dynamic HTML: Introduction to DHTML – CSS – Advantages of CSS – Types of CSS: Embedded, Inline, External Style Sheets – Grouping.

Unit – IV (18-hours)

VB Script: Introduction - Embedding VBScript Code within an HTML document – Data types – all about variables – intrinsic operators – intrinsic functions - The MsgBox functions – input boxes – controlling the flow of code – building a home for your code – passing arguments into procedures – where to put procedures – intrinsic HTML form controls – The button control.

Unit - V (18-hours)

Java Script: Introduction – Embedding Java Code within an HTML document – key words – Data types – variables – operators – Control Statements – Functions – types of dialog boxes – Arrays – Event Handling – Mouse Events – Form Events.

Books for Study:

1. Internet and web technologies – Raj Kammal.
2. Web Technology – N.P. Gopalan and J. Akilandeswari

Books of Reference:

1. WWW with HTML – C. Xavier

WEB DESIGN LAB

Hours: 6hrs/week 90 Hrs

Subject Code: U1CC6PV

Credits: 4

Objectives:

1. Understand the importance of the web as a medium of communication
2. Understand the principles of creating an effective web page
3. Understanding the basic knowledge of HTML, VBScript and Java Script.
4. Be able to embed social media content into web pages.

List of Programs

1. Create a web page to show the different attributes of Font tags.
2. Create a web Page using HREF tag having the attribute ALINK, VLINK etc.
3. Create a web page with appropriate contents inserting an image as anchor at the left hand side of the page to open another web page.
4. Create a web page with a link to direct to go to the bottom of the page that has pink color as background and an image at the center.
5. Create a HTML document containing a nested list showing the contents of a book.
6. Create a web page containing a table having your class time schedule.
7. Create the following table in HTML with Dummy Data

Name of the train	Place	Destination	Train No.	Time	Fare
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				Arrival	Departure	

8. Create a home page for your college in the following format

College Name	
Links	Information

9. Create a HTML document to design your resume.

10. Create a simple form with submit button accepting name and register number.

11. Write a VB script program to display current date and time.

12. Write a VB script program to perform arithmetic operations using functions.

13. Write a VB script program to create a login form validating the user.

14. Write a Java script program to demonstrate the various string functions.

15. Write a Java script program that reads five integers and determines the largest and the smallest integers in the group.

16. Write a Java script program to find out the Square Root of a given number.

INDUSTRIAL LAW

Hours: 6hrs/week 90 Hrs

Subject Code: U1CCC63

Credits: 5

Objectives

To provide knowledge on law which relating to Industries.

Unit – I (18-
hours)

The Factories Act, 1948

Unit – II (18-
hours)

The Workmen's Compensation Act, 1923

Unit – III (18-
hours)

The Payment of Wages Act, 1936 – The Minimum Wages Act, 1948

Unit – IV (18-
hours)

The Industrial Disputes Act, 1947

Unit – V (18-
hours)

The Employee's State Insurance Act, 1948 – Employee's Provident Fund Act

Text Books

3. Elements of mercantile law – N.D.Kapoor

4. Mercantile law – M.C.Kuchal

Reference Books

2. Hand book of mercantile law – E.Venkatesan

NME: INSURANCE

Hours: 2hrs/week 30 Hrs

Subject Code: U1CCN61

Credits: 2

Objectives



To provide basic knowledge about insurance sector to non-commerce students.

Unit- 1 (6-hours)

Origin – Meaning – Types of Insurance – Insurances Vs Assurance – Fundamental principles of insurance – Functions and importance of insurance

Unit – 2 (6-hours)

Life Insurance – Fundamental Principles of Life Insurance – Types of Life Insurance policies – Procedure for taking a Life Policy – Premium Computation – Investment of Life Insurance fund

Unit – 3 (6-hours)

Life Insurance Policy conditions – lost policies – Assignment – Nomination – Settlement of claim – Lapse of Life Insurance policy – Revival of policy – Redating – Surrender value – Loan on Life Insurance policies – Specimen of Loan application form – proposal form – personal statement – Agent Report

Unit – 4 (6-hours)

Marine Insurance – Meaning – Types of Marine policies – conditions of marine policy – Marine losses – Payment of claims

Unit – 5 (6-hours)

Fire Insurance – Meaning – Types of Fire Insurance policies – Conditions of Fire insurance Policy – Payment of claim – Reinsurance – Miscellaneous insurance – Kinds of Miscellaneous Insurance

Text Books

6. Marine Insurance – Smith
7. Fire Insurance – Godwin
8. Life insurance in India – Drd. R.M.Ray
9. Principles and practice of insurance – Dr. N.R. Nagarajan
10. Life Insurance year book

Reference Books

5. Insurance – principles and practice – M.N.Mishra
6. Principles practice & Law of Insurance – Gosh & Agarwal
7. Insurance Law in India – Venkopa Rao
8. Principles and practice of insurance – Young and Bacon

TALLY

Hours: 2hrs/week 30 Hrs

Subject Code: U1CCS61

Credits: 2

Objectives

To enhance the knowledge of the students regarding Tally usage in accounting.

Unit-I (6-hours)

Configuration – Single & Multiple User – Tally Opening Screen – Company creation and maintenance – Company features – Language configuration – Keyboard conventions & Key Combinations – Quitting Tally.

Unit-II (6-hours)

Groups – Multiple Groups – Ledger accounts – Multiple ledgers – Cost categories and centres – vouchers – pre-defined vouchers – Creating and customizing vouchers – Reports – Trial balance – Balance Sheet, Profit and Loss account, Stock summary, ratio analysis, Day books, cash and fund flow, BRS.

Unit-III (6-hours)



Stock Groups – Stock categories – Stock items – Unit of measurement – Godowns – Inventory vouchers – sales order – purchase order – reorder level – movement analysis – inventory statement – Outstanding payables and receivables – Interest calculations using simple parameters

Unit-IV

(6-hours)

TDS Enabling Ledgers – voucher creation – Reports – computation – payables – outstandings – VAT – terminologies – TIN Enabling Ledgers – Stock item with VAT - Vouchers entry with VAT computations..

Unit-V

(6-hours)

Common printing options – different printing format – Cheque printing – Using security control & security levels – ODBC – Back-up & restore – splitting company data – Export and Import of data.

Text Books:

3. Dr. Namrata Agarwal, Tally 9, Comdex.
4. Accounting Software – TCPS

TALLY - LAB

Hours: 2hrs/week 30 Hrs

Subject Code: U1CCS6P

Credits: 2

3. Create a new company with 15 ledger accounts with opening balance.
4. Enter the following transactions in the various vouchers in Tally

Payment of salaries by cheque	Rs.4000
Collection from Chand & Co	Rs.10000
Payment to Prem	Rs. 9000
Payment to Kumar	Rs. 6000
Obtained cheque from Prabu	Rs.10000
Paid rent by cheque	Rs. 500
Paid to Suguna by cheque	Rs. 4000
Purchased goods from Kumar	Rs.10000
Sold goods to Mukunth	Rs.15000
Purchased goods from Ramu	Rs. 12000
Sold goods to Sivaranjani	Rs. 7000
Payment of commission	Rs. 500
Amount withdrawn from Bank	Rs. 5000
Other expenses during the period	Rs. 2500
Returned goods to Kumar	Rs. 500
Mukunth returned goods	Rs. 1000
Bank charges	Rs. 300
Babu Bros Settled account by paying	Rs. 7250
Purchased machine from Norton&Co	Rs.25000
Paid Norton & Co	Rs.20000
3. Extract Trial balance, profit and loss account and Balance sheet of the business after entering the above transactions, with as many details as possible.
4. Prepare all subsidiary books, and parties' accounts with whom there were transactions, bank account and nominal accounts
5. Prepare a Bank Reconciliation Statement
6. Create Stock groups with stock items in various godowns
7. Prepare Purchase and sales order book
8. Prepare TDS statement
9. Make sales invoice with VAT calculation
10. Demonstrate Restore and data backup



VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

[Re-accredited with 'A' Grade by NAAC]

Virudhunagar – 626 001

COURSE NAME: BACHELOR OF BUSINESS ADMINISTRATION
V SEMESTER

Semester	Part	Subject	Hours	Credits	Int+Ext = Total	Subject Code	Revision
V	CORE 12	OPERATIONS MANAGEMENT	5	4	25+75=100	U1BAC51	Revised
	CORE 13	RETAIL MANAGEMENT	5	4	25+75=100	U1BAC52	Interchanged & Revised
	CORE 14	MANAGEMENT ACCOUNTING	5	4	25+75=100	U1BAC53	Interchanged & Revised
	CORE 15	RESEARCH METHODOLOGY	5	4	25+75=100	U1BAC54	Revised
	ELECTIVE 2	SALES MANAGEMENT	6	5	25+75=100	U1BAE51	New
	SBE- 4	EMPLOYABILITY SKILLS	2	2	25+75=100	U1PS51	New
	NME 1	BUSINESS ADMINISTRATION	2	2	25+75=100	U1BAN51	New

VI SEMESTER

Semester	Part	Subject	Hours	Credits	Int+Ext = Total	Subject Code	Revision
VI	CORE 16	FINANCIAL MANAGEMENT	6	4	25+75 = 100	U1BAC61	Interchanged
	CORE 17	SERVICES MARKETING	6	4	25+75 = 100	U1BAC62	Revised
	CORE 18	HUMAN RESOURCE MANAGEMENT	6	4	25+75 = 100	U1BAC63	Interchanged
	ELECTIVE 3	FIELD STUDY REPORT	6	5	25+75 = 100	U1BAE61	Revised
	SBE 5	ELEMENTS OF TALLY	2	2	25+75 = 100	U1BAS61	New
	SBE 6	TALLY PRACTICAL	2	2	40+60 = 100	U1BAS6P	New
	NME 2	ENTREPRENEURSHIP	2	2	25+75=100	U1BAN61	New

Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

1. 150 objective type questions with four alternatives for each question.
2. 30 questions to be asked from each unit.
3. Each question carries ½ mark.



Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries ½ mark.
3. Total marks to be reduced to 25.

OPERATIONS MANAGEMENT

Contact Hours per week: 5

Subject Code: U1BAC51

Contact Hours per Semester: 75

Credits: 4

Objective: To enlighten the students on various functions of production management and manufacturing practices.

UNIT-1

[15 Hours]

Operations management – Meaning – scope - production systems - continuous production – Intermittent production – mass & flow production - Batch production – job order production.

UNIT-2

[15 Hours]

Plant location – Importance – Factors affecting plant location. Plant layout – Principles – Process layout – product layout – Fixed position layout.

UNIT-3

[15 Hours]

Material management – Objectives - Functions of inventories – Inventory control and its importance – Double bin system - ABC analysis, Production planning and control – meaning and importance.

UNIT-4

[15 Hours]

Plant maintenance – Importance - breakdown maintenance – Preventive maintenance and predictive maintenance - work study: Meaning and Importance.

UNIT-5

[15 Hours]

Quality control – Need and importance – Control charts and their uses. Material handling – Principles – Factors affecting the choice of material handling equipments.

TEXT BOOKS

1. Production and Operation Management- Dr.B.S.Goel, Pragati Prakashan publication.
2. Materials Management – M.M.Verma

REFERENCE BOOKS

1. Industrial Engineering and Management – O.P.Kanna
2. Production Management – Elwood S.Buffa (Johnuron)
3. Integrated Materials Management-Gopalakrishnan(Tata McGraw Hill)

RETAIL MANAGEMENT

Contact Hours per week: 5

Subject Code: U1BAC52

Contact Hours per Semester: 75

Credits: 4

Objectives: To provide a basic theoretical framework of the concepts of Retail Management and to enable the students to identify the retailing opportunities.

UNIT I

Meaning of retail and retailing – Scope of retailing – Growth and development of retailing – Evolution of Indian retail –Retailer – Types of retailers.

[18 Hours]

UNIT II

Functions of Retailers – Benefits of Retailing – Retailing environment – Ethics in Retailing – Illegal and unethical Issues in Retailing – Prospects of retailing in India.

[18 Hours]



UNIT III: Distribution channels in retailing – role of retailer – Types of retail formats – Non-store retailing – Role of store Manager. [18 Hours]

UNIT IV: Retail pricing – Factors affecting retail Pricing – pricing strategies - Importance of promotion in retailing, forms of retail promotion. [18 Hours]

UNIT V: Customer loyalty – meaning – variables influencing store loyalty - Application of Information technology in retailing – FDI in Retailing – Services retailing. [18 Hours]

TEXT BOOK:

1. Suja nair, Retail Management, 4th Edition, Himalaya publishing House.

ReferenceBooks:

1. Swapna Pradhan, Retail Management, Tata Mcgrow hill publishing company Ltd.
2. Berry berman and Joel r., Evens, Retail Management 10th edition, Prentice Hill publishing House.

MANAGEMENT ACCOUNTING

Contact Hours per week: 5

Subject Code: U1BAC53

Contact Hours per Semester: 75

Credits: 4

Objective:

To enlighten the students on various functions of accounting management and practices.

UNIT I [15 Hours]

Management Accounting – Meaning, nature, Functions, advantages and disadvantages of Management Accounting, Differences between Management Accounting and Financial accounting - Financial statement Analysis – comparative, common size and Trend Percentages.

UNIT II [15 Hours]

Ratio Analysis – Meaning, Merits and demerits – classification of Ratios – Profitability Ratios, Turnover Ratios and financial Ratios. (Simple Problems only)

UNIT III [15 Hours]

Fund Flow Statement – Meaning, merits and demerits – preparation of fund flow statement. (simple problems only).

UNIT IV [15 Hours]

Marginal costing – Meaning, merits and demerits - Break – Even Analysis – Assumptions - profit volume Ratio, Margin of safety, maintaining a desired level of profit (Simple problems only).

UNIT V [15 Hours]

Budgetary Control – Meaning, objectives, merits and demerits – Classification of Budgets - (Problems only from cash Budget and Flexible Budget).

Note: 60% marks for problems and 40% marks for theory.

TEXTBOOKS

1. Management Accounting- R.S.N.Pillai and Bagavathi, S.Chand publisher.
2. Financial & Management Accounting- S.N. Maheswari, Sultan & Chand publisher.

REFERENCE BOOK

1. Management Accounting by khan and jain (TMH)
2. Management Accounting by Manmohan and Goyal

RESEARCH METHODOLOGY

Contact Hours per week: 5

Subject Code: U1BAC54

Contact Hours per Semester: 75

Credits: 4

Objectives:

- 1) To provide a basic theoretical framework of the concepts of Research Methodology.
- 2) To enable the students to identify the business problems.



3) To undertake a methodological approach to design data requirements and to find conclusion.

4) To undertake research in business and industrial problems.

Unit – I [15 Hours]

Research Methodology – Introduction – Meaning – Objectives – Types – Significance – Problems encountered by Researchers – Criteria of Good Research - Research Process – Research Design – Meaning and Importance

Unit – II [15 Hours]

Sampling – Definition - Objectives – Characteristics – Probability and Non-Probability Sampling methods. Scaling – Definition – Scale Classification – Scaling Techniques.

Unit – III: Methods of Data Collection – Types of data – Data Sources – Methods of Collection of Primary Data – Questionnaire - Meaning – Requisites of a good questionnaire – Kinds of questions – Pre_testing. [15 Hours]

Unit – IV: Data Processing – Editing, Coding, Classification and Tabulation - Analysis of Data – Meaning – Characteristics – Interpretation of data – Meaning – Different forms – Need for Interpretation. Hypothesis – Meaning - Null and Alternate hypothesis only.

[15 Hours]

Unit – V: Report writing – Report – Meaning – Essentials of a good report – Types of report – Steps in Report writing – Contents of Research report - Use of library and internet in Research.

[15 Hours]

TEXT BOOK

1. Research Methodology, Methods & Techniques – Kothari – Wiley Easter Ltd., Publications.

REFERENCE BOOK

1. Research Methods in Social Sciences – Dr.S.Nakkiran Dr.R.Selvaraju – Himalaya Publishing House.
2. Research Methodology by P.Panneer Selvam.

SALES MANAGEMENT

Contact Hours per week: 6

Subject Code: U1BAE51

Contact Hours per Semester: 90

Credits: 5

Objectives

- 1) To enable the students to become familiar with sales management practices.
- 2) To understand the existing practices, so as to develop new ones, to suit his Business requirement.

UNIT-I [18 Hours]

Sales Management: Meaning and definition – objectives and scope – functions of sales management – Personal selling: meaning and definition – nature of personal selling- objectives and importance of personal selling – Salesman: types of salesman – characteristics of a successful salesman – sales organization: purpose – basic types of sales organization.

UNIT-II [18 Hours]

Sales planning - Sales planning process – Sales forecasting – objectives- factors influencing sales forecast – steps in sales forecasting – methods of sales forecasting – Sales budget: meaning – purposes and advantages – procedure of sales budgeting – methods of sales budgeting – Sales quota: types of quota – quota setting procedure – advantages of sales quota – Sales territories: meaning – factors deciding territories – establishing sales territories - benefits.

UNIT-III [18Hours]

Management of sales force: Sales force planning – determining the size of sales force – Recruitment and selection of sales force: meaning and nature of recruitment and selection –



importance – sources of recruitment – methods and procedure of selection and recruitment – training and development of sales force – methods of training.

UNIT-IV [18 Hours]

Control and supervision of sales force: Bases of control- Motivation of salesman: importance – techniques of sales force motivation – Sales force compensation: compensation plan – essentials of a good compensation plan – methods of compensation.

UNIT-V [18 Hours]

Process of effective selling: prospecting – types of prospects – steps in prospecting – Pre-approach: need and importance – Approach: methods of approach – Presentation: meaning and essentials of presentation – Demonstration: meaning and essentials of presentation – Handling objections: Reasons – types of objections – methods of handling objections – Closing the sale: importance – techniques – requisites of successful closing – Follow- up.

Text Books:

1. Advertising and Personal Selling – Dr.C.B.Gupta, Sultan Chand & Sons.

Reference Books:

1. Sales Management – Richard R.Still, Edward W.Cundiff, Norman A.P.govari – Prentice Hall of India.
2. Salesmanship and Advertising – R.S.Davar, Progrestine Publisher.

SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code: U1PS51

Contact Hours per Semester: 30

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I : Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. (6-hours)

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. (6-hours)

Unit III: Reasoning (6-hours)

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning (6-hours)

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V: (6-hours)

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
2. Quantitative Aptitude - R.S.Aggarwal
3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
4. Malayala Manorama Year Book, 2014

NME 1 - BUSINESS ADMINISTRATION

Contact Hours per week: 2

Subject Code: U1BAN51

Contact Hours per Semester: 30

Credits: 2

Objectives



To enable the student to secure basic knowledge in Business Administration and management practices.

UNIT – I [6 Hours]

Management – Definition – Nature of Management, Levels of Management and Functions of Management. Henry Fayol's 14 Principles of Management.

UNIT– II [6 Hours]

Planning – Definition, Nature of planning, advantages and Limitations of planning and Steps in planning.

UNIT– III [6 Hours]

Organization – Meaning and Importance - Types of organization: Line organization, line and staff organization and functional organization (3 Types only).

UNIT– IV [6 Hours]

Motivation – Meaning, Nature of Motivation and Maslow's theory of motivation. Leadership – meaning, Qualities of a good leader and kinds of Leadership styles; Autocratic, Democratic and free rein leader. (3 Type only).

UNIT V [6 Hours]

Communication – Meaning, process of communication, Barriers in Communication and Measures to overcome communication barriers - Controlling – meaning, Nature of control and Steps in controlling.

Text Books

1. Principles of Management – J.Jaisankar, Margham Publications.
2. Business Administration – R.K.Sharma and Shashi K.Gupta, Kalyani Publisher.

Reference Books:

1. Management theory & Practice – C.B.Gupta, Sultan Chand Publisher
2. Principles of Management – K.P.Ganesan

VI Semester

FINANCIAL MANAGEMENT

Contact Hours per week: 6

Subject Code: U1BAC61

Contact Hours per Semester: 90

Credits: 4

Objectives: To enlighten the students on various functions of financial management and practices.

UNIT-1 : Financial Management – Definition – Objectives of the firm : Profit maximization Vs wealth maximization – Functions of finance – Financial Decisions – Investment decision – Financing Decision and Dividend decision – Organization of the finance function – Controller Vs Treasurer. [18 Hours]

UNIT-2 : Sources of Capital – Long term, intermediate term and short term – types of securities – Debt, Equity and Preferred Stock. Capital structure – Forms – Importance – Factors determining capital structure - Theories of capital structure (only Theory) – Problems on EBIT – EPS analysis. [18 Hours]

UNIT-3 : Working capital Management – Concept of working capital – Kinds of working capital - Determinants of working capital – Estimation of Working Capital (Problem) - Cash Management - Motives for holding cash – Managing cash inflows and cash outflows (only theory). [18 Hours]

UNIT-4: Cost of capital – Meaning and Definition – Significance – Classification of cost-Determination of Cost of Capital – Cost of Debt – Cost of Equity - Cost of Preference Shares - Weighted average cost of capital (Theory & Problems). [18 Hours]

UNIT-5: Capital budgeting – Techniques – Investment evaluation methods: Pay back Period, Accounting rate of return – Net present Value and Internal rate of return (problem on IRR to



be excluded). Dividend policy – factors affecting dividend policy – Forms of dividends - Stock dividend and stock split (Theory only). [18 Hours]

NOTE: Question must be asked 40% on theory 60% on problems.

TEXT BOOK:

1. Financial management, Shashi K. Gupta & R.K. Sharma Kalyani Publishers, New Delhi.

Reference Books:

1. Financial Management – Principles & Practice – Dr.S.N.Maheswari, Sultan Chand & Sons, New Delhi.
2. Financial Management – Text and Problems – M.Y.Khan & P.K.Jain.

SERVICES MARKETING

Contact Hours per week: 6

Subject Code: U1BAC62

Contact Hours per Semester: 90

Credits: 4

Objectives: To provide a basic theoretical framework of the concepts of Services marketing and to enable the students to identify the service problems.

UNIT-1: Services marketing –Introduction and definition – types of services – nature and characteristics of services - classification of services – difference between services and goods – Marketing Management Process for services – Services Marketing Mix – Meaning and Elements [18Hours]

UNIT-2: Service product – Introduction – service concept - Service life cycle concept – New Service Development - Branding and Service Positioning - Pricing in Services – Objectives of pricing – Factors affecting pricing decisions – Methods of pricing – Pricing Strategies. [18 Hours]

UNIT-3: Service promotion – Promotion mix for services – Advertising –Sales Promotion – Personal Selling – Word of mouth Communication – Public relation and Publicity. Place in service – Channels in Service Delivery – Designing a distribution system – Functions of Intermediaries. [18 Hours]

UNIT-4: People in Services – Types of Service Personnel – Contact Personnel and Support Personnel – Role of customer in service delivery – Service Process – Service Blue Print – Meaning and Importance. [18 Hours]

UNIT-5: Physical Evidence – Physical facilities – Essential evidence and Peripheral evidence – Marketing of Services: Tourism Marketing - Bank Marketing – Hospital marketing – Hotel Marketing. [18 Hours]

TEXT BOOK

1. Services Marketing – Vasanti Venugopal, Raghu,V.N. Himalaya Publishing House.

Reference Books:

1. Services Marketing – S.M. Jha . Himalaya Publishing House
2. Services Marketing - Appaniah, Reddy, Himalaya Publishing House

HUMAN RESOURCE MANAGEMENT

Contact Hours per week: 6

Subject Code: U1BAC63

Contact Hours per Semester: 90

Credits: 4

Objectives: To enable the student to secure basic knowledge in Human resource management practices.

Unit I Human Resource Management – Definition – Nature – objectives – functions - Advantages and Disadvantages of HRM - Qualities of Human Resource Manager.

[18Hours]



Unit II: Human Resource planning – Definition, objectives AND importance - Human Resource Planning process – Job Analysis – Job Description – Job specification.

[18 Hours]

Unit III: Recruitment – Meaning, factors affecting recruitment and sources of recruitment. Selection – Meaning and selection process.

[18 Hours]

Unit IV: Placement and Induction - Training – Importance – Types of Training and steps in training programme.

[18 Hours]

Unit V: Industrial Relations – Objectives of IR - Importance of IR - parties to IR - Causes for poor IR and How to develop sound IR. Performance Appraisal – Meaning - objectives of Performance Appraisal - Traditional methods of Performance Appraisal only.

[18 Hours]

Text Book:

1. Human Resource Management by S.S.Khanka, S.Chand Publisher

Reference Books:

1. Human Resource Management by K.Aswathappa, McGraw Hill.
2. Human Resource Management by L.M.Prasad, Sultan Chand.

FIELD STUDY REPORT

Contact Hours per week: 6

Subject Code: U1BAE61

Contact Hours per Semester: 90

Credits: 5

RULES GOVERNING FIELD STUDY REPORT

1. Each student should undergo 3 weeks field study in any area during the VI semester outside the college.
2. The student has to submit the field study report in two copies in not less than 60 type written pages.
3. The student must decide the topic in consultation with the Faculty Guide and construct the questionnaire if any and get the approval of the guide before leaving for field work.
4. The field study report will be evaluated by the faculty guide and the HOD. The student has to appear for a viva voce that will be conducted before the end of VI semester. Presence of External examiner in viva voce panel is optional.
5. The field study project must contain the following: a) *Introduction* b) *Objectives* c) *Methodology* d) *Data analysis* e) *Findings* f) *Suggestions*
6. The report submitted will be evaluated as follows. Report Writing - 50
Viva Voce - 50

Total - 100

7. Passing Minimum is 40% of the aggregate.

ELEMENTS OF TALLY

Contact Hours per week: 2

Subject Code: U1BAS61

Contact Hours per Semester: 30

Credits: 2

Objectives: To enable the students to secure basic knowledge in Computerized Business Accounting with Tally practices.

UNIT – I

Tally – introduction - features of tally – opening screen of tally – Creating a company – Selecting a Company – Altering an existing company.

[6 Hours]

UNIT – II



Creation of groups – Creation of Ledger accounts – Editing and deleting ledgers – Vouchers: voucher entry – creation of different types of vouchers – editing and deleting vouchers – invoices.

[6 Hours]

UNIT – III

Inventories–creation of stock category, stock groups and stock items–stock vouchers – purchase and sales orders – pure inventory vouchers – units of measure – godowns[6 Hours].

UNIT – IV: Reports in Tally: working with day book report – working with stock summary reports.

[6 Hours]

UNIT – V: Working with trial balance report – working with profit and loss a/c report – working with balance sheet report.

[6 Hours]

Text Book:

1. Business Accounting with MS Excel and Tally Course kit – Vikas Gupta, Dreamtech Press.

Reference Books:

1. Tally 9 - Law Point
2. Tally ERP 9 – Law Point

TALLY PRACTICALS

Contact Hours per week: 2

Contact Hours per Semester: 30

Subject Code: U1BAS6P

Credits: 2

1. Creation of company.
2. Creation of groups, single group and sub-groups.
3. Creation of vouchers.
4. Creation of ledgers.
5. Creation of stock category, stock groups and stock items.
6. Creation of godowns.
7. Preparation of Trial Balance.
8. Preparation of Profit and Loss A/c.
9. Preparation of Balance Sheet.

NME-2 ENTREPRENEURSHIP

Contact Hours per week: 2

Contact Hours per Semester: 30

Subject Code: U1BAN61

Credits: 2

Objectives: To enlighten the students on various Entrepreneurial development functions.

UNIT – I: Entrepreneur – Meaning, characteristics of an entrepreneur, functions on an entrepreneur, Types of Entrepreneurs . Entrepreneurship – meaning – characteristics of entrepreneurship.

[6 Hours]

UNIT – II: Women entrepreneurs – Types of women Entrepreneur, problems of women entrepreneurs and remedies. Rural entrepreneurship – meaning, problems of Rural Entrepreneurship.

[6 Hours]

UNIT – III: SSI – Meaning, Importance of SSI, problem of SSI and steps in starting Small business.

[6 Hours]

UNIT – IV: Project Report – Meaning and Contents of the Report, Institutional support and finance to Entrepreneur – SISL, SIDCO, DIC and TIIC (4 Institutions only).

[6 Hours]

UNIT – V: Incentives for small scale units – Subsidy and Tax concessions. Sickness in SSI – Meaning, Causes of Industrial sickness and Measures to prevent sickness in SSI.

[6 Hours]

Text Books:

1. Entrepreneurial Development – Gordon and Natarajan, Himalaya Publishing House.
2. Entrepreneurial Development – S.S.Khanka, S.Chand Publishers.

Reference Books

1. Entrepreneurship and Management of Small Business – Dr.P.C.Sekar.



Course Name : Bachelor of Science

Discipline : Mathematics

Semester	Part	Subject	Hour	Credit	Int+Ext = Total	Subject Code	Revision
V	Core 7	Modern algebra	5	4	25+75=100	U1MAC51	No Change
	Core 8	Real analysis	5	4	25+75=100	U1MAC52	No Change
	Core 9	Graph Theory	5	4	25+75=100	U1MAC53	Revised
	Allied 7	Probability and Statistics	6	5	25+75=100	U1MAA51	New
	Elective 1	Linear Programming	5	5	25+75=100	U1MAE51	No Change
	SBE - 4	Employability Skills	2	2	25+75=100	U1PS51	Revised
	NME - 1	Fundamentals of Arithmetic	2	2	25+75=100	U1MAN51	Revised

Semester	Part	Subject	Hour	Credit	Int+Ext = Total	Subject Code	Revision
VI	Core 10	Linear Algebra	6	5	25+75=100	U1MAC61	No Change
	Core 11	Complex analysis	6	5	25+75=100	U1MAC62	No Change
	Core 12	Operations Research	5	5	25+75=100	U1MAC63	Revised
	Allied 8	Numerical Methods	6	5	25+75=100	U1MAA61	No Change
	SBE - 5	Industrial Statistics	2	2	25+75=100	U1MAS61	New
	SBE - 6	Random Process	2	2	25+75=100	U1MAS62	New
	NME - 2	Statistics and operations research	2	2	25+75=100	U1MAN61	No Change

Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

1. 150 objective type questions with four alternatives for each question.
2. 30 questions to be asked from each unit.
3. Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries ½ mark.
3. Total marks to be reduced to 25.



**V-SEMESTER
MODERN ALGEBRA**

Credits: 4

Subject code : U1MAC51

Hours: 5hrs/week 75 Hrs

Objectives:

- To know about the basic concepts of relations and functions.
- To know about the properties of groups, subgroups, normal subgroups.
- To know about homomorphism, isomorphism of groups.
- To learn about rings, sub rings, characteristic of a ring and ideals.

UNIT I : (15 hours)

Groups: Definition and examples – Elementary properties of a group – Equivalent definitions of a group – Permutations – Cycles and Transpositions – Even and Odd permutations – S_n and A_n .

UNIT II: (15 hours)

Subgroups : Definitions and examples – Center – Normalizer – Intersection and Union of Subgroups – **Cyclic groups :** Definition and examples – Cyclic groups are abelian – A group is cyclic if its order is equal to the order of one of its elements – Subgroups of cyclic groups are cyclic – Theorems on the number of generator of cyclic groups.

UNIT III: (15 hours)

Cosets and their properties – Congruence relation modulo subgroups – Lagrange's theorem and its consequences – The order of an elements of a finite group divides the order of the groups. A group of prime order is cyclic – A group has no proper subgroup if it is a cyclic group of prime order – Euler's theorem – Fermat's theorem.

Normal subgroups: – Equivalent conditions for a subgroup to be normal – Any subgroup of an abelian group is normal – A subgroup of index 2 is normal – Intersection of a subgroup and a normal subgroup – If a subgroup has exactly one subgroup of given order then it is normal – Quotient group.

UNIT IV: (15 hours)

Homomorphism: – Types of homomorphisms – Homomorphism with reference to identity – Inverse and order of an element – its properties – Kernel of homomorphisms – Homomorphic image of an abelian group is abelian – and that of a cyclic group is cyclic – Isomorphism – Isomorphism is an equivalence relation among groups – Any infinite cyclic group is isomorphic to the group of integers – Any finite cyclic group of order n is isomorphic to Z_n – Cayley's theorem – The fundamental theorem of homomorphism

UNIT V: (15 hours)

Rings : Definitions and examples – Elementary properties – Isomorphism of rings – types of rings – Characteristic of a ring – subrings – Ideals.

Text Books: Modern Algebra by Dr. S. Arumugam, Publications: Sci Tech, 2006.

Unit I : 3.1 – 3.4

Unit II : 3.5, 3.6 & 3.7.

Unit III: 3.8 & 3.9.

Unit IV: 3.10 & 3.11.

Unit V : 4.1 – 4.7

Reference Books: MODERN ALGEBRA – T.K. Manickavasagam Pillai



REAL ANALYSIS

Subject Code : U1MAC52

Credits: 4

Hours: 5hrs/week 75 Hrs

Objective :

To enable the students to understand that analysis is the study of limiting processes on algebraic structures and to assist the students to view the geometric structure of sets.

Unit I: (15 hours)

Countable and uncountable sets – Inequalities of Holder and Minkowski – Metric spaces – Definition and Examples – open sets – Interior of a set – closed sets – closure of a set – limit point (Definitions and Examples only)

Unit II (15 hours)

Complete Metric Spaces :- Completeness – Cantor's Intersection Theorem – Baire's Category Theorem.

Unit III: (15 hours)

Continuity – Homeomorphism – Uniform continuity (Discontinuous functions on \mathbb{R} – is excluded)

Unit IV: (15 hours)

Connectedness – Definition and Examples connected subsets of \mathbb{R} – Connectedness and continuity.

Unit V: (15 hours)

Compactness :- Compact metric spaces – Compact subsets of \mathbb{R} - Equivalent Characterisations for Compactness – Compactness and Continuity.

Text Books:

Modern Analysis – By Dr.S.Arumugam and Mr.A.Thanga Pandi Isaac. New Gamma Publishing House, Palayamkottai, 2007

Reference Books:

1. A First course in Mathematical Analysis – By D.SomaSundram & B.Choudhary Narosa Publishing House, Chennai
2. Methods of Real Analysis – By Richard R. Gold berg, Oxford & IBH Publishing Company, New Delhi

GRAPH THEORY

Credits: 4

Subject Code : U1MAC53

Hours: 5hrs/week 75 Hrs

OBJECTIVES:

- i) To learn the introduction of graph theory.
- ii) To understand the concepts of graph theory.

UNIT –I : Graphs and Degree Sequences: (15hrs)

Definition and examples – Degrees- Subgraphs- Isomorphism-Independent sets and Coverings-Matrices- Operations on graphs-Degree sequences.

UNIT – II: Connectedness, Eulerian and Hamiltonian graphs: (15hrs)

Walks-Trails and Paths-Connectedness and Components-Connectivity-Eulerian graphs-Hamiltonian graphs.

UNIT –III : Trees and Matchings:

Characterisation of trees-Centre of a tree- Matchings-Matchings in bipartite graphs.



UNIT –IV :Planarity and Colourability: (15hrs)

Definition and properties-Euler's formula-Chromatic number and chromatic index-The five colour theorem.

UNIT – V:Chromatic Polynomials and Directed graphs: (15hrs)

Chromatic polynomials-Definition and basic properties-Paths and Connections-Tournaments.

TEXT BOOKS:

Invitation to graph theory by S.Arumugam and S.Ramachandran,Scitech publications,Chennai(2001)

CHAPTERS:

UNIT I:Sections 2.1-2.4,2.6-2.9,3.1

UNIT II: Sections4.1,4.2,4.4,5.1,5.2

UNIT III: Sections6.1,6.2,7.1,7.2

UNIT IV: Sections8.1,9.1,9.2

UNIT V: Sections9.4,10.1,10.2,10.4

REFERENCE BOOKS:

1) A first course in graph theory,S.A.Choudum,Macmillan India Ltd,New Delhi(1987).

2)Basic graph theory by K.R.Parthasarathy Tata McGraw.Hill Publishing Co.Ltd NewDelhi(1994).

PROBABILITY AND STATISTICS

Hours: 6hrs/week 90

Subject code : U1MAA51

Credits: 5

Objectives:

Statistics pervades all subject matter. It is a tool of all sciences. Trade, Industry or commerce, economics, biology, botany, astronomy, physics, chemistry, education, medicine, sociology, psychology, or metrology. It is often remarked "Statistics is what statisticians do".

The following are the important functions of the Science of Statistics:

It presents facts in a definite form.

It simplifies mass of figures.

It facilitates comparison.

It helps in formulating and testing hypothesis.

It helps in prediction.

It helps in the formulation of suitable policies.

UNIT-1 :- (18 hours)

Correlation and regression (Chapter 6.1, 6.2, 6.3)

UNIT-2:- (18 hours)

Probability, Random variables (Chapter 11.1, 11.2, 12.1, 12.2, 12.3)

UNIT-3:- (18 hours)

Mathematical Expectations- Moment generating function(Chapter 12.4, 12.5)

UNIT-4:- (18 hours)

Binomial distribution – Poisson Distribution. (Chapter 13.1, 13.2)

UNIT-5:- (18 hours)

Normal distribution- Test based on χ^2 distribution (Chapter 13.3, 16.1, 16.2)

TEXT BOOKS:-

"Statistics" By Dr.S.Arumugam & Mr.A.Thangapandi Issac.

[New Gamma Publication House – June 2007]



REFERENCE BOOK:-

“Statistical Methods” By S.P.Gupta
[Sultan Chand & Sons(37th Revised Edition,2008)]

LINEAR PROGRAMMING

Credits: 5

Subject code : U1MAE51

Hours: 5hrs/week 75 Hrs

Objectives:

To enable the students to

- Acquire the knowledge of Applications of Linear Programming.
- Know about how to solve LPP using various methods.
- Know about the concept of Transportation and Assignment Problem.

Unit I:- (15 hours)

Origin and Development of O.R.-Modelling in Operations Research- General Solution Methods for O.R. Models-Scientific Methods in O.R.-Applications of Operation Research.

Unit II:- (15 hours)

Definition of LPP-Mathematical Formulation of a LPP-Canonical and standard form of a LPP- Definition of a feasible solution-Optimal solution-Optimum basic feasible solution- Degenerate solution of a LPP-Graphical solution of a LPP-Simplex method of solving a LPP

Unit III:- (15 hours)

Charne's method of penalties-Two Phase method-Concept of Duality-Formation of Dual LPP-The Dual of the Dual is Primal (only problem)-Dual Simplex method

Unit IV:- (15 hours)

Transportation Problem-Finding initial basic feasible solution by North west corner method and Vogel's approximation method - Optimal solution of Transportation Problem.

Unit V:- (15 hours)

Assignment Problem-Solution of Assignment Problem-Travelling salesman Problem.

TEXT BOOKS: Operations Research by Kanti Swarup,P.K.Gupta,Man Mohan

Unit I: Chapter 1 Section 1.1,1.3,1.4,1.5,1.7

Unit II: Chapter 2 Section 2.1 , 2.2

Chapter 3 Section 3.2,3.4,3.5

Chapter 4 Section 4.1 , 4.3

Unit III: Chapter 4 Section 4.4

Chapter 5 Section 5.2,5.3,5.7

Unit IV: Chapter 10 Section 10.1 to 10.5,10.9 to 10.12

Unit V: Chapter11 Section 11.1 to 11.6

REFERENCE BOOKS:

1.Prof.V.Sundaresan,K.S.Ganapathy Subramanian,K.Ganesan-**Resource Management Techniques(Operations Research)**-A.R.Publications

2.Dr.S.Arumugam- **Operations Research**-New Gamma Publication -2006



SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Contact Hours per Semester: 30

Subject Code: U1PS51

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I : Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. **(6-hours)**

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. **(6-hours)**

Unit III: Reasoning (6-hours)

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning (6-hours)

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V: (6-hours)

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

- | | | |
|---|---|--------------|
| 1. Verbal & Non Verbal Reasoning | - | R.S.Aggarwal |
| 2. Quantitative Aptitude | - | R.S.Aggarwal |
| 3. Subjective & Objective Quantitative Aptitude | - | R.S.Aggarwal |
| 4. Malayala Manorama Year Book, 2014 | | |

FUNDAMENTALS OF ARITHMETIC

Credits: 2

Subject code : U1MAN51

Hours: 2hrs/week 30

OBJECTIVES:

To Enable the Students:

To Learn About the Basic Concepts on Simplification, Percentage, Profit and Loss, Time and work, Time and distance, Simple interest and Compound interest, Help the Students to attend the all competitive examination.

UNIT –I : Simplification, Problems on ages **6hrs**

UNIT – II Percentage, Profit and Loss **6hrs**

UNIT –III :Time and work **6hrs**

UNIT –IV :Time and distance **6hrs**

UNIT – V : Simple interest and Compound interest **6hrs**

TEXT BOOKS:

Quantitative Aptitude for Competitive Examination by R.S.Aggarwal, S.Chand Publication New Delhi (7th Fully Revised edition 2008)

CHAPTERS:

UNIT I - Section 4

UNIT II - Section 10,11

UNIT III -Section 15



Reference Book: Objective Mathematics –S.K. Arora, Mrs. Sunitha Bhasin and Manish puri – IMS Publications-Eighth edition.

**VI-Semester
LINEAR ALGEBRA**

Credits: 5

Subject code : U1MAC61

Hours: 6hrs/week 90

Objectives:

- To introduce the basic concepts of Vector spaces and linear transformations.
- To give preliminaries for independence and non-independence of sets.
- Providing matrix of linear transformations and finding eigen values and eigen vectors.
- The concept of bilinear forms and quadratic forms is also added.

UNIT-I :- (18 hours)

Introduction on vector spaces - Definitions – Subspaces - Linear Transformations – Kernel – Span of a set – linear span.

UNIT- II: - (18 hours)

Basic concepts of linear independence - Theorems – Basis & Dimension – Maximal linear independent set - rank and nullity – singular linear transformations.

UNIT – III: - (18 hours)

Matrix of a linear transformation – Inner Product Space – norm – orthogonality – orthogonal complements.

UNIT – IV: - (18 hours)

Theory of matrices – Algebra of matrices - Elementary transformations - rank – simultaneous linear equations – Cayley Hamilton theorems

UNIT – V:- (18 Hours)

Eigen values and eigen vectors.

UNIT – I: Chapter 5: 5.1 – 5.4

UNIT – II: Chapter 5: 5.5 – 5.7

UNIT – III: Chapter 6: 6.1 – 6.3

UNIT – IV: Chapter 7: 7.1 – 7.6

UNIT – V: Chapter 7: 7.7 – 7.8

TEXT BOOKS:

“Modern Algebra” – Dr. Aumugarm. S and Issac A. T.
– SciTech publications (2006).

REFERENCE BOOKS:

“Introduction to Linear Algebra” – Grossman - Saunders College Pub. – 1994.

COMPLEX ANALYSIS

Credits: 5

Subject code : U1MAC62

Hours: 6hrs/week 90

Objectives:

To enable the students to understand that the study of complex Analysis is an essential background for Mathematicians, Physicists and other Scientists and to acquire a good



knowledge of Analytic Functions in terms of Power series approach, differentiability approach and the Geometric approach and Perceive them all as unified.

Unit I: (18 hours)

The Extended Complex plane – Limits – Continuous Function – Differentiability (Definitions only) – The Cauchy – Riemann equations – Analytic function – Harmonic functions.

Unit II: (18 hours)

Bilinear Transformations – Cross ratio – Fixed points of Bilinear transformations – Some Special Bilinear Transformations: The real axis onto itself- The unit circle onto itself-The real axis onto the unit circle..

Unit III: (18 hours)

Definite Integral – Cauchy's Theorem – Cauchy's Integral Formula – Higher Derivatives.

Unit IV: (18 hours)

Taylor's Series – Laurent's Series – Zeros of an Analytic function – Singularities.

Unit V: (18 hours)

Residues – Cauchy's Residue theorem – Argument theorem – Rouché's Theorem – Fundamental Theorem of Algebra – Evaluation of Definite Integrals (First three types only).

Text Books:

Complex Analysis – By Dr.S.Arumugam, T.ThangaPandi Isaac and A.SomaSundram, Scitech Publications (India) Pvt. Ltd., Chennai – (June 2004)

Reference Books:

Complex Analysis – By T.K.Manicavachagam Pillai & Others , S.Viswanathan (Printers and Publishers) Pvt. Ltd., Chennai.

1. **Complex Analysis** – By P.DuraiPandian and Others, Emerald Publishers, Chennai.

OPERATION RESEARCH

Credits: 5

Subject Code : U1MAC63

Hours: 6hrs/week 90

Objectives:

To enable the students to

- Acquire the knowledge of Applications of inventory decisions which are relevant to undergraduate level.
- Know about how to solve game theory problem
- know about the concept of Queuing models Networking Problem.

Unit -I: Sequencing (18 hours)

Problem of sequencing-basic terms used in sequencing-processing n jobs through 2 machines- processing n jobs through k machines- processing 2 jobs through k machines.

Unit-II: Replacement problem: (18 hours)

Replacement of equipment/asset that deteriorates gradually-replacement of equipment that fails suddenly.

Unit-III: Games and strategies: (18 hours)

Introduction-Two persons zero-sum games-some basic terms-the maximin-minimax principle games without saddle points-mixed strategies-graphic solutions of $2 \times n$ & $m \times 2$ games-dominance property-arithmetic method for $n \times n$ games-general solution of $m \times n$ rectangular games.



Unit-IV: Queuing theory:

(18 hours)

Introduction-queuing system-elements of queuing system-operating characteristics of a queuing system probability distributions in queuing systems-classification of queuing models-definition of transient and steady states-Poisson queuing systems- M/M/1:FIFO:∞, M/M/1:FIFO:N, M/M/C:FIFO:∞, M/M/C: FIFO:N.

Unit-V: Network scheduling by PERT/CPM:

(18 hours)

Introduction-Network and basic components-logical sequencing- rules for network constructions-critical path analysis.

Text Books :

Operation research by Kanti swarup , Gupta , Manmohan, 12th edition.

Unit -I chap 12.1 to 12.6

Unit-II chap 18.1 to 18.3

Unit-III chap 17.1 to 17.9

Unit-IV chap 20.1 to 20.8

Unit-V chap 21.1 to 21.5

Reference Books :

- 1.**Resource Management Techniques-** Prof.V.Sundaresan, K.S.Ganapathy Subramanian, K.Ganesan- (Operations Research)-A.R.Publications
- 2.**Operations Research-** Dr.S.Arumugam- New Gamma Publications

NUMERICAL METHODS

Credits: 5

Subject code : U1MAA61

Hours: 6hrs/week 90

Objectives:

- Understanding the distinction between accuracy and precision.
- Learning how to quantify error.
- Understanding how to write forward, backward and centered finite- difference approximations of first and second derivatives

Unit I:

18 hours

Numerical solution of Algebraic and Transcendental equations – Iteration method – Newton - Method of false positions – Solution of Simultaneous linear equations – Gauss method - Gauss' Jordan method – Iteration method – Gauss method.

Unit II:

18 hours

Finite differences – Forward difference and Backward differences – Finite differences – operators – Relations – Properties – Finding missing terms – Inverse operators – Factorial Notations.

Unit III:

18 hours

Interpolation and Newton's forward and backward formula – Divided differences and properties – Newton's divided difference formula – Gauss formula – Stirling formula – Bessel formula – Laplace Everrett's formula – Lagrange formula – Simple problems – Inverse interpolation using Lagrange formulation

Unit IV:

18 hours

Numerical differentiation – Finding the first and second derivatives – Maximum and minimum values of a function for a given data.



Unit V:

18 hours

Numerical Integration – Newton's cot's formula – Trapezoidal rule – Simpson's one third rule – Simpson's three eight rule – Weddle's rule.

Text Books:

Numerical Methods by

S.Arumugam, A.Thangapandi Isaac, A.Somasundaram, Scitech publications

Reference Books:

Numerical methods in science and engineering by DR.M.K. Venkataraman

INDUSTRIAL STATISTICS

Credits: 2

Subject Code: UIMAS61

Hours: 2hrs/week 30

Objectives :-

Statistics deals with all sciences such as Biologist, Zoology, Education, Economics, Planning, Industry, Medical Sciences, an Index Number is widely used Statistical device for comparing the level of a certain phenomenon with the level of same phenomenon at some standard period.

UNIT-I: STATISTICAL INFERENCE:-

(6 hours)

Introduction – procedure of testing hypothesis- standard error and sampling distribution- estimation (page 881-894)

UNIT-II : TEST OF SIGNIFICANCE FOR SMALL SAMPLES:

(6 hours)

Student's t- distribution – To test the significance of the mean of a random sample – Testing difference between means & 2 samples (independent)- Testing difference between means & 2 samples (dependent samples) – (Page-910 – 923) (exercise problems not included).

Illustration – 28, 29, 30, 31, 32, 33, 34, 35, 36, 37.

UNIT-III : STATISTICAL QUALITY CONTROL:

(6 hours)

Introduction – control charts – \bar{x} charts – R Charts – Control charts for c (no. of defects per unit)-control chart for P(Fraction Defective).

(page- 1051 -1072) Illustration -1,2,3,4,5,6,7,8,9,10,11,12.(exercise problems not included).

UNIT-IV: INDEX NUMBERS:

(6 hours)

Introduction- Uses of index numbers – problems in the construction of index numbers – Weighted Aggregative Indices (page – 515 – 522) & (page – 529- 534)

Illustration 5,6,7 (Exercise problems not included)

UNIT -5 : ANALYSIS OF TIME SERIES:

(6 hours)

Introduction – Time series defined – utility of time series – Components of time series- Preliminary adjustment before analyzing time series - Method of least squares – Fitting straight line- trend - Second degree parabola.

(page – 589 – 600) & (page -613 – 622).

Illustration -10, 11,12,13,14, (Exercise problems not included)

TEXT BOOKS:-

“STATISTICAL METHODS”

S.P.Gupta, Sultan Chand & sons , Thirty – Seventh Revised Edition , 2008.

REFERENCE BOOKS :-

“Business Mathematics” by K.Alagar

Publications :- “Tata McGraw”



RANDOM PROCESS

Credits: 2

Subject Code: UIMAS62

Hours: 2hrs/week 30

Objectives:

- * To develop an interest in the subject and to pursue their studies
- * To develop an understanding and appreciation of the ideas and a familiarity with the pertaining technique

Unit-I : (6 hours)

Classification of random process-methods of description of a random process-special classes of random process-average value of random process-stationarity-examples of a SSS process (examples 1 to 9) page 337 – 357

Unit-II : (6 hours)

Autocorrelation function and its properties-cross- Autocorrelation function and its properties-ergodicity- mean ergodic process- mean ergodic theorem-correlation ergodic process. (examples 1,2,3,5 only)page no 358-369

Unit-III : (6 hours)

Power spectral density function- properties power spectral density function- wiener-khinechine theorem not included examples 6,7,8,9,10 page 372-375

Unit-IV : (6 hours)

Poisson process-properties of poisson process examples 1 to 6 only page no 434- 445

Unit-V: (6 hours)

Markov process-definition of Markov chain-Chapman-Kolmogorov theorem-classification of states of a Markov chain.

Text Books : **Probability, statistics and random process** second edition by T.Veerarajan Tata Mcgraw-hill publishing company limited, New Delhi

Reference Books :

Probability and queuing- Kandasamy
Stochastic process-Medhi

STATISTICS AND OPERATIONS RESEARCH

Credits: 2

Subject code : U1MAN61

Hours: 2hrs/week 30

Objectives:

- To develop the ability of understanding statistical concepts.
- To make the students apply the different statistical measures for any data.

Unit I: (6 hours)

Statistics: Definition-Collection of data—classification and tabulation of data—Frequency distribution—Diagrammatic presentation—Graphic presentation.

Unit II: (6 hours)

Mean—Median—Mode

Unit III: (6 hours)

Index numbers— simple aggregate method --Weighted index numbers—Laspeyre's , Paasche's, Fisher's ideal Index numbers, Marshall-Edgeworth and Kelly's method..

Unit IV: (6 hours)

Operations Research : Introduction—definition—modeling in OR—General solution methods for OR models—scientific method in OR—Applications of OR.



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Unit V:

(6 hours)

Mathematical formulations of LPP –Graphical solutions of LPP—General LPP—Canonical and standard forms of LPP.

Text Books:

1. Statistics by R.S.N.Pillai, Bagavathi, S.Chand & company Ltd., edition 2008.
2. Operations Research by Kanti swarup, P.K.Gupta, Man mohan, Sultan chand and sons, edition 2005.

Statistics: Unit I to Unit III

Unit I : Chapters 4,6,7,8

Unit II : Chapter 9

Unit III: Chapter 14 page no. 526 – 545

Operations research : Unit IV and Unit V

Unit V : Chapter 1 – 1.1,1.2,1.3,1.4,1.5,1.7

Unit V: Chapter 2 -2.2

Chapter 3 – 3.2 , 3.4 and 3.5

Course Name : **Bachelor of Science**Discipline : **Physics****COURSE SCHEME:**

Sem	Part	Subject	Hrs	Credit	Marks Int+Ext = Total	Subject Code	Revision
V	I	Core 5 Classical & Statistical Mechanics	4	4	25+75=100	U1PHC51	Revised
	II	Core 6 Digital Electronics	4	4	25+75=100	U1PHC52	Revised
	III	Core 7 Physical Optics & Spectroscopy	4	4	25+75=100	U1PHC53	Revised
	III	Core (Major) General Physics Lab	3	-	-	-	Revised
	III	Core (Major) Electronics Lab	3	-	-	-	Revised
	III	Core (Major) Digital Electronics Lab	2	-	-	-	New
	III	General Chemistry	4	4	25+75=100	U1CHA5X3	No Change
	III	Organic analysis Lab	2	-	-	-	No Change
	IV	Employability Skills	2	2	25+75=100	U1PS51	New
IV	NME - Basic Physics – I	2	2	25+75=100	U1PHN51	New	
VI	I	Core 8 Atomic & Nuclear Physics	4	4	25+75=100	U1PHC61	Revised
	II	Core 9 Material Science	4	4	25+75=100	U1PHC62	Revised
	III	Core 10 Bio Physics	4	4	25+75=100	U1PHC63	New
	III	Core (Major) General Physics Lab	3	5	40+60=100	U1PHC6P1	Revised
	III	Core (Major) Electronics Lab	3	5	40+60=100	U1PHC6P2	Revised
	III	Core (Major) Digital Electronics Lab	2	5	40+60=100	U1PHC6P3	New
	III	General Chemistry	4	4	25+75=100	U1CHA6X4	No Change
	III	Organic analysis Lab	2	2	40+60=100	U1CHA6PX	No Change
	IV	SBS6 Astrophysics	2	2	25+75=100	U1PHS61	New
IV	NME - Basic Physics – II	2	2	25+75=100	U1PHN61	New	

Objectives

- Nowadays most of the students prefer to join Professional Colleges after completing their higher secondary School studies. Only limited students wish to join Science Colleges.
- The curriculum of B.Sc Physics programme is now carefully designed to create interest in Physics and in order to prepare the students to meet the challenges of Society locally or globally.
- After the successful completion of this course, a B.Sc. degree holder would be able to face various competitive examinations and take up any job requiring the graduateship.
- Also, the degree holder will become equipped to undergo various post graduate courses in Physics and related subjects and to give full assistance to researchers in various research and development laboratories.



Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

1. 150 objective type questions with four alternatives for each question.
2. 30 questions to be asked from each unit.
3. Each question carries $\frac{1}{2}$ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries $\frac{1}{2}$ mark.
3. Total marks to be reduced to 25.

COURSE : III B.Sc. PHYSICS SEMESTER : V	CLASSICAL AND STATISTICAL MECHANICS CORE PAPER 5	Hours : 4 Credit : 4
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Contact hours per Week – 4 hours

Contact hours per Semester –60 hours

Subject Code: U1PHC51

objectives :

- To understand the classical concepts.
- To get knowledge about Lagrangian, Hamiltonian Mechanics.
- To understand the Fundamentals and distribution laws of statistical mechanics.

UNIT - I: (12hours)

Space and Time – Inertial frames – Mechanics of a particle: Conservation of linear momentum – Conservation of angular momentum – Conservation of energy – Mechanics of a system of particles: Conservation of linear momentum – Conservation of angular momentum – Conservation of energy – Constraints – Degrees of freedom under constraints – Forces of constraint – Difficulties introduced by the constraints and their removal.

UNIT - II: (12hours)

Generalized coordinates – Principle of virtual work – D'Alemberts principle – Lagrange's equations from D'Alemberts principle – Applications (Simple Pendulum, Compound Pendulum, Atwood's Machine) – Lagrange's equations in presence of Non-conservative forces – Hamilton's Principle and Lagrange's equations – Superiority of lagrangian mechanics over Newtonian Approach.

UNIT - III: (12hours)

Generalized momentum and cyclic coordinates – Hamiltonian function H – Physical significance – Hamilton's equations – Hamilton's equations in different coordinate system – Simple applications (Harmonic oscillator, motion of a particle in a central force field, Compound Pendulum)

UNIT - IV: (12hours)

Microscopic and Macroscopic systems – Ensembles – Phase Space – Probability – Basic Postulates of statistical mechanics – Definition of Mathematical probability – Thermo dynamic probability – Boltzmann's theorem on entropy and probability – statistical equilibrium – Maxwell-Boltzmann statistics – Maxwell-Boltzmann energy distribution law – Maxwell-Boltzmann's velocity distribution law.



UNIT - V:

(12hours)

Bose-Einstein statistics – Bose-Einstein distribution law – Photon gas – Planck's law of black body radiation (Derivation) – Deduction of Wien's and Rayleigh-Jean's law of black body radiation - Fermi-Dirac statistics – Fermi-Dirac distribution law – Electron gas- Fermi energy in crystalline solids – Comparison between the three statistics.

Books for study :

- Classical Mechanics – J.C. Upadhyaya, reprint 2012, Himalaya Publishing House.
Unit I: 1.2, 1.4, 1.6, 1.7, 2.3
Unit II: 2.4 – 2.7, 2.9, 2.11, 2.12
Unit III: 3.2, 3.4 – 3.7
- Modern Physics – R. Murugesan, Er. Kiruthiga Sivaprasath, 2013, 17th edition, S. Chand & Company pvt. Ltd.
Unit IV: 76.1, 76.2, 76.3, 76.6, 76.4, 76.5, 76.7, 75.3, 75.4
Unit V: 75.5, 75.10, 75.8, 75.9, 75. 11, 75.6, 76.9, 76.8, 75.7

Reference Books :

- Introduction to Classical Mechanics – R. Takwale and P.S Puranik. TMH Publishers
- Statistical Mechanics – R.K. Srivastava, J.Ashok, 2010, PHI.
- Fundamentals of Statistical Mechanics – B.B. Laud, 2009, New age International Publishers.

COURSE : III B.Sc. PHYSICS SEMESTER : V	DIGITAL ELECTRONICS CORE PAPER 6	Hours : 4 Credit : 4
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Contact Hours per Semester: 60 hrs

Contact hours per Week – 4 hours

Subject Code: U1PHC52

Objectives

To understand different number systems and Boolean algebra.

- To get knowledge about different logic gates.
- To study the different arithmetic circuits.
- To understand the functioning of Clocks, timer Circuits and Registers.

UNIT - I: Number Systems and Codes:

(12hours)

Binary, decimal, Octal, hexadecimal – conversion from one another – Binary addition, subtraction, multiplication and division – Binary subtraction by 1's and 2's complement – ASCII code – Excess 3 code – Gray code.

Combinational logic circuits:

Basic laws – Properties of Boolean Algebra – Duality theorem and their Proof.

UNIT - II: Logic gates:

(12hours)

Introduction – positive and negative logic designation – Logic gates – OR, AND, NOT, NAND, NOR, Universal gates and EX-OR gates.

Logic Families:

Introduction – Diode Resistor Logic (DRL) – OR, AND gates, RTL NOT gate, DTL NOR, TTL NOR, DTL NAND – Sum of products – Karnaugh map – two variable, three variable and four variable.

UNIT - III: Arithmetic Circuits:

(12hours)

Introduction – Half adder – Full adder – Half subtractor – Full subtractor – 4-bit binary parallel adder – 4-bit binary parallel subtractor.



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Combinational Circuits: Introduction – Multiplexers – Basic 4-input multiplexer – Demultiplexers – 1 to 4 Demultiplexers – Encoders – Decimal to BCD encoder – 3 to 3 encoder – Decoder – 3 to 8 decoder – BCD to decimal decoder – BCD to seven segment decoder.

UNIT - IV: Clocks and Timing circuits: (12hours)

Introduction – Clock waveforms – IC 555 timer – monostable and astable multivibrators.

Flip flops:

RS flip flops – clocked RS flip flop – JK flip flop – JK master slave flip flop – D flip flop.

UNIT - V: Registers: (12hours)

Introduction – Types of Shift Registers – Serial in, Serial out Shift Registers – Serial in – Parallel out shift registers.

Counters:

4-bit binary ripple counter – decade counter – binary ladder type – digital to Analog (DA) converter – Analog to Digital (AD) converter – successive approximation converter.

Book for study

1. Digital Principles and Applications by Donald Leach, Albert Paul Malvino, Goutam Saha, Tata Mc Graw Hill, (2001) Seventh Edition.

Unit: I, IV, V

Chapter 2 (section 2.2)

Chapter 3 (section 3.1)

Chapter 5 (section 5.1 – 5.8)

Chapter 6 (section 6.1 - 6.2)

Chapter 7 (section 7.1, 7.4, 7.5)

Chapter 8 (section 8.1 – 8.5, 8.8)

Chapter 9 (section 9.1 - 9.3)

Chapter 10 (section 10.1, 10.5)

Chapter 12 (section 12.2 – 12.5, 12.8)

2. Basic Electronics and Applied Electronics by Jose Robin and Ubald Raj, Indira Publications (2004).

Unit: II, III

Chapter 7 (Page number 324 - 329)

Chapter 8 (Page number 421 - 445)

Reference Books

1. Electronic Devices and Circuits by Salivahanan, Suresh Kumar and Vallavaraj, Tata McGraw Hill.
2. An Introduction to Integrated Electronics by V. Vijeyandran.
3. Digital Logic Circuits by Salivahanan, Arivazhahan.

COURSE : III B.Sc. PHYSICS SEMESTER : V	PHYSICAL OPTICS AND SPECTROSCOPY CORE PAPER 7	Hours : 4 Credit : 4
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Contact Hours per Semester: 60 hrs

Contact hours per Week – 4 hours

Subject Code: U1PHC53

Objectives

- To understand Nature of light.
- To get knowledge about properties of light.



- To impart knowledge about different types of Spectroscopy.

Unit I: (12hours)

Interference: Introduction – Light waves – Superposition of waves – Interference – Young's Double slit experiment – Coherence – conditions for interference – Thin film – Plane parallel film – Interference due to transmitted light – Newton's rings

Unit II: (12hours)

Frenel Diffraction: Introduction – Huygens-Fresnel theory – Fresnel's Assumptions – Rectilinear propagation of light – Zone plate – Distinction between interference and diffraction – Fresnel and Fraunhofer types of diffraction

Fraunhofer Diffraction: Introduction – Fraunhofer diffraction at a single slit – Plane diffraction grating.

Unit III: (12hours)

Polarization: Introduction – Preferential diffraction in a wave – Polarised light – Natural light – Anisotropic crystals – Calcite crystal – Huygen's explanation of double refraction – Huygen's construction of wavefronts – Experimental determination of principal refractive indices – Electromagnetic theory of double refraction – Types of Polarised light – Production of elliptically polarized light – Production of circularly polarized light – Analysis of polarized light.

Unit IV: (12hours)

Spectroscopy: Electromagnetic spectrum – Types of molecular energies – Different spectroscopic methods an overview – Spectral line width – Absorption and emission of radiation – Einstein's coefficients – Classification of molecules – Interaction of radiation with rotating molecules – Rotational spectra of rigid diatomic molecule – Isotope effect in rotational spectra – Intensity of rotational lines – Non-rigid rotator – Microwave spectrometer.

Unit V: (12hours)

Infra-red Spectroscopy: Vibrational energy of a diatomic molecule – Infra-red spectra preliminaries – Infra-red selection rule – Vibrating diatomic molecule – Diatomic vibrating rotator – IR spectrometer instrumentation.

Raman Spectroscopy: Introduction – Theory of raman scattering – Rotational raman spectra – Vibrational raman spectra – Mutual exclusion principle – Raman spectrometer.

Text books:

1. A Textbook of Optics—N.Subrahmanyam & Brijlal ,Twenty Fourth edition, 2010- S.Chand &Company Ltd.

Unit I- 14.1 -14.7, 15.1- 15.3, 15.6

Unit II- 17.1 – 17.7, 18.1, 18.2, 18.7

Unit III-20.1 – 20.4, 20.7 -20.12, 20.15, 20.18 -20.20

2. Molecular Structure and Spectroscopy---G.Aruldas, second edition, 2011-Prentice-Hall of India Private Ltd. New Delhi-110 001

Unit IV-1.1 – 1.6, 6.1 – 6.6, 6.14

Unit V- 7.1 – 7.5, 7.16, 8.1 – 8.6

Reference books:

1.Optics and Spectroscopy---R.Murugesan, Kiruthiga Sivaprasath, Eighth revised edition, S.Chand&Company Ltd. Ram Nagar, New Delhi-110055

2.Fundamentals of Optics---Devraj Singh, PHI Learning Private Ltd. New Delhi-110001

3.Geometrical and Physical Optics---P.K.Chakrabarti, New Central book agency(P)

Ltd,8/1 Chintamoni Das Lane,Kolkata 700009



COURSE : III B.Sc. PHYSICS SEMESTER : V & VI	Core Lab (Major) - General Physics	Hours : 3 Credit : 5
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List of Experiments

1. Refractive Index of Glass - Small angled prism.
 2. I – I' curve - Spectrometer.
 3. Grating (Minimum deviation) - Spectrometer.
 4. Resolving Power of a grating - Spectrometer.
 5. Hartmann's constants - Spectrometer.
 6. Series Resonance circuits - LCR circuit.
 7. Parallel Resonance circuits - LCR circuit.
 8. Self inductance - Maxwell's bridge (AC method).
 9. Self inductance - Owen's bridge (AC method).
 10. Impedance & Power factor - LR circuit.
 11. Impedance & Power factor - CR circuit.
 12. Mutual Inductance - Spot Galvanometer.
 13. Comparison of Mutual Inductance - Spot Galvanometer.
 14. High Resistance by leakage - Spot Galvanometer.
 15. Internal Resistance of a cell - Spot Galvanometer.
 16. Acceptance angle and Numerical aperture – Fiber optic cable.
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COURSE : III B.Sc. PHYSICS SEMESTER : V & VI	Core Lab (Major) - Electronics I	Hours : 3 Credit : 5
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List of Experiments

1. Characteristics of Zener diode.
 2. Characteristics of Transistor (CE mode).
 3. Full wave rectifier with π filter.
 4. Bridge rectifier with π filter.
 5. Voltage Regulator using Zener diode.
 6. Regulated power supply using IC's.
 7. Clipping & Clamping circuits using discrete components.
 8. Integrator & Differentiator circuits using discrete components.
 9. Logic gates using discrete components.
 10. Single Stage Amplifier (gain & Bandwidth).
 11. Two Stage Amplifier without feed back (gain & Bandwidth).
 12. Two Stage Amplifier with feed back (gain & Bandwidth).
 13. Hartley Oscillator (frequency & inductance of pair of coils).
 14. Colpitt's Oscillator (frequency & inductance of coil).
 15. Astable multivibrator using discrete components.
 16. Monostable multivibrator using discrete components.
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COURSE : III B.Sc. PHYSICS SEMESTER : V & VI	Core Lab (Major) – Electronics II	Hours : 2 Credit : 5
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List of Experiments

1. Construction of dual power supply.
2. Voltage Doubler and Tripler.
3. Integrator and Differentiator circuits using 741C.
4. Adder and Subtractor circuits using 741C.
5. Astable multivibrator circuit using 741C.
6. Astable multivibrator circuit using 555 IC.
7. Schmidt Trigger circuit using 555 IC.
8. NAND gate as a universal building block.
9. NOR gate as a universal building block.
10. Half adder and Full adder using IC's.
11. Four bit binary adder using IC's.
12. Shift Register.
13. Ring Counter.
14. Four bit binary Counter.
15. BCD Counter.
16. Four bit Binary Subtractor.

SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code: U1PS51

Contact Hours per Semester: 30

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I: Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. **(6-hours)**

Unit II: Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. **(6-hours)**

Unit III: Reasoning **(6-hours)**

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning **(6-hours)**

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V: **(6-hours)**

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
2. Quantitative Aptitude - R.S.Aggarwal
3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
4. Malayala Manorama Year Book, 2014



COURSE : UG III Year SEMESTER : V	NME - Basic Physics – I	Hours : 2 Credit : 2
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Contact hours per Week – 2

Contacts Hours Per Semester:30 hours

Subject Code: U1PHN51

Objectives

- To get knowledge about three states of matter.
- To study the different types of motion.

Unit I

(6 Hours)

Matter – Three states of matter – General properties of matter – Special properties of solid - Special properties of liquids - Special properties of gases – Kinetic theory of matter – Molecular motion in the three states of matter – Units – S.I. system – Dimensions.

Unit II

(6 Hours)

Rest and motion – Displacement – Speed and velocity – Uniform velocity – Translatory and Rotatory motion – Acceleration – Equations of Uniformly accelerated motion – Distance traveled in a particular second – Velocity-Time graphs – Scalar and Vector quantities – addition and subtraction of vectors – Rectangular components of vector – Multiplication of a vector by a scalar.

Unit III

(6 Hours)

Newton's laws of motion – Newton's first law of motion - Newton's second law of motion – Impulse - Newton's third law of motion – Uniform circular motion-Centripetal force – Banking of tracks – Centrifugal force – Centrifuge – Motion of falling bodies – Law of falling bodies – Kepler's Laws of planetary motion – Newton's universal law of Gravitation.

Unit IV :

(6 Hours)

Work – Power – Energy – Potential energy – Law of conservation of energy – Motion of a Simple pendulum – Friction – Laws of limiting friction – Friction , a Necessity and an Evil – Methods of reducing friction

Unit V:

(6 Hours)

Elasticity – Definitions – Cohesive and Adhesive forces – Surface tension – Viscosity – Osmosis – Osmotic pressure – Thrust and Pressure – Laws of liquid pressure – Pascal's law – Hydraulic brakes – Atmospheric Pressure – Bicycle pump – Water pump – Siphon

Book for study:

1. Principles of Physics, N.Subrahmanyam and Brij Lal, S. Chand & Company Ltd, 1996

Unit I : Sections 1.2 to 1.12.

Unit II : Sections 2.1 to 2.9, 3.1 to 3.4.

Unit III : Sections 4.1 to 4.5, 4.15 & 4.16, 4.18 & 4.19, 5.1 to 5.4.

Unit IV : Sections 6.1, 6.3 to 6.7 and 6.9, 6.10, 6.13, 6.14.

Unit V : Sections 8.1, 8.7 & 8.8, 8.16, 8.20 & 8.21, 9.1 to 9.3, 9.5, 10.1, 10.12 & 10.13 and 10.16

Reference Books :

1. Properties of Matter. Brijlal Subrahmanyam. 2004. S.Chand & Co.
2. Mechanics and Mathematical Methods. R.Murugesan. 1996. S.Chand & Co.



COURSE : III B.Sc. PHYSICS SEMESTER : VI	Atomic and Nuclear Physics CORE PAPER 8	Hours : 4 Credit : 4
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Contact Hours per Semester: 60 hrs

Contact Hours Per Week:4

Subject Code: U1PHC61

Objectives :

- To understand atom models.
- To study the quantum mechanical explanation for the atom model.
- To study the nuclear composition and its properties
- To understand the nuclear structure.
- To understand the Nuclear fission and fusion.

UNIT – I

12 Hours

Introduction – Rutherford's experiments on scattering of α particles – Bohr atom model – Effects of Nuclear motion on atomic spectra – Evidence in favour of Bohr's theory – Critical potential – Atomic excitation – Sommerfeld's relativistic atom model: Elliptic orbits for hydrogen – Total energy – Sommerfeld's relativistic theory – Fine structure of $H\alpha$ line. The vector atom model: spatial quantization – Spinning electron – Quantum numbers associated with the vector atom model – Coupling schemes – The Pauli Exclusion Principle – Some Examples of Electro configuration with their modern symbolic representations.

UNIT – II

12 Hours

Zeeman effect – Lorentz Classical theory of normal Zeeman effect – Quantum mechanical explanation of the normal Zeeman effect – Anomalous Zeeman effect – X rays: Introduction – production of X-rays – X-ray spectra – Characteristic X-ray spectrum – Moseley's law – Compton scattering: theory and experimental verification.

UNIT – III

12 Hours

Introduction to the nucleus – Classification of nuclei – General properties of nucleus – Binding energy – Nuclear stability – Theories of nuclear composition – Nuclear forces – Meson theory of nuclear forces.

UNIT – IV

12 Hours

Models of nuclear structure – The liquid drop model – The shell model – The collective model – Determination of nuclear radius: mirror nuclei method – Fermi gas model of the nucleus.

UNIT – V

12 Hours

Nuclear fission and fusion: Discovery – Nuclear fission – Energy released in fission – Bohr and Wheeler's theory of nuclear fission - Chain reaction – Critical size for maintenance of chain reaction - Atom bomb – Nuclear reactors – Nuclear fusion –Source of stellar energy – Thermonuclear reactions – Controlled thermonuclear reaction.

Books for study :

1. Modern Physics – R. Murugesan, Er. Kiruthiga Sivaprasath, 2013, 17th Edition S. Chand & Co Ltd..

Unit I: 6.1, 6.2, 6.4 - 6.6, 6.8 - 6.9, 6.11 - 6.15, 6.17

Unit II: 6.23, 6.25, 6.26, 7.1, 7.2, 7.11 – 7.14

Unit III: 27.1 - 27.8

Unit IV: 27.9 – 27.13, 28.6

Unit V: 35.1 – 35.9

Reference Books :

1. Modern Physics – Seghal Chopra & seghal sultan, Chand, 1998.



COURSE : III B.Sc. PHYSICS SEMESTER : VI	MATERIAL SCIENCE CORE PAPER 9	Hours : 4 Credit : 4
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Contact Hours per Semester: 60 hrs

Contact Hours Per Week:4

Subject Code: U1PHC62

Objectives

- To study bonding in solids and crystal structure.
- To understand the electronic theory of solids.
- To study Magnetic properties of solids.
- To understand the behaviour of Dielectric materials.
- To understand the principle and applications of LASER.

UNIT - I: Bonding in Solids:

12Hours

Types of chemical bonding in solids – ionic, metallic, molecular and Hydrogen bonds.

Crystallography:

Crystal Lattice and Crystal Structure – Unit cell – Crystal systems and Bravais Lattice – Miller indices – Crystal Structure of SC, BCC, FCC – Structure of diamond and Zinc Blende.

UNIT - II: Electronic Theory of Solids:

12Hours

Introduction – Classical free electron theory of solids – Heat capacity of solids – Eintein's theory, Debye's theory of specific heat.

Conducting Materials:

Introduction – Electron drift, mobility, mean free path, relaxation time – Sources of resistivity of metals – Concept of phonon – Electrical and thermal conductivities of metals – Wiedmann - Franz law – Thermal expansion.

UNIT - III: Magnetic Materials:

12Hours

Introduction – Different types of magnetic materials – Dia, para, ferro, antiferro and ferrimagnetism – Langevin's theory of dia and para magnetism – Weiss theory of para and ferromagnetism – Domain theory of ferromagnetism – Hard and soft magnetic materials – Magnetostriction materials – Ferrites – Hysterisis – Applications.

UNIT - IV: Dielectric Materials:

12Hours

Introduction – fundamental definitions in dielectric – Polar and non-polar dielectrics – Different types of polarization – electronic, ionic, orientations, space charge polarization – Classius Mosotti relation – Dielectric loss – Dielectric strength and breakdown – Applications.

UNIT - V: Laser Materials:

12Hours

Introduction – Emission and absorption of light – Spontaneous and stimulated emission – Laser – principle – properties – applications – Types of Laser – Ruby Laser – He – Ne Laser – semiconductor Laser.

Book for study

1. Material Science -Dr. M. Arumugam, Anuradha Publications, 2002 Edition.
(Units I, II, III, IV)
Unit I (Chapter 2 - Section 2.1 – 2.3,)
Unit I (Chapter 3- Section 3.1 – 3.4, 3.6, 3.7)
Unit II (Chapter 4 - Section 4.1 – 4.2, 4.13)
Unit II (Chapter 5 - Section 5.1, 5.3, 5.6 – 5.8)



Unit III (Chapter 7 - Section 7.1 – 7.6, 7.8)

Unit IV (Chapter 6 - Section 6.1 – 6.5, 6.7, 6.9, 6.10)

2. Modern Physics – R. Murugesan, S.Chand & Company Ltd, (2012) Sixteenth Edition. (Unit V)

Chapter 19 (Section 19.1 – 19.5)

Reference Books

1. Fundamentals of Solid State Physics – Saxena, Gupta and Saxena.
2. Introduction to Solids – Azaroff.
3. Solid State Physics – R.K. Puri, V.K. Babbu.

COURSE : III B.Sc. PHYSICS SEMESTER : VI	BIOPHYSICS CORE PAPER 10	Hours : 4 Credit : 4
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Contact Hours per Semester:60 hr

Contacts Hours Per Week:4

Subject Code: U1PHC63

Objectives:

To understand the applications of Thermodynamics and radioactivity to Biology.

- To study the Principle, working of different Microscopes used in Biology.
- To understand the Mechanism of human Ear.
- To get knowledge about different types of Spectroscopy.

UNIT - I: Thermodynamics

12 Hours

Introduction – Glossary – Laws of Thermodynamics and living organisms – first law of thermodynamics – Enthalpy (Heat Content) – Second law of Thermodynamics – Comparison of First and Second law of Thermodynamics – Entropy – second law of Thermodynamics Using the concept of Entropy – Physiological steady state – Efficiency and free energy in Thermodynamic System – Living body as thermodynamic system.

UNIT - II: Nucleonics in Biology and Medicine

12 Hours

Elementary particles – radioactivity – isotopes – X-rays – Detection and measurement of radioactivity.

UNIT - III: Microscopy in Biology and Medicine

12 Hours

Phase-Contrast Microscope – Interference Microscope – Fluorescence Microscope – Ultra-Violet Microscope – Electron Microscope – Scanning Electron Microscope – Scanning Electron-Probe Micro-Analysis – Centrifuge Microscope.

UNIT – IV: Bioacoustic

12 Hours

Sound and its Characteristic – Function of Ear as a Hearing Organ – Physical Basis of Hearing – Unit of Intensity of Sound – transmission of Sound wave in the inner ear- Travelling waves – Electrical Responses of Cochlea or Organ of Corti or Cochlear partition – Pitch Perception – Perception of Loudness – Mechanism of Hearing – Beats and Dissonance – Combination of Tones.

UNIT - V: Spectroscopies

12 Hours

Light Scattering (Rayleigh Scattering) – Optical Activity – Absorption Spectroscopy – Fluorescence Spectroscopy – Ultraviolet(UV) Spectroscopy – Atomic Spectroscopy – Electron Spin Resonance Spectroscopy – Mass spectroscopy.

Book for study

1. A Text Book of Biophysics, R.N. Roy, New Central Book Agency (P) Ltd. 2005 Edition.
Unit I (Chapter 3 - Section 3.1 – 3.13)
Unit II (Chapter 7- Section 7.1 – 7.6)



Unit III (Chapter 13 - Section 13.1 – 13.8)

Unit IV (Chapter 20 - Section 20.1– 20.4, 20.7 – 20.13)

2. Essentials of Biophysics – P. Narayanan, New age international publishers, 2009.

Unit V (Chapter 8 - Section 8.1 – 8.5, 8.8 – 8.10).

Reference Books

1. Biophysics, Vasantha Pattabhi & N.Gautham. Narosa Publishing House (2003).
2. Biophysics, G.R.Chatwal. Himalaya Publishing House (2011).

COURSE : III B.Sc. PHYSICS SEMESTER : VI	ASTROPHYSICS SKILL BASED SUBJECT 6	Hours : 2 Credit : 2
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Hours per week: 2 Credits: 2

Subject Code: U1PHS61

Contact Hours per Semester: 30 hrs

Objectives:

To understand the fundamental units used in Astrophysics, Thermodynamic equilibrium in stellar space.

- To study the stellar structure.
- To understand nuclear reaction rates in stellar interiors.

UNIT - I:

6 Hours

Mass, length and time scale in astrophysics – The emergence of modern astrophysics – Celestial coordinates – Magnitude scale – Application of Physics to astrophysics, Relevance of general relativity – Sources of astronomical information – Astronomy in different bands of electromagnetic radiation – Astronomical nomenclature.

UNIT - II:

6 Hours

Introduction – Theory of radiative transfer – Thermodynamic equilibrium revisited – Radiative transfer through stellar atmosphere.

UNIT - III:

6 Hours

Introduction – Basic equations of stellar structure – constructing stellar models – Some relations amongst stellar quantities.

UNIT – IV:

6 Hours

The possibility of nuclear reactions in stars – Calculation of nuclear reaction rates – Important nuclear reactions in stellar interiors – Detailed stellar models and experimental conformation – Stellar evolution.

UNIT - V:

6 Hours

Introduction – Basic equations of fluid mechanics – Jeans instability – Basic equations of MHD – Alfvén's theorem of flux freezing.

Book for study

1. Astrophysics for Physicists, Arnab Rai Choudhuri, Cambridge University Press. 2010 Edition.
Unit I (Chapter 1 - Section 1.1 – 1.8)
Unit II (Chapter 2- Section 2.1 – 2.4)
Unit III (Chapter 3 - Section 3.1 – 3.4)
Unit IV (Chapter 4 - Section 4.1– 4.5)
Unit V (Chapter 8 - Section 8.1 – 8.5)



COURSE : UG III Year SEMESTER : V	NME - Basic Physics – II	Hours : 2 Credit : 2
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Hours per week: 2 Credits: 2

Subject Code: U1PHN61

Contact Hours per Semester: 30 hrs

Objectives

- To get knowledge about Heat and Temperature.
- To get knowledge about the propagation of light, sound.
- To study the Xrays, radioactivity.

Unit I:

6 Hours

Concept of Heat and Temperature – Thermometry – Types of thermometers – Mercury as Thermometric substance – Mercury thermometer – Celsius, Fahrenheit and Reaumur scales – Relation between Celsius, Fahrenheit and Rankine scales of temperature – Errors in mercury thermometer

Unit II :

6 Hours

Propagation of light – Introduction – Transmission of light – Rectilinear propagation of light – Shadows – Eclipses – Lunar eclipse – Solar eclipse – Photographic camera – Epidiascope – Periscope – Visual angle – Colours of bodies – Appearance of Rose in different lights – Blue of the sky – Rainbow

Unit III :

6 Hours

Origin of sound – Material medium is a necessity – Musical sound and Noise – Characteristics of musical sound – Siren – Musical scale – Doppler effect - Ultrasonics – Applications of ultrasonic waves

Unit IV :

6 Hours

Electrical measurements – Definitions – International standard units for potential difference, current and resistance – charge and current – Heating effect of electric current – Introduction – Heat developed in a conductor carrying current – Joule's law of heating by electric current – Applications of Heating effect of electric current – Carbon arc – electric bulb – Fluorescent tubes

Unit V :

6 Hours

X-rays – Properties of X-rays – Uses of X-rays – radioactivity – Properties of radioactive radiations – Radioactive transformations – Nuclear energy – Nuclear fission – Chain reaction – Atom bomb – Nuclear reactor - Radiation hazards

Book for study:

1. Principles of Physics, N.Subrahmanyam and Brij Lal, S. Chand & Company Ltd, 1996

Unit I: Sections 11.1 to 11.8.

Unit II : Sections 18.1 to 18.7, 21.1, 21.3 to 21.5, 22.18, 22.19 and 22.21 & 22.22

Unit III : Sections 24.1 & 24.2, 25.1 to 25.3, 25.7, 25.10 and 25.14 & 25.15

Unit IV : Sections 35.1 to 35.3, 37.1 to 37.3 and 37.6 to 37.9

Unit V : Sections 39.9 to 39.11, 39.17 to 39.19, 39.40 to 39.44 and 39.47

Books for Reference:

1. Heat and Thermodynamics by Brijlal and Subrahmanyam. S. Chand & Co. 2004.

2. A Text Book of sound by Khanna and Bedi (1983) Atma Ram & Sons, New Delhi.

3. Fundamental of Physics, D. Halliday, Resnick and J. Walker, 6th Edition, Wiley, New York.



B.Sc. Allied Chemistry Syllabus

Part III – General Chemistry

Hours per week: 4

Credits:4

Subject Code: U1CHA5X3

Objectives:

- To understand the basic requirements of chemical calculations.
- To acquire fundamental knowledge in chemical bonding.
- To have fundamental knowledge idea about adsorption, catalysis and co-ordination compounds.
- To have an idea about water analysis.

Unit I – Basic chemical calculation

(12 hours)

Significant numbers – SI Units – dimensions – calculation of formula weight – understanding Avogadro number – mole concept – mole fraction of the solvent and solute – conversion of grams into moles and moles into grams – stoichiometric equations. Methods of expressing concentration of the solution – normality, molarity and molality – calculation on principle of volumetric analysis.

Unit II – Theories of bonding

(12 hours)

Types of the chemical bonds – ionic bond, covalent bond and coordinate bond – Valence bond theory – Valence Shell Electron Pair Repulsion theory – shapes of CH₄, H₂O and NH₃ molecules – Molecular orbital theory – Bonding and anti bonding orbital – MO theory applied to homonuclear molecules – H₂, O₂ and N₂ – comparative study of VB and MO theories.

Unit III – Coordination compounds

(12 hours)

Introduction – nomenclature – Werner's theory – coordination number and geometry – EAN rule – Valence Bond theory and bonding in octahedral and tetrahedral complexes – low spin and high spin complexes – Crystal field theory.

Unit IV – Adsorption and catalysis

(12 hours)

Adsorption:

Definition of various terms – characteristics of adsorption of gases on solids – physical and chemical adsorption – adsorption isotherm – application of isotherm.

Catalysis:

Definition – characteristic of catalysis – promoters and poisons – enzyme catalysis – acid-base and autocatalysis – application

Unit V – Water treatment

(12 hours)

Water quality analysis – chemical and physical analysis of water quality parameter - Standard prescribed for water quality by WHO and Indian standard – sea water as a source of drinking water.

Sewage treatment

Municipal waste water – sewage treatment – aerobic and anaerobic process – miscellaneous method of sewage treatment.

Reference Books

1. P.L. Soni, Textbook of Inorganic Chemistry, Sultan Chand & Sons, 2008.
2. R. Gopalan Textbook of Inorganic Chemistry, Universities Press Pvt. Ltd., 2012.
3. Puri, Sharma and Kalia, Principles of Inorganic Chemistry, S.Chand & Co., 2008.
4. B.K.Sharma, Goel Publishing House, 2006.
5. S.Bahl and Arun Bahl, Advanced Organic Chemistry, S.Chand & Co. Ltd., 2008.
6. R.T. Morrison and R.W. Boyd, Organic Chemistry, 6th edition, Prentice Hall of India Pvt. Ltd., 2000.



Part III – Allied Paper IV – General Chemistry

Hours per week: 4 Credits:4

Subject Code: U1CHA4X4

Objectives:

- To study the basics of chemical kinetics .
- To gain knowledge about the chromatographic techniques.
- To understand the role of bio-organic materials.
- To acquire basic idea about the cosmetics.

Unit I – Chemical kinetics

(12 hours)

Introduction – rate of reaction – rate law and rate constant – order and molecularity of a reaction. Rate equation of zero, first and second order reactions with examples. Half-life period.

Unit II – Chemical equilibrium and ionic equilibrium in solution

(12 hours)

Equilibrium: Definition. Chemical equilibrium – definition, characterization and equilibrium law, K_c and K_p relation – Le Chatelier principle – synthesis of ammonia (Haber process)

Acids, bases and salts – ionization of acid and base – buffer solution – solubility equilibria of sparingly soluble salts. Electrolyte – classification and example of electrolytes – Ostwald's dilution law.

Unit III – Chromatography

(12 hours)

Basic principles of common types of chromatography – Paper chromatography – thin layer chromatography – column chromatography – Ion exchange chromatography. Application of each technique.

Unit IV – Protein, Amino acids, Hormones and vitamins

(12 hours)

Definition – classification of proteins – colour reaction of proteins – Nucleic acids – nucleoside – nucleotides and general structure of DNA. Hormones – Classification – structure of some sex hormones – oestrone and progesterone. Vitamins – classification of vitamins – sources and deficiencies of Vitamins A, B₁, C, D, E and K (structural elucidation not required).

Unit V – Domestic chemical products

(12 hours)

Cosmetics- creams and types of creams – perfumes- talcum powder, deodorants – chemicals in food – antioxidants, artificial sweeteners, preservatives and edible colours. Detergents – constituents of detergents.

Reference Books

1. Puri, Sharma and Kalia, Principles of Inorganic Chemistry, S.Chand & Co., 2008.
2. R. Gopalan Textbook of Inorganic Chemistry, Universities Press Pvt. Ltd., 2012.
3. B.K.Sharma, Goel Publishing House, 2006.
4. P.L. Soni, Textbook of Organic Chemistry, Sultan Chand & Sons, 2008.
5. S.Bahl and Arun Bahl, Advanced Organic Chemistry, S.Chand & Co. Ltd., 2008.

Part III –Lab II – Organic analysis

Hours per week: 2 Credits: 2

Subject Code: U1CHA6PX

Objectives:

- To gain the fundamental knowledge about organic analysis

Organic analysis

Analysis of an organic compound containing one or two functional groups and confirmation by the preparation of a solid derivative – acids, phenols, aldehydes, ketones, esters, nitro compounds, primary amine , amides, anilides, aliphatic diamide and monosaccharides (unsaturated compounds should be avoided).



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Course Name : Bachelor of Science

Discipline : Chemistry

Sem	Part	Subject	Hrs	Cr	Int+Ext=Total	Code	Revision
V	III	Core Subject V – Organic Chemistry I	4	4	25+75= 100	U1CHC51	Revised
	III	Core Subject VI – Physical Chemistry I	4	4	25+75= 100	U1CHC52	Revised
	III	Core Subject VII – Inorganic Chemistry I	4	4	25+75= 100	U1CHC53	Revised
	III	Core lab III – Organic Preparations and Gravimetric Estimations	3	-	---	---	-
	III	Core lab IV – Organic Analysis and Organic Estimations	3	-	---	---	-
	III	Core lab V – Physical Chemistry experiments	2	-	---	---	-
	III	Allied II (Physics)	4	4	25+75= 100	U1PHA5X3	No Change
	III	Allied II Lab(Physics)	2	-	---	---	Revised
	IV	Skill Based Subject V – Employability Skills	2	2	25+75= 100	U1PS51	New
	IV	Non Major Elective I – Polymer Chemistry	2	2	25+75= 100	U1CHN51	New

Sem	Part	Subject	Hrs	Cr	Int+Ext=Total	Code	Revision
VI	III	Core Subject VIII – Organic Chemistry II	4	4	25+75= 100	U1CHC61	Revised
	III	Core Subject IX – Physical Chemistry II	4	4	25+75= 100	U1CHC62	Revised
	III	Core Subject X – Inorganic Chemistry-II	4	4	25+75= 100	U1CHC63	Revised
	III	Core lab III – Organic Preparations and Gravimetric Estimations	3	4	40+60= 100	U1CHC6P1	Revised
	III	Core lab IV – Organic Analysis and Organic Estimations	3	4	40+60= 100	U1CHC6P2	Revised
	III	Core lab V – Physical Chemistry experiments	2	4	40+60= 100	U1CHC6P3	Revised
	III	Allied II (Physics)	4	4	25+75= 100	U1PHA6X4	No Change



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III	Allied II Lab(Physics)	2	2	40+60= 100	U1PHA6PX	Revised
IV	Skill Based Subject VI – Medicinal Laboratory Technology and Clinical Biochemistry	2	2	25+75= 100	U1CHS61	Revised
IV	Non Major Elective II – Industrial Chemistry	2	2	25+75= 100	U1CHN61	Revised

Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

1. 150 objective type questions with four alternatives for each question.
2. 30 questions to be asked from each unit.
3. Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries ½ mark.
3. Total marks to be reduced to 25.

Semester-V ORGANIC CHEMISTRY I

Hours per week: 4

Credits: 4

Subject Code:U1CHC51

Objectives:

- To impart the knowledge of dye and its application.
- To understand the concept of aromaticity and aromatic substitution.
- To appreciate the synthesis of new compounds and their uses.
- To have a bird eye view on polynuclear hydrocarbons and green chemistry.

Unit-I: Dyes

(12 hours)

Definition- theory of colour and constitution- classification of dyes according to their structure and application.

Azo dyes- preparation of methyl orange, congo red.

Triphenyl methane dyes- preparation of malachite green, rosaniline and crystal violet.

Phthalein dyes- preparation of phenolphthalein, fluorescein and eosin.

Vat dyes- preparation of indigo.

Unit-II: Derivatives of benzene:

(12 hours)

Halogen compounds- preparation and properties of fluorobenzene, iodobenzene, 1,3,5-tribromobenzene.

Hydroxybenzene-acidic character of phenols- effect of substituents on acidity of phenols- mechanism of Reimer-Timann reaction, Kolbe reaction- preparation of cresols, catechol, resorcinol, quinol and euginol.

Aromatic nitro compounds- preparation and properties of nitrotoluenes.

Aromatic amino compounds- preparation by reduction of nitro compounds and from chlorobenzene- effect of substituents on the basic character of aromatic amines- comparison between aliphatic and aromatic amines- Estimation of aniline- preparation of sulphanilic acid, nitroanilines and phenylene diamines- preparation and synthetic application of benzene diazonium chloride.

Unit-III: Aromatic carbonyl compounds

(12 hours)

Aldehyde and ketones: preparation and uses of cinnamaldehyde- coumarin- vanillin, Micheler's ketone, benzoquinones, Quinone-oxime tautomerism- mechanism of Perkin's reaction, Claisen reaction, Cannizzaro's reaction, Knoevenagel reaction, Benzoin condensation, Gattermann aldehyde synthesis, phenolic ketones- phloroacetophenone-preparation- Houben- Hoesch synthesis.

Unit-IV: Aromatic carboxylic acids

(12 hours)



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Aromatic carboxylic acids- effect of substituents on acidic character- preparation, properties and uses of phenylacetic acid, mandelic acid, cinnamic acid- properties and uses of phthalic acid, isophthalic acid and terephthalic acid.

Substituted acids- preparation and properties of salicylic acid, aspirin, anthranilic acid.

Aromatic sulphonic acids: preparation, properties and uses of benzene sulphonic acid, saccharin, chloramine-T and dichloramine-T.

Unit-V: Polynuclear hydrocarbon and Green chemistry: (12 hours)

Isolated system- preparation, properties and uses of diphenyl, triphenylmethane and stilbene.

Condensed ring system: synthesis, reaction and the structure of naphthalene, anthracene and phenanthrene - preparation, properties and uses of naphthylamines, naphthols, naphthaquinones and alizarin- structural elucidation of alizarin.

Green chemistry- Principle- Green solvents

References:

1. I.L. Finar, Organic Chemistry Vol.I ELBS, 6th edition, 1973.
2. R.T. Morrison and R.W.Boyd, Organic Chemistry, Prantice Hall of India private Ltd, 6th edition, 2001.
3. P.L.Soni, Organic Chemistry, Sultan Chand & Sons,New Delhi, 29th edition,2007.
- 4 B.S.Bahl and Arun Bahl, Advanced Organic Chemistry, S.Chand & Company Ltd.,Ram Nagar, New Delhi, 14th edition,1996.
5. M.K. Jain and S.C. Sharma, Modern Organic Chemistry, Vishal Publishing Co,Jalandhar-Delhi,4th edition,2013.
6. V.Kumar An Introduction to Green Chemistry, Vishal Publishing Company, Delhi.

Physical Chemistry I

Hours per week: 4

Credits: 4

Subject Code:U1CHC52

Objective:

- This paper aims to introduce the concepts of thermodynamics and its applications in refrigeration and in chemical reactions.
- It also includes the study of the dynamics of chemical reaction, the basic need for the determination of the actual path-way of the reaction.
- Finally the basic principles of group theory help the students for the better understanding of spectroscopic techniques.

Unit I: Thermodynamics I

(12 hours)

Terms used in thermodynamics- thermodynamic processes- work, energy and heat- First Law – statement – mathematical formulation – internal energy – enthalpy or heat content – heat capacity at constant volume (C_V) and at constant pressure (C_P) – relationship between C_p and C_v – work done, heat change and enthalpy change for reversible isothermal expansion and compression of an ideal gas – calculation of q , w , ΔE and ΔH for reversible adiabatic expansion of an ideal gas – relation between T , V and P of an ideal gas undergoing adiabatic reversible expansion – application of first law to non ideal gas undergoing reversible isothermal and adiabatic expansion – Joule effect – Joule Thomson effect – Joule Thomson coefficient in the case of ideal and real gases – inversion temperature and its physical significance.

Unit II: Thermodynamics II

(12 hours)

Thermochemistry- Hess's law of constant heat summation – Kirchoff's equation – Bond enthalpies and its applications in the determination of enthalpies of reactions, enthalpies of formation of compounds and resonance energy.

Limitations of first law of thermodynamics – spontaneous process – statement of second law – conversion of heat into work – thermodynamic efficiency – Carnot cycle – refrigeration cycle – Carnot theorem – Kelvin scale of temperature.

Concept of entropy – physical significance of entropy – derivation of the concept of entropy – Other state functions- Helmholtz work function – Gibbs free energy – variation of free energy with temperature and pressure Maxwell's relations- Thermodynamic equation of states- Criteria for reversible and irreversible processes in terms of ΔS , ΔG , ΔH and ΔA – limitations of these criteria- Gibbs-Helmholtz equation and its application.

Unit III: Thermodynamics III

(12 hours)

Thermodynamics of open systems- Partial molar quantities – definition and significance of chemical potential –Gibbs-Duhem equation – variation of chemical potential with temperature and pressure–Clausius-Clapeyron equation – derivation and applications – Concept of fugacity- determination- physical significance-concept of activity- activity coefficient- reference or standard states of gas, liquid and solid.

Application of thermodynamics to various type of equilibria – equilibrium constant and free energy changes – Van't Hoff reaction isotherm and Van't Hoff isochore – thermodynamic interpretation of law of mass action and Le-Chatelier principle.

Nernst heat theorem- formulation of third law of thermodynamics- concept of residual entropy.

Unit IV: Chemical kinetics

(12 hours)



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Terms in chemical kinetics- rate equation- rate constant – order of a reaction- units of rate constants- molecularity of a reaction- Derivation of rate constants for zero, first and second order reactions – characteristics of these reactions and examples- pseudo-unimolecular reactions – Experimental determination of order of a chemical reaction – use of differential and integral rate expressions - half life method- isolation method. Kinetic study of some specific reactions- Catalytic decomposition of hydrogen peroxide – decomposition of dinitrogen pentoxide. Inversion of cane sugar and acid catalysed hydrolysis of ester.

Unit V: Group theory

(12 hours)

Molecular symmetry elements and symmetry operations – classification of group- definitions, theorems and grammar of group theory- sub groups- product of symmetry operations – classes and similarity transformation – group multiplication table – Classification of molecules into point groups – rotational (C &S), Dihedral (D) and T- type (Td &Oh) point groups with examples. Vector and matrix algebra – transformation matrices of symmetry operations.

Recommended Books

1. B.R. Puri, L.R. Sharma and M.S. Pathania, "Principles of Physical Chemistry, (2003) Vishal Publishing Co., Jalandhar.
2. P.L. Soni, Principles of Physical Chemistry, S. Chand & Co., New Delhi, 1980.
3. B.S. Bahl, G.D. Tuli and Arun Bahl, Essentials of Physical Chemistry, S.Chand & Co., New Delhi, 2000.
4. S. Glasston, Thermodynamics for Chemists, East-West Press Private Ltd., New Delhi, 1969.
5. J. Rajaram and J.C. Kuriakose, Thermodynamics for students of chemistry, Shoban Lal Nagin Chand & Co., (1986).
6. K.J. Laidler, Chemical Kinetics, 3rd Edn., Harper International Edn., London (1987).
7. K.J. Laidler, Theories of Chemical Reaction Rates, McGraw Hill Book Co., London (1969).
8. C. Kalidas, Chemical Kinetic Methods, New Age International, 1996.
9. F.A.Cotton, Chemical Applications of Group Theory, 3rd Edn., John Wiley & Sons, New York (1999).
10. G.Davidson, Introduction to Group Theory for Chemist, Applied Science Publishers Ltd., London (1971).
11. V.Ramakrishnan and M.S. Gopinath, Group theory in chemistry, 2nd Edn., Vishal Publications (1991).
12. K.V. Raman, Group theory and its application to chemistry, Tata McGraw-Hill Pub. Co., (1990)

Part III Core subject VII – Inorganic Chemistry I

Hours per week: 4

Credits: 4

Subject Code: U1CHC53

Objectives

- To acquire knowledge on electron transfer reaction.
- To acquire knowledge on acid – base concepts.
- To acquire knowledge on the rare earth elements.
- To understand the bonding concept in metal carbonyls.
- To gain the fundamental idea on the applications of computer languages in chemistry.

Unit I: Concept of electron transfer

(12 hours)

Oxidation and reduction - electronic concept - oxidation number - calculation of oxidation number of elements in compounds and ions - redox reaction- Important oxidants and their reduction half reactions - Fe(III) and KMnO_4 . Important reductants and their oxidation reactions - Fe(II) and oxalic acid. Methods of balancing redox reactions. Oxidising agent - reducing agent- equivalent weight of oxidizing agent- equivalent weight of reducing agent.

Unit II: Concepts of acids and bases

(12 hours)

Arrhenius concept – Bronsted-Lowry concept - conjugate acid-base pair - Amphiprotic substances - levelling effect - Lux-Flood concept - Relative strength of acids and bases: substituent effect- steric effect - F-strain - Usanovich concept- HSAB concept.

Classification of solvents - chemical reaction in liquid ammonia: precipitation reactions- Acid-base reactions - complex formation reactions - Ammonolysis reactions - protolysis reaction - solvation reaction - metal-ammonia solution and their reactions.

Unit III: f - block elements

(12 hours)

Lanthanide series - electronic configuration - oxidation state - atomic and ionic radii of M^{3+} ions - Lanthanide contraction - colour of M^{3+} cations - occurrence, extraction of lanthanides from monazite sand.

Actinide series - trans-uranic elements – occurrence - radioactive nature- electronic configuration - oxidation state - atomic and ionic radii of M^{3+} ions - Actinide contraction - colour of M^{3+} cations. Comparison between lanthanides and actinides.

Unit IV: Metal carbonyls

(12 hours)

π acid complexes - low oxidation state of metal in metal carbonyls. Classifications of metal carbonyls - EAN rule - EAN rule applied to metal carbonyls. Bonding in metal carbonyls - IR spectra of metal carbonyls. Preparation, properties and structure of $\text{Cr}(\text{CO})_6$, $\text{Mn}_2(\text{CO})_{10}$, $\text{Fe}(\text{CO})_5$, $\text{Fe}_2(\text{CO})_9$, $\text{Fe}_3(\text{CO})_{12}$, $\text{Co}_2(\text{CO})_8$, $\text{Ni}(\text{CO})_4$ and $\text{V}(\text{CO})_6$.

Unit V: Applications of C language in chemistry

(12 hours)

Introduction to computers – C-language – Introduction - character set - keywords and identifiers - constants, variables, data types and operators - computation of some simple problems in chemistry - Half-life period,



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normality, molarity and molality of a solution - Root mean square velocity - Ionic strength of an electrolyte - Beer-Lambert's law.

Reference Books

1. Sathya Prakash's Modern Inorganic Chemistry, R.D.Madan, S.Chand & Co., New Delhi, 2005.
2. Advanced Inorganic Chemistry, Sathya Prakash, Volume I and II, S.Chand & Co., New Delhi, Revised reprint 2013.
3. Vogel's Text Book of Quantitative Chemical Analysis, V Edition, ELBS, 1989.
4. B.R. Puri, L.R. Sharma and K.C. Kalia, Principles of Inorganic Chemistry, Milestone Publishers, 2010.
5. K.V. Raman, Computers in Chemistry, Tata McGraw Hill, 1993.
6. Bertini, H.B.Gray, S.J. Lippard and J.S. Valantine, Bioinorganic Chemistry, Viva Books Private Limited., 1998.
7. R. Gopalan and V. Ramalingam, Concise Coordination Chemistry, Vikas Publishing House Private Limited, New Delhi, 2010.

SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code: U1PS51

Contact Hours per Semester: 30

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I : Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. **(6-hours)**

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. **(6-hours)**

Unit III: Reasoning **(6-hours)**

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning **(6-hours)**

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V: **(6-hours)**

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
2. Quantitative Aptitude - R.S.Aggarwal
3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
4. Malayala Manorama Year Book, 2014

Non Major Elective-I

Polymer Chemistry

Hours per week: 2

Credits: 2

Subject Code:U1CHN51

Objectives

- To study the basics of polymer chemistry
- To learn the knowledge about the polymers and polymerization techniques.

Unit I: Polymer Chemistry – Introduction **(6 hours)**

Polymers - Classification of polymers: Linear polymers, non-linear or branched polymers, cross – linked polymers, homo chain and hetero chain, homopolymers, co-polymers, block polymers and graft polymers (definition and examples only).

Unit II: Individual polymers - I **(6 hours)**

Preparation and uses of polyethylene, polystyrene, polyacrylonitrile, PVC and polytetrafluoro ethylene.

Unit III: Individual polymers – II **(6 hours)**

Preparation and uses of, polyamides (Kelvar), polyurethanes, phenol-formaldehyde, urea-formaldehyde and epoxy resins.

Unit IV: Polymerization techniques and uses of polymers **(6 hours)**

Polymerization techniques: Bulk, solution, suspension, emulsion, polymerizations.

Uses of polymers in electronics and biomedicine.

Unit V: Polymer processing **(6 hours)**

Polymer processing – plastics (thermo and thermosetting), elastomers, fibres, compounding, plasticizers, colorants, flame retardants.



Suggested readings:

1. V.R.Gowariker, N.V.Viswanathan and Jayadev Sreedhar, "Polymer Science", Wiley Eastern Ltd., New Delhi, 1986.
2. B.K.Sharma, "Polymer Chemistry", Goel Publishing House, Meerut, 1989.
3. F.W.Billmeyer, "Textbook of Polymer Science", 3rd edn., John Wiley and Sons, New York, 1984.

Semester-VI

ORGANIC CHEMISTRY II

Hours per week: 4

Credits: 4

Subject Code:U1CHC61

Objectives:

- To create awareness in learning re-arrangement reactions.
- To provide basic knowledge in the spectroscopy.
- To inculcate the curiosity in learning conformational analysis.
- To offer sufficient basic knowledge in elucidating the structure of natural products.

Unit-I: Molecular rearrangement & Free radical

(12 hours)

Molecular rearrangement –reaction-definition- Types of molecular rearrangement reaction- Detailed mechanism of the following rearrangement – Pinacol-pinacolone, Hofmann, Benzil-benzilic acid, Claisen, Benzidine, Fries rearrangement.

Free radicals: Definition-preparation and reactions of short lived free radicals- stability of free radicals- detection of free radicals- chain reactions. Mechanism of Sandmeyer reaction, Gomberg reaction and Hofmann-Loeffler reaction.

Unit-II: Spectroscopy of organic molecules

(12 hours)

UV Spectroscopy-absorption laws- types of electronic transition- bathochromic, hypsochromic, hyperchromic and hypochromic effects- applications of UV to organic compounds- Woodward-Fieser rule as applied to conjugated enes and α,β -unsaturated ketones.

IR Spectroscopy- Introduction-mode of vibration-selection rule-group frequency concept-application of IR to organic compounds-Finger print region- effect of hydrogen bond.

NMR Spectroscopy: Introduction- chemical shift- shielding and deshielding effects-factors influencing chemical shift value-solvent used-splitting of signals- coupling constants-NMR spectra of simple organic compounds like bromo ethane, ethanol, propanal, benzene and benzaldehyde.

Unit-III: Alicyclic compounds & Conformational analysis

(12 hours)

Alicyclic compounds: General methods of preparation and properties of cycloparaffins- Bayer's strain theory and its modification.

Conformational analysis: Difference between configuration and conformation. Fischer, Sawhorse and Newmann projection formula- conformational analysis of ethane, n-butane, 1,2-dichloro ethane, cyclohexane and monosubstituted cyclohexane.

Civetone and muscone –any one method of synthesis- structure only (elucidation is not necessary)

Unit-IV: Alkaloids and Vitamins

(12 hours)

Alkaloid-General methods of isolation and general methods for determining the structure of alkaloids- classification of alkaloids- structural elucidation of the following alkaloids – Coniine, piperine and nicotine.

Vitamins- definition- classification- Thiamine, Riboflavin, Pyridoxine and Ascorbic acid- occurrence and biological importance- structural elucidation of Pyridoxine and Ascorbic acid.

Unit-V: Terpenes, Proteins and nucleic acids

(12 hours)

Terpenes-Introduction, classification, occurrence and isolation-general properties- isoprene rule- general methods for determining structure – structural elucidation of citral, geranial and terpineol.

Proteins and nucleic acid: definition- classification of proteins- colour reactions of proteins- primary, secondary, tertiary and quaternary structure of proteins(an elementary idea only)- Nucleic acids-Nucleosides and Nucleotides-RNA and DNA general structure.

References:

1. I.L. Finar, Organic Chemistry Vol.I, ELBS, 6th edition, 1973.
2. I.L. Finar, Organic Chemistry Vol.II, ELBS, 6th edition, 1973.
3. R.T. Morrison and R.W.Boyd, Organic Chemistry,Printice Hall of India private Ltd, 6th edition, 2001.
4. P.L.Soni, Organic Chemistry, Sultan Chand & Sons,New Delhi, 29th edition,2007.
5. B.S.Bahl and Arun Bahl, Advanced Organic Chemistry, S.Chand & Company Ltd, Ram Nagar, New Delhi,14th edition,1996.
6. P.S Kalsi, Spectroscopy of organic compounds, New Age International (P) Ltd, 6th



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edition, 2004.

7. B.M. Silverstein, G.C. Bassler and T.C. Morrill, Spectroscopic Identification of Organic Compounds. John Wiley & Sons Inc, 6th edition, 2005.

8. William Kemp, Organic Spectroscopy, Mac Millan Press Ltd, 1st edition, 1975.

9. Y.R. Sharma Elementary Organic spectroscopy, S.Chand & Co, New Delhi, Fourth Edition,

2007

10. M.K. Jain and S.C. Sharma, Modern Organic Chemistry, Vishal Publishing Co, Jalandhar-Delhi, 4th edition, 2013.

Physical Chemistry II

Hours per week: 4

Credits: 4

Subject Code: U1CHC62

Objectives:

- This paper aims to introduce the concepts of electrochemistry and its applications
- It introduces the concepts of spectroscopy and dealt-with the applications of microwave, IR, Raman, NMR and EPR in the structural elucidation of compounds.
- Finally the basic principles of photochemistry help the students for the better understanding of photo physical and chemical processes.

Unit I: Electrochemistry I

(12 hours)

Electrolytic conduction- Faraday's law of electrolysis- conductivities of ions- specific, equivalent and molar conductance- measurement of conductance of electrolytes- variation of conductance with dilution- equivalent conductance at infinite dilution- Kohlrausch's law of independent migration of ions and its applications- Transference number and its determination by moving boundary method- Applications of conductance measurements- conductometric titrations.

Theories of weak and strong electrolytes- Ostwald dilution law- Debye-Huckel theory of strong electrolytes- Activity coefficients of electrolytes- ionic strength- Debye-Huckel Limiting Law.

Unit II: Electrochemistry II

(12 hours)

Concepts of Electrochemical cells – cell diagram and terminology – conventions regarding signs of cell e.m.f. – calculation of cell e.m.f. from single electrode potential – standard e.m.f. of the cell – Nernst equation- Reversible and irreversible cells – thermodynamics and electromotive force – calculation of ΔG , ΔH , ΔS and K for cell reactions- Single electrode potential and cell e.m.f. measurement of single electrode potential – types of electrodes – reference electrode-calomel electrode – standard electrode potential – electrochemical series – experimental determination of cell e.m.f. – Weston cadmium cell Types of electrochemical cells- Commercial cells – primary and secondary cells – dry cell – lead storage cell – Ni-Cd cell – H_2 - O_2 fuel cells.

Unit III: Molecular Spectroscopy I

(12 hours)

Introduction – electromagnetic radiation – different regions – absorption spectroscopy – molecular spectra – types of molecular spectra.

Rotational spectra of diatomic molecules – rigid rotator – selection rule – determination of moment of inertia and bond length – intensities of spectral lines – effect of isotopic substitution.

Vibrational spectra – IR spectra of diatomic molecules – Hooke's law – simple harmonic oscillator- force constant – selection rule – vibrational energy level diagram – anharmonic oscillator – applications – force constant determination. Modes of vibration in polyatomic molecules – vibrational spectra of H_2O and CO_2 - Rotational vibrational spectra of diatomic molecules.

Unit IV: Molecular Spectroscopy II

(12 hours)

Raman spectra – Raman effect – Stokes and anti-Stokes lines – quantum theory of Raman effect – experimental study – comparison between IR and Raman spectra – applications of Raman spectra- Electronic Spectroscopy – Franck-Condon principle-Types of electronic transition- Nuclear magnetic resonance spectroscopy – theory of NMR spectroscopy- types of NMR spectroscopy- Position of NMR signals- chemical shift- number and position of NMR signals- NMR spectra of simple organic molecules methanol, methyl chloride and ethanol- Electron paramagnetic resonance spectroscopy – principle – difference between NMR and EPR –EPR spectrum of hydrogen.

Unit V: Photochemistry

(12 hours)

Definition of photochemical reactions – comparative study of thermal and photochemical reactions – laws of photochemistry – Lambert and Beer law – Grothus-Draper law – Stark-Einstein law – quantum efficiency and its determination – consequence of light absorption by atoms and molecules – Jablonski diagram -photo-physical processes – fluorescence, phosphorescence and other deactivating processes –Photochemical processes – kinetics of photochemical reactions. Gaseous reactions: Hydrogen-halogen reactions (formation of HCl and HBr and decomposition of HI). Photochemical equilibrium – flash photolysis – photosensitization, chemiluminescence – bioluminescence.

Recommended Books

1. B.R. Puri, L.R. Sharma and M.S. Pathania, "Principles of Physical Chemistry, (2003) Vishal Publishing Co., Jalandhar.
2. P.L. Soni, Principles of Physical Chemistry, S. Chand & Co., New Delhi, 1980.
3. B.S. Bahl, G.D. Tuli and Arun Bahl, Essentials of Physical Chemistry, S.Chand & Co., New Delhi, 2000.



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4. B.Viswanathan, S. Sundaram, R. Venkataraman, K. Rengarajan and P.S. Raghavan, "Electrochemistry-Principles and Applications" S. Viswanathan Printers and Publishers Pvt., Ltd., (2007)
5. D.R. Crow, "Principles and Application of Electrochemistry", Chapman Hall, London (1988).
6. J.O.M. Bockris and A.K.N. Reddy, "Modern Electrochemistry" Vol. I & II, Plenum Press, New York (1970).
7. L.Antropov, "Theoretical Electrochemistry" Mir Publications, Moscow (1972)
8. S.Glasstone, An Introduction to Electrochemistry, East west Press private limited, New Delhi,2000.
9. C.N.Banwell and E.M.McCash, Molecular Spectroscopy, Tata McGraw Hill, 4th Edn., (1995).
10. G. Aruldhas, "Molecular Structure and Spectroscopy", Prentice-Hall of India Pvt., Ltd., New Delhi (2001)
11. K.K. Rohatgi Mukherjee, Fundamentals of Photochemistry, New age international private limited,2000.
12. N.J. Turro, Modern Molecular Photochemistry, Benjamin Cummings 1965.

Part III Core subject X – Inorganic Chemistry - II

Hours per week: 4

Credits: 4

Subject Code:U1CHC63

Objectives:

- To understand the basic theories of inorganic analytical Chemistry
- To acquire fundamental knowledge on Chromatographic techniques
- To study the basics of Bio-inorganic Chemistry

Unit I: Theory of analytical chemistry – I

(12 hours)

Role of solubility products in the precipitation of various cations in different group in qualitative analysis. Elimination of interfering acid radicals in the analysis of basic radicals. Types of titrimetric reactions - neutralization, redox, iodo and iodimetric, precipitation and complexometric titrations.

Unit II: Theory of analytical chemistry – II

(12 hours)

Formation of precipitate - Precipitation methods- Conditions of precipitation - Co precipitation - Post precipitation. Digestion, Washing and Drying/Ignition of the precipitate.

Thermoanalytical method –Principle of thermogravimetry, differential thermal analysis- Instrumentation for TGA and DTA – factors affecting TGA and DTA curves- TGA and DTA of calcium oxalate monohydrate.

Unit III: Theory of analytical chemistry - III

(12 hours)

Accuracy – precision – errors- absolute error - relative error - classification of errors - minimisation of errors - significant figures - rules for identifying significant figures - statistical treatment of data: Range, average, median, deviation, mean deviation, relative mean deviation, standard deviation, variance, co-efficient of variance, correlation co-efficient. Rejection of experimental data: Student's t-test and Q-test. Analysis of experimental results - graphical method - curve fitting - least square method.

Unit IV: Chromatography

(12 hours)

Principle of chromatography – classification - column chromatography - adsorbents, preparation of column, elution, recovery of substance, Thin layer chromatography - choice of adsorbent and solvent preparation - R_f value. Paper chromatography – principle - solvent - factors affecting R_f values - separation of amino acid mixtures - Ion exchange chromatography-principle – resins - action of resins, experiment techniques, applications.

Unit V: Bio-inorganic chemistry

(12 hours)

Porphyrim ring system – metalloporphyrin - Iron porphyrins - structure and functions of hemoglobin and myoglobin - Bohr effect - explanation for cooperativity effect.

Structure and functions of chlorophyll – ionophores - sodium-potassium pump. Toxicity of heavy metal such as Cu, Cr, As, Hg and Pb.

Reference Books

1. Sathya Prakash's Modern Inorganic Chemistry, R.D.Madan, S.Chand & Co., New Delhi, 2005.
2. Advanced Inorganic Chemistry, Sathya Prakash, Volume I and II, S.Chand & Co., New Delhi, Revised reprint 2013.
3. Vogel's Text Book of Quantitative Chemical Analysis, V Edition, ELBS, 1989.



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4. B.R. Puri, L.R. Sharma and K.C. Kalia, Principles of Inorganic Chemistry, Milestone Publishers, 2010.
5. B.K. Sharma, Instrumental methods of Chemical Analysis, Goel Publishing House 23rd Edition, 2004.
6. V.K. Srivastava, and K.K. Srivastava, Introduction to Chromatography- Theory and Practice, S. Chnd & Co., 1987.
7. Bertini, H.B.Gray, S.J. Lippard and J.S. Valentine, Bioinorganic Chemistry, Viva Books Private Limited., 1998.
8. R. Gopalan and V. Ramalingam, Concise Coordination Chemistry, Vikas Publishing House Private Limited, New Delhi, 2010.

Part III – Core Lab III – Organic preparation and Gravimetric Estimation

Hours per week: 3

Credits: 4

Subject Code:U1CHC6P1

Objectives

- To study the basics of organic preparation.
- To acquire knowledge about the inorganic estimation.

Organic preparation:

1. Oxidation : Preparation of benzoic acid from benzaldehyde
2. Hydrolysis: (i) Preparation of benzoic acid from benzamide
(ii) Preparation of benzoic acid from ethyl benzoate.
3. Acetylation: Preparation of acetanilide from aniline
4. Bromination: Preparation of p-bromoacetanilide from acetanilide
5. Nitration: (i) Preparation of m-dinitrobenzene from nitrobenzene
(ii) Preparation of picric acid from phenol.
6. Benzoylation: Preparation of β -naphthyl benzoate from β -naphthol
7. Addition: Preparation of osazone from glucose.

Gravimetric Estimation:

1. Estimation of lead as lead chromate.
2. Estimation of barium as barium chromate.
3. Estimation of zinc as zinc oxinate.
4. Estimation of copper as cuprous thiocyanate.
5. Estimation of nickel as Ni-DMG.

Part III – Core Lab IV – Organic Analysis and Organic Estimation

Hours per week: 3

Credits: 4

Subject Code:U1CHC6P2

Objectives

- To acquire knowledge about the analysis of simple organic compounds.
- To know the fundamental strategies of organic estimation.

Organic Analysis

Analysis of organic compound containing one or two functional groups and conformation by preparation of a solid derivative – acids, phenols, aldehydes, ketones, esters, nitrocompounds, amines, amides, anilides, aliphatic diamide, and sulphur analogue of diamide .

Organic Estimation

1. Estimation of phenol
2. Estimation of aniline

Part III Core Lab V– Physical Chemistry experiments

Paper Code: U1CHC6P3

Objective:



The theoretical concepts dealt in the physical chemistry theory papers are given as experiments for the better understanding of the concepts.

- I. **Determination of molecular weight by**
 1. Transition temperature method – Sodium thiosulphate pentahydrate, sodium acetate trihydrate
 2. Cryoscopic method – Rast method
- II **Phase diagram**
 1. Simple eutectic phase diagram
- III **Critical Solution Temperature**
 1. Determination of CST of phenol – water system
 2. Effect of impurity on CST of phenol water system
- IV **Heat of Solution**
 1. Determination of heat of solution of $K_2Cr_2O_7$ in water
 2. Determination of heat of solution of $H_2C_2O_4$ in water
 3. Determination of heat of solution of $(NH_4)_2C_2O_4$ in water
- V **Kinetic experiments**
 1. Kinetics of acid catalysed hydrolysis of ester
 - a) Determination of rate constant of the reaction
 - b) Determination of relative strength of acids.
- VI **Conductometric methods**
 1. Determination of cell constant of the given cell
 2. Acid base titration: $NH_4Cl \rightarrow NaOH \rightarrow HCl$
- VII **Potentiometric methods**
 1. Acid base titration: HCl vs $NaOH$
 2. Redox titration: $KMnO_4$ vs FAS

Skill Based Subject VI – Medical Laboratory Technology and Clinical Biochemistry

Hours per week: 2

Credits: 2

Subject Code:U1CHS61

Objectives:

- To offer the basic knowledge in blood analysis and urine analysis.
- To acquire fundamental knowledge in the estimation of blood and urine sugar.
- To acquire fundamental knowledge in lipids and their biological functions.
- To provide basic knowledge in analytical techniques.

Unit I: Microorganism and blood analysis

(6 hours)

Types of microorganism, general characteristics of bacteria, fungi and viruses, sterilization and disinfection of microorganism. Collection and preparation of samples, typhoid test, Tuberculin test, VDRL, Pregnancy and HIV test. Blood collection, use of anti-coagulants, transportations of blood after collection, Rh and blood grouping.

Unit II: Analysis of blood cells and urine

(6 hours)

Determination of hemoglobin content, Total RBC, WBC and Platelet count, EPR calculation of Red blood cell – examination for malaria parasites, routine examination of Urine.

Unit III: Carbohydrates

(6 hours)

Carbohydrates: Definition, important functions, and general classification and the properties of carbohydrate. Determination of Blood and urine glucose. Interpretation of results. Glucose tolerance test.

Unit IV: Lipids

(6 hours)

Lipids: Definition, general classification Importance biological functions and the properties of lipids, determination of total lipids. HDL & LDL – Definition, determination in blood.

Unit V: Analytical Techniques

(6 hours)



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Analytical biochemistry: Principles of colorimetry – Flame photometry – chromatography – electrophoresis – osmometry and Fluorimetry techniques. Use of microscope. Fundamentals of automation in clinical laboratories – laboratory information system (Flow chart only).

Reference Books:

1. P.B. Godkar and D.P. Godkar, Text book of Medical Laboratory Technology, 2nd edition, Bhalani Publishing house, 2010.
2. K.L. Mukherjee and S. Ghosh, Medical Laboratory Technology, Vol I, II & III, 2nd edition, Tata Mc Graw Hill Education Pvt. Ltd. 2010.
3. Jayashree Ghosh, A Text Book of Pharmaceutical Chemistry, S. Chand & Company Ltd. 2010

INDUSTRIAL CHEMISTRY (UG-NME)

Hours per week: 2

Credits: 2

Subject Code:U1CHN61

Objectives:

- To study the development of chemical industries.
- To learn the manufacturing process of cement, glass, plastics and paints
- To know the importance of fertilizers.

UNIT I: Chemical industries

(6 hours)

Introduction-origin and development of chemical process industry–Pre scientific chemical industry–scientific chemical industry–Growth with restraints- Green challenge to chemical industry-Indian chemical industry today.

UNIT II: Cement and Glass

(6 hours)

Cement: Manufacturing process-raw materials–composition and uses of products in Portland cement.

Glass: Introduction–Raw materials–Manufacturing process–Special glass (Soft, optical & safety glasses).

UNIT III: Plastics and Rubber

(6hours)

Plastics: Introduction–classification–general notes on plastics manufacture – flow sheet for manufacture of polythene – modern synthetic fibers.

Rubber: Characteristics and uses of rubber-natural Rubber- synthetic rubber-SBR (Buna-S)

UNIT IV: Paints and Fertilizers

(6 hours)

Paints: Introduction-constituents of a paint-flow sheet for mixing of paint.

Fertilizers: Importance

of fertilizers-flow sheet for Manufacture of NH₃ by Haber process.

UNIT V: Water

(6 hours)

Water: Introduction–types of water –soft and hard water-types of hardness-disadvantages of using hard water in industry- Reverse Osmosis -sea water as a source of drinking water,

Reference books

1. W. V. Mark, Chemical process industries, Vol. I and II, 2nd Edition, CBS Publications, S. C. Bhatia, 2008.
2. B. N. Chakrabarty, Industrial Chemistry, Oxford and LBH Publ., New Delhi, 1984.
3. B. K. Sharma, Industrial chemistry, Goel Publishing house, 6th edition, 1994.
4. Mukhyonov (ed), Chemical technology Vol. I, MIR Publication, Moscow, 3rd Edition, 1979.

COURSE : ALLIED PHYSICS SEMESTER : V	ELECTRICITY & ELECTRONICS	Hours : 4 Credit : 4
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Subject Code: U1PHA5X3

Contact Hours per Semester: 60 hrs

Objectives

- To understand the fundamentals of electrostatics and principles of Capacitors
- To get basic knowledge about electrical networks



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- To study the basics of electronics
- To get the basic knowledge about digital electronics

UNIT – I

(12 hours)

Gauss's law – Proof – Applications – Field due to a charged sphere and an infinite plane sheet – Field near a charged conducting cylinder – Coulomb's theorem – Electric potential – Relation between potential and field – Capacitors – Expression for capacity of parallel plate, spherical (outer sphere earthed) and cylindrical capacitors – Energy of charged capacitor – Loss of energy due to sharing of charges.

UNIT – II

(12 hours)

Kirchoff's laws – Application of Wheatstone's network – Sensitiveness of bridge – Carey Foster's bridge – measurement of resistance and temperature coefficient of resistance – Principle of potentiometer – Calibration of ammeter and voltmeter (low range and high range) – measurement of resistance using potentiometer.

UNIT – III

(12 hours)

Torque on a current loop – Mirror galvanometer – dead beat and ballistic – current sensitiveness – B.G theory – damping correction – expression for charge sensitiveness – comparison of e.m.f's and comparison of capacitors.

Electromotive force generated in a coil rotating in a uniform magnetic field – R.M.S and mean value of alternating current – LCR circuit – impedances – Series and Parallel resonant circuits – power factor – wattles current – choke.

UNIT – IV

(12 hours)

Junction diodes – Forward and reverse bias – Diode characteristics – Types of diodes (LED and Zener) – Bridge rectifier using junction diodes – π filter – Transistor characteristics (CE mode only) – biasing and action of a single stage transistor (CE) amplifier – frequency response of Hartley oscillator – Modulation (qualitative study) – Op-amp and its characteristics – Virtual earth – Voltage amplifier in inverting mode – Op-amp as adder and subtractor.

UNIT – V

(12 hours)

Binary number system – reason for using binary numbers – binary to decimal and decimal to binary conversions – addition and subtraction of binary numbers – Logic circuits – Boolean algebra – De Morgan's theorem – OR, AND, NOT, NOR & NAND gates – NOR & NAND gates as universal building blocks – Ex-OR gate.

Book for study

Electricity and Electronics by R.Murugeshan.

Reference Books

1. Solid State Electronics – B.L.Theraja, S. Chand, (2003).
2. Electricity and Magnetism – Brijlal and Subramanyam. S Chand, (2007).

COURSE : ALLIED PHYSICS SEMESTER : VI	OPTICS, SPECTROSCOPY & MODERN PHYSICS	Hours : 4 Credit : 4
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Subject Code: U1PHA6X4

Contact Hours per Semester: 60 hrs

OPTICS, SPECTROSCOPY & MODERN PHYSICS

Objectives

- To understand the basics of geometrical and physical optics
- To study the different technique in spectroscopy and photoelectricity
- To get basic knowledge about quantum physics and relativity

UNIT – I

(12 hours)



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Deviation produced by thin lens – Focal length of two thin lenses in and out of contact – Cardinal points – Refraction through a thin prism – Dispersion – Dispersive power – Combination of thin prisms to produce (a) deviation without dispersion and (b) dispersion without deviation – Direct vision spectroscopy – Chromatic aberration in lenses and its removal – Spherical aberration in lenses and its removal – Aplanatic lenses – Oil immersion objective – Theory of primary and secondary rainbows.

UNIT – II

(12 hours)

Interference in thin films – Air wedge – Newton's rings (Reflected beam only) – Determination of wavelength – Jamin's interferometer – Principle and use.

Diffraction – Theory of plane transmission grating (Normal incidence only) – Experiment to determine wavelength.

UNIT – III

(12 hours)

Double refraction – Nicol prism, constructions, action and uses – QWP and HWP – Optical activity (no theory) – Biot's laws – Specific rotatory power – Half shade polarimeter – Determination of specific rotatory power – Fibre optics – Light propagation in fibres – Fibre optic communication systems.

UNIT – IV

(12 hours)

Infrared radiation – production, properties and uses – Ultraviolet radiation sources, properties and uses – Quantum theory – Planck's quantum theory – Raman effect – simple theory experimental study (Wood's apparatus) – Applications – Photoelectricity – Laws of photoelectricity – Einstein equations – Photo cells and their uses – Photo emissive, photo conductive and photo voltaic cells.

UNIT – V

(12 hours)

De Broglie's theory - electron diffraction – G.P.Thomson experiment – Michelson Morley experiment – Significance of negative results – Postulates of special theory of relativity – Lorentz transformation equations (no derivation) – Length contraction – Time dilation – Variation of mass with velocity – Mass-energy relation (simple derivation).

Book for study

1. Optics, Spectroscopy and Modern Physics by R.Murugesan.

Reference Books

1. A Text Book of Optics by Brijlal and N.Subramanyam S.Chand, (2002).

COURSE : ALLIED PHYSICS	ALLIED PHYSICS PRACTICAL –II	Hours : 2 Credit : 2
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Subject Code: U1PHA6PX

Contact Hours per Semester: 60 hrs

INTERNAL: 40

EXTERNAL: 60

1. Spectrometer – Grating (Normal incidence).
 2. Spectrometer – Dispersive power of the prism.
 3. Newton's rings.
 4. Air wedge – Thickness of insulation.
 5. Series resonance.
 6. Parallel resonance.
 7. Comparison of Capacitance – Desauty's Bridge (AC method)
 8. Logic gates – AND, OR, NOT using discrete components.
 9. Logic gates – NAND, NOR using discrete components.
 10. Bridge rectifier.
 11. Zener diode – Characteristics.
 12. Transistor – Static characteristics (CE mode).
 13. Single stage transistor amplifier.
 14. Hartley oscillator.
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Courses Name: Bachelor of Science

Discipline : Botany

Sem	Part	Subject	Hr	Cr	Int+Ext=Total	Code	Revision
V	Core V	Biochemistry	5	5	25+75=100	U1BYC51	Revised
	Core VI	Genetics & Evolution	5	5	25+75=100	U1BYC52	Interchanged & Revised
	Core VII	Taxonomy of Angiosperms	4	4	25+75=100	U1BYC53	Interchanged & Revised
	Core Practical V	Lab: Biochemistry, Genetics & evolution & Taxonomy of Angiosperms	6	3	40+60=100	U1BYC5P	New
	Allied (b) - III	Cell Biology, Developmental Biology, Physiology, Immunology and Evolution	4	4	25+75=100	U1ZYA5X3	Revised
	Allied (b) – Practical III	Lab: Zoology	2	-	----	---	-
	Skill V – General Studies	Employability Skills	2	2	25+75=100	U1PS51	New
	NME I	Plant utility & Exploitation	2	2	25+75=100	U1BYN51	No Chnage

Sem	Part	Subject	Hr	Cr	Int+Ext=Total	Code	Revision
VI	Core VIII	Plant Physiology	5	5	25+75=100	U1BYC61	Revised
	Core IX	Biotechnology & Bioinformatics	5	5	25+75=100	U1BYC62	Revised
	Core X	Microbiology	4	4	25+75=100	U1BYC63	Interchanged
	Core Practical VI	Lab: Plant physiology, Biotechnology & Bioinformatics & Microbiology	6	4	40+60=100	U1BYC6P	New
	Allied (b) - IV	Commercial Zoology (Vermiculture, Apiculture, Aquaculture and Poultry Science and Dairy Farming)	4	4	25+75=100	U1ZYA6X4	New
	Allied (b) - Practical IV	Lab in Cell biology, Developmental biology, Physiology, Immunology and evolution & Commercial Zoology	2	2	40+60=100	U1ZYA6PX	Revised
	Skill VI	Biodiversity & Conservation	2	2	25+75=100	U1BYS61	No Change
	NME II	Mushroom Cultivation	2	2	25+75=100	U1BYN61	No Change

Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

1. 150 objective type questions with four alternatives for each question.



2. 30 questions to be asked from each unit.
3. Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries ½ mark.
3. Total marks to be reduced to 25.

Core- V Biochemistry

Contact Hours per week: 5 hrs

Contact Hours per Semester: 60 hrs

Objectives:

To under the basic concepts of Biochemistry

To under the basic concepts and application of Instruments

Sub code: UIBYC51

Credit-5

UNIT – I

12-Hrs

Basic concepts of atoms, molecules and types of Bonding in Biomolecules, Isomerism and its types, pH- pH Scale, acid and base concepts. Buffers – Henderson - Hasselbalch equations. Basic principles of thermodynamics(Laws of thermodynamics,Enthalpy,Entropy and Free energy)

UNIT – II

12-Hrs

Carbohydrates: definition, structure linear/open chain, ring form, classification- structure of glucose, sucrose, starch and cellulose.properties of monosaccharides

Lipids: Classification,Types and properties of lipids.

UNIT – III

12- Hrs

Amino acid: structure, classification of amino acid (based on side chain and based on polarity), physical and chemical properties of aminoacids.

Proteins: Classifications-, structure-primary, secondary, tertiary and quaternary and properties of proteins.

UNIT – IV

12-Hrs

Enzymes: Nomenclature, classification and properties, Mechanism of enzyme action (Lock and key, Induced fit model) factors affecting enzyme activities -substrate, pH ,temperature and Inhibitors(Brief account)

Vitamins – structure, classification, source, importance, deficiency symptoms.

UNIT – V

12-Hrs

Basic principles and application of colorimetry, pH meter and centrifuge. Chromatography - paper, TLC and column chromatography .

Text Book:

- Dulsy Fatima *et al.*, (2007), Elements of Biochemistry, Saras Publication, Nagercoil.
- Jain.J.L (2004), Fundamentals of Biochemistry, S.Chand & Company, New Delhi.

Reference Book:

- Conn,E.E, Stumpf,P.K, Bruening,G and Doi,R.H (2001) Outlines of Biochemisry, John Wiley & Sons, New York.
- Lehninger.A (1982) Principle Biochemistry, CBS Publishers & Distributors, Delhi.

Core –VI GENETICS AND EVOLUTION

Contact Hours per week: 5 hrs

Contact Hours per Semester: 60 hrs

Objectives:

To learn about basic concepts of Mendelian genetics.

Sub code: UIBYC52

Credit: 5



1. To understand the molecular basis genetics (including topics replication, transcription, translation and mutation)
2. To understand the evolutionary theories.

Unit I

12-Hrs

A brief account of Mendel's law of heredity. Monohybrid and Dihybrid cross- test cross- Interaction of gene- Incomplete dominance , co dominance. Complementary gene(9:7)- Comb type in fowls. Dominant epistasis(12:3:1). Multiple alleles (ABO blood group) - Polygenic inheritance.(Ear length in Maize)

Unit II

12-Hrs

Linkage and crossing over – significance- linkage in maize, molecular mechanism of crossing over. Determination of sex in plants-(Melandrium). Extra chromosomal inheritance (plastid inheritance in *Mirabilis*). Gene mutation- induced and spontaneous - mutagens and Molecular basis of mutations(Frame shift and Tautomerization)

Unit III

12-Hrs

DNA as genetic material-(Griffith experiment and Hershey&chase). structure of DNA and its replication RNA- types, structure and functions. Transcription, Translation. Operon concept.-Lac operon

Unit IV

12-Hrs

Genetic recombination in bacteria – Transformation, Transduction and conjugation. Eukaryotic genome organization–

Unit V

12-Hrs

Evolution:

Introduction. Theories of evolution- Darwinism, Lamarckism, Hugo de vries modern synthetic theory of evolution. Hardy -Weinberg law.(Brief account)

Text Books:

1. Verma P.S and V.K Agarwal 1991. S.Chand &Co, New Delhi.
2. Gupta, P.K 2002. Genetics. Rastogi Publishers, Meerut.

Reference Books:

3. Burns, G.W.1980 – The Science of Genetics, Collier acillan, New York
4. Gardnet, E.J Simmons and Snustad, D.P 1985 – principles of Genetics. Edition 8, John Wiley & Sons, New York.
5. Verma P.S and V.K Agarwal 1991. S.Chand &Co, New Delhi.
6. Singh P.D 200 Fundamentals of genetics. Kalyani Publishers, New Delhi.
7. Gupta, P.K 2002. Genetics. Rastogi Publishers, Meerut.
8. Strickberger, M.W. 1999. Genetics. Prentice hall of India Pvt Ltd, New Delhi.
9. Mirta,S. 1994. Genetics. Rastogi publisher, Meerut

Core –VII -Taxonomy of Angiosperms

Contact Hours per week: 4 hrs

Sub code: UIBYC53

Contact Hours per Semester: 60 hrs

Credit: 4

Objectives: To understand the morphology of angiosperms plants.
To understand the importance of herbarium and BSI
To understand the salient features of the families
To understand the economic importance of important plants

UNIT – I

12-Hrs

Morphology:

Parts of the leaf- Phyllotaxy-simple and compound leaf-shape (Sagittate, ovate, cordate, linear, lanceolate, oblong) and margin(entire, wavy, serrate) of leaf-Inflorescence type Racemose(- Raceme,Panicle,Spike,Catkin,Corymb,Umbel,spadix,Head)-Cymose (Solitary, simple, Monochasial,



Dichasial, Polychasial)--Parts of a typical Dicot and Monocot flower-sexdistribution (Bisexual, Unisexual, Polygamous, Monoceious, dioecious)-symmetry (Acyclic, cyclic, hemicyclic)- perianth- Androecium and its parts-attachment of anther-arrangement of stamens- size of stamens-fusion of stamens- Gynoecium and its parts-carpel number (Mono,Bi,Tri&Multi) and its nature-position of ovary-locules and placentation

UNIT – II

12-Hrs Systems

of classification(Artificial-natural and phylogenetic) Brief study of Linnaeus system , Bentham and Hooker and Hutchinson classification- Herbarium technique Brief account on Binomial system of nomenclature-Role of Botanical survey of India.

UNIT – III

12-Hrs

Study of the following families with special reference to Vegetative and Floral feautres and economic importance

Polypetalae- Annonaceae, Brassicace, Rutaceae, Fabaceae, Cucurbitaceae

UNIT – IV

12-Hrs

Study of the following families with special reference to Vegetative and Floral feautres and economic importance -**Gamopetalae** -Rubiaceae, Apocynaceae, Solanaceae, Acanthaceae, and Lamiaceae

UNIT – V

12-Hrs

Study of the following families with special reference toVegetative and Floral feautres and economic importance -**Monochlamydeae**-Amaranthaceae, Euphorbiaceae Orchidaceae, , Amaryllidaceae, and Poaceae

Text Book:

- Dutta A.C (2008) Botany for degree students (6th edition). Oxford university press
- Pandey, S.N and Misra, S.P (2008) Taxonomy of Angiosperms. Ane books India, New Delhi.

Reference Book:

- George H.M. Lawrence (1964) Taxonomy of vascular plants, Oxford and IBM publishing co. New Delhi.
- Vasishta P.C (2001) Taxonomy of angiosperms. S.Chand & company, New Delhi
- Pandey, B.P (2001) Taxonomy of angiosperms. S.Chand & company, New Delhi

Practical-V Biochemistry, Genetics and evolution and Taxonomy of Angiosperms

Sub code: UIBYC5P

Credit:4

Hours/week=6

Syllabus

Biochemistry And Biotechniques – Practical

1. To determine the pH of different solutions
2. Titration of weak acid with a strong base
3. To determine the Rf value of amino acids by paper chromatography
4. Determination of complementary colours and verification of Beer's law
5. Estimation of starch in plant tissue by gravimetric method

Practical Syllabus- Genetics

- 1.To study probability by coin tossing
- 2.Solving Problem related to Monohybrid, Dihybrid crosses, Test cross, Incomplete dominance and Interaction of genes
- 3.To study polygenic inheritance of quantitative traits in plants such as Length of pods, number of seeds in fruits and to explain and interpret the observation in graphs.
- 4.Spotters related to syllabus.

Taxonomy of Angiosperms – Practical

1. To assign angiosperm plants to their respective families and give reasons.



2. To describe the plant in technical terms. (Draw labelled diagrams of the floral parts including longitudinal sections of the flower, construct the floral diagram and give the floral formula.)
3. To identify the angiosperm specimens from the local flora or from the herbarium collected during the field study.
4. To attend field work for minimum of Three days to acquaint with the flora of the same.
5. Submission of Herbarium (Minimum of twenty sheets)

CELLBIOLOGY, DEVELOPMENTAL BIOLOGY, PHYSIOLOGY, IMMUNOLOGY AND EVOLUTION

Contact hours per Week – 4 hours

Subject Code: UIZYA5X3

Contact hours per Semester – 60 hours

Credits: 2

Objectives

- To understand various structure and functions cell and organelles
- To Study about the development and function of various organs in animal body
- To find out ancestral development in earth

Unit I

12 hours

Cell Biology

Structure of animal Cell-cell membrane-cell organelles- mitochondria, endoplasmic reticulum, Golgi complex, ribosomes, structure and functions only. Study of cancer cells.

Unit II

12 hours

Developmental Biology Structure of sperm and ovum in frog- Gametogenesis-cleavage, blastulation and gastrulation. Human reproductive system, birth control –Test tube baby.

Unit III

12 hours

Physiology

Digestion of Carbohydrates-proteins and lipids- Mechanism of respiration and transport of gases-Structure of Nephron and formation of urine-Structure of Neuron and conduction of Nerve impulse.

Unit IV

12 hours

Immunology

Types of immunity (Innate and Acquired immunity) - Lymphoid organs (Primary and Secondary) – Immunoglobulin-IgG-Antigen antibody reactions.

Unit V

12 hours

Evolution

Paleontological evidences for evolution- Lamarckism-Darwinism-Modern synthetic theory, Allopatric and sympatric speciation- Speciation-human evolution –fossil history only

Text Books

1. Arumugam.N., 2007 Cellbiology, Molecular biology, Genetics, Immunology, And Biotechnology , Saras publication.
2. Arumugam.N., 2007, Physiology, Developmental biology, Biochemistry, Microbiology and Evolution

Reference Books

1. PS VERMA &VK .AGARWAL, 2012 ,Chordate embryology Chand Publication
2. Ambika Shanmugam(2007) Fundamentals of biochemistry for medical students,
3. Veera bala Rastogi- Evolution.
4. Rastogi- Animal Physiology
5. Immunology –Ivan Roitt



SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code: U1PS51

Contact Hours per Semester: 30

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I : Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. **(6-hours)**

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. **(6-hours)**

Unit III: Reasoning (6-hours)

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning (6-hours)

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V: (6-hours)

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
 2. Quantitative Aptitude - R.S.Aggarwal
 3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
 4. Malayala Manorama Year Book, 2014
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NME- PLANT UTILITY AND EXPLOITATION

Contact Hours per week: 2 hrs

Sub code: UIBYN51

Contact Hours per Semester: 30 hrs

Credit-2

Objectives:

To know about the medicinal property of plants

To study about the extraction and preparation of the crude drugs

Unit I

6-Hrs

Brief Study of the following economic produces with special reference to botanical name, family, morphology and uses

Pulses: Red gram, Soyabeans, Bengal gram, horse gram

Fruits: Apple, Mango, pine apple, pomegranate, grapes

Unit-II

6-Hrs

Brief Study of the following economic produces with special reference to botanical name, family, morphology and uses

Beverages: Cocoa; Spices and Condiments: garlic, cardamom, pepper and ginger

Dyes: Haematoxylin, Indigo

Unit-III

6-Hrs

Brief Study of the following economic produces with special reference to botanical name, family, morphology and uses

Latex: Rubber

Oil: Gingelly oil, Coconut oil; Tannins: Myrobalan



Resins and gums: Oleoresin, Canada balsam and Turpentine

Unit IV

6-Hrs

Brief Study of the following economic produces with special reference to botanical name, family, morphology and uses

Essential oil: Lemon grass oil, sandalwood oil

Wood: teak wood, neem and rose wood

Medicinal: *Catharanthus roseus* and *Aloe vera*

Unit V

6-Hrs

Methods of Processing: Tea, Coffee. Extraction of Eucalyptus oil; Importance of Ethnobotany in Tamil Nadu

Text Books

1. H.D.Kumar, Economic Botany, 2003, MacMuth Publications, New Delhi.

Reference Books

1. Dr. V. Singh, Dr. P.C. Pande & Dr. D.K. Jain. 2012, Rastogi Publications, New Delhi.
-

CORE VIII - PLANT PHYSIOLOGY

Contact Hours per week: 5 hrs

Sub code: UIBYC61

Contact Hours per Semester: 60 hrs

Credit-5

COURSE OBJECTIVE:

- *To understand the various physical forces involved in absorption of water and mineral nutrients
- *To acquire knowledge on the various metabolic pathways by which the plants prepare their food
- *To learn about the mechanism of oxidation of food and utilization of energy in plants
- *To study about the physiological aspects of flowering
- *To understand the physiological applications of phytohormones
- *To enhance the knowledge about the various movements exhibited by plants for its survival

UNIT I

12-Hrs

Absorption of water – imbibition, diffusion, osmosis, plasmolysis. Mechanism of water absorption- Osmotic theory, Non-osmotic theory and Passive theory. Ascent of sap. Translocation of solutes - Munch flow hypothesis. Transpiration -Types-stomatal, cuticular and lenticular. Mechanism of stomatal movement. Factors affecting transpiration and Guttation.

UNIT II

12-Hrs

Mineral nutrition – Macro (N,P,K, & Mg) and Micro(Bo,Cu & Zn) elements- its physiological role and deficiency symptoms. Hydroponics and its significance. Light reaction – PS I and PSII, Photophosphorylation – cyclic and non-cyclic, Dark reaction – Calvin cycle and Hatch & Slack pathway. C₂ cycle (Brief account).

UNIT III

12-Hrs

Respiration – types of respiration – aerobic and anaerobic, Respiratory Quotient (RQ) values. Mechanism of respiration – Glycolysis, Krebs' cycle, electron transport and oxidative phosphorylation. Nitrogen metabolism – Nitrogen cycle. Nitrogen fixation – symbiotic and asymbiotic.

UNIT IV

12-Hrs

Plant growth hormones – physiological effects of auxins, gibberellins, cytokinins and ethylene. Physiology of flowering – photoperiodism, Vernalization. Seed dormancy – Factors affecting seed dormancy. Methods of breaking seed dormancy.

UNIT V

12-Hrs

Tropic and plant movements – (phototropism, geotropism, hydrotropism, thigmotropism).

Movement of Curvature – nutation and nastic movement- nyctinastic, seismonastic, thigmonastic, Biological clocks and circadian rhythms.

TEXT BOOKS:

- Plant physiology – S.N. Pandey and B.K. Sinha Vikas Publishing house 1999.
- Plant Physiology – Salisbury and Ross CBS Publishers and distributors, Delhi 1995.
- Plant physiology - Prof. Annie Ragland et.al., Saras Publications 2007.

REFERENCE BOOKS:

- Modern Plant physiology – R.K. Sinha Narosa Publishing house New Delhi, 2004.
- Text Book of Plant Physiology – S.K. Verma S.Chand and company, New Delhi, 2003.



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- Plant Physiology –Devlin and Witham, CBS Publishers and Distributors, 1999.
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CORE-1X BIOTECHNOLOGY AND BIOINFORMATICS

Contact Hours per week: 5 hrs

Sub code: UIBYC62

Contact Hours per Semester: 60 hrs

Credit-5

Objectives:

- To provide students with a solid foundation in the rapidly expanding field of biotechnology
- To enhance the knowledge about the applications of modern softwares in biotechnology for the industrial production with waste minimization and reduced energy consumption

Unit :I

12-Hrs

Scope – definition, Introduction to gene cloning-Vectors-Plasmids(Basic features)-PBR 322,Bacteriophage (Basic features)--M13,Isolation of chromosomal and Plasmid DNA (Brief account),Restriction endonucleases,DNA Ligases,Alkaline phosphatase,Polynucleotide kinase,Terminal deoxy nucleotidyl transferase,DNA Polymerase(Taq),Reverse transcriptase.

Unit II

12-Hrs

Methods of gene delivery –, direct gene transfer using PEG, Electroporation, biolistics, microinjection and liposome mediated ,Identification of recombinants-Insertional inactivation of antibiotic resistance marker gene-Inactivation of Lac Z' gene,Selection of recombinant phages,Colony Hybridization.

Unit III

12-Hrs

Tissue culture, Media and its composition of MS Medium, Techniques in Protoplast culture, artificial seeds, Application of Tissue culture in agriculture and Horticulture.

Unit IV

12-Hrs

Fermentation technology, Submerged fermentation and Solid state fermentation Types of fermentor. Industrial production of Ethanol, penicillin, and Glutamic acid

Unit V

12-Hrs

Introduction and Applications of Bioinformatics, Database, Primary and secondary databases Biological databases -NCBI, Sequence analyzing tools- BLAST .

Text books:

- A text Book of Biotechnology , R.C. Dubey, 2006- S. Chand & Company Ltd, Ram Nagar, New Delhi.
- Plant tissue culture, Kalyan Kumar De., 1992- New central book Agency P .Ltd, Calcutta.
- Shanmugavel,P.2005.Principles of Bioinformatics. Pointer Publishers, Jaipur, India

References:

- Brown, C.M, Campbell, I. and Priest, F.G, 1990. Introduction to Biotechnology. Blackwell Scientific publications Oxford, London.
 - Brown, T.A, 1999. Genomes. John Wiley & Sons. Newyork.
 - Chawla, H.S. 2000. Introduction to plant biotechnology. Oxford & IBH Publishing Co. Pvt.Ltd. New Delhi.
 - Dixon, R.A and Gonzales, R.A (Eds.) 1994. Plant Cell Culture- A Practical Approach. Oxford University Press, Newyork.
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CORE-X MICROBIOLOGY

Contact Hours per week: 4 hrs

Sub code: UIBYC63

Contact Hours per Semester: 60 hrs

Credit-4

Course objectives:

- To know the contributions of microbiologists.
 - To learn about the structure of bacterial cell and growth of Bacteria.
 - To understand Bergey's manual of bacterial classification.
 - To know the various methods of sterilization.
 - To know the pure culture techniques.
 - To learn the sanitary tests for coliforms.
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Unit I

12-Hrs

Early development of microbiology- contributions of Anton Van Leeuwenhoek, Louis Pasteur and Robert Koch and his postulates – General characteristics of Bacteria – Morphological characteristics – Ultra structure of bacterial cell, capsule, flagella, pili, mesosome, cell wall and endospore.

Unit II

12-Hrs

Bergey's classification of Bacteria, Multiplication of Bacteria, Growth curve, methods of measurement of bacterial growth, Nutritional types of bacteria, Bacteriophage – structure and reproduction.

Unit III

12-Hrs

Methods in Microbiology- Culture media preparation, sterilization techniques, pure culture techniques – spread plate, pour plate and streak plate, staining techniques – simple staining and Gram's staining.

Unit IV

12-Hrs

Disinfectants structure and mode of action- Antibiotics – Penicillin, Streptomycin and Tetracycline – source structure and mode of action. Single cell protein(Brief account).

Unit V

12-Hrs

Tests for detection of coliform bacteria in water – sewage treatment – oxidation pond – trickling filter – Spoilage of food and preservation techniques, Microbiology of milk and milk products.

Text Books:

1. Power, C.B and M.E. Dagnawala – General Microbiology Vol- 1 and Vol-II
2. A.S Rao. Introduction to Microbiology.
3. P.D Sharma – Microbiology and Plant pathology.
4. G. Shelia – General microbiology.
5. Anna and Joshua microbiology.

Reference Books:

1. Pelczar, M.J. Chan, E.C.S. and Krieg, N.R. 1993 – **Microbiology- concepts and application**. Mc Grew Hill, Inc. New York.
2. **A text book of Microbiology-** R.C Dubey and D.K. Maheshwari. S.Chand &Company Ltd, New Delhi.
3. Kumar, H.D. and Swati Kumar, 1999. **Modern Concepts of Microbiology**. Vikas Publishing House Pvt.Ltd. New Delhi.
4. Nicklin, J et al., 1999. **Instant notes in Microbiology**. Viva Books Pvt.Ltd. New Delhi.

Lab: Plant Physiology, Biotechnology Bioinformatics &Microbiology

Sub code: UIBYC6P

Credit:4

Hours/week=6

Syllabus

Plant Physiology Practical Syllabus:

To carry out the following experiments and explain the working, observation & Interpretations.

- a. Imbibition – Direct weight method.
 - b. Osmotic pressure – Plasmolytic method.
 - c. Rate of transpiration – Farmer's Potometer.
 - d. Rate of Photosynthesis – Test tube Funnel method.
 - e. Separation of photosynthetic pigments- Paper chromatography method.
- Demonstrate the Physiological Experiment set up.

1. Potato osmoscope.
2. Bell – jar experiment
3. Ganong's Potometer
4. Kuhne's fermentation
5. Ganong's Light screen
6. Mohl's half leaf experiment.
7. Measurement of growth using Lever Auxanometer.
8. Geotropism



9. Phototropism.

Biotechnology and Bioinformatics Practical Syllabus:

1. Isolation of plant chromosomal DNA- CTAB method(Demo)
2. Quantitative estimation of DNA.(Demo)
3. Agarose gel electrophoresis(Demo)
4. Restriction endonuclease(Demo)
5. Amplification of DNA using PCR - demonstration.
6. Plant tissue culture, suspension culture - Demonstration
7. Demonstration of isolation of plant protoplasts.
8. Demonstration and regeneration from Callus cultures
9. Molecular visualization –Rasmol, Cn3D, Swiss PDB viewer.
10. Database similarity searching and dynamic programming algorithms
-Sequence similarity searching-NCBI BLAST, FASTA

Microbiology Practical Syllabus:

1. Basic equipments used in Microbiology Laboratory.
2. Sterilization of glass wares and culture media
3. Motility of Bacteria – Hanging drop method.
4. Simple staining of bacteria.
5. Gram staining of bacteria
6. Preparation of culture media – Nutrient Broth, Nutrient Agar, Potato Dextrose Agar.
7. Isolation of microorganisms from water and soil.

COMMERCIAL ZOOLOGY

(VERMICULTURE, APICULTURE, AQUACULTURE AND POULTRY SCIENCE AND DAIRY FARMING)

Contact hours per Week – 4 hours

Contact hours per Semester – 60 hours

Subject Code: U1ZYA6X4

Credits: 2

Objectives

- To understand the concepts of maintain animals like earthworms, honey bees, fishes, chicks and cattle.
- To develop the students as entrepreneur of the zoology

Unit I

12 hours

Vermiculture

Cultivable species of earthworms- Vermicomposting methods-conditions required for vermicomposting- vermicast- vermiwash.

Unit II

12 hours

Apiculture-Life history of honey bee, kinds of honey bee-types of hives-newton's hive and other appliances, enemies and diseases of honey bee –medicinal values of honey.

Unit III

12 hours

Aquaculture –scope of aquaculture –aquaculture in india-Culturable organisms- construction of fish pond-Culture of Indian major carps, induced breeding-prawn culture- pearl culture.

Unit IV

12 hours

Poultry science

Breeds of fowls-poultry industry in India-Choosing of parents- sexing of day old chick construction of poultry house- deep litter system- Cage system-Rearing of layers and broilers-nutritive value of egg-poultry diseases (common diseases like Raniket diseases, coryza, fowl pox, polyneuritis, coccidiosis, curled toe)

Unit V

12 hours

Dairy farming

Importance of dairy farming, dairy animals-cattle cow –buffalo-goat (any one example to each)-management of a model dairy farm-live stock diseases- foot and mouth diseases, udder diseases, Rinder pest – nutritive values of milk, milk products and pasteurization

Text Books



VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

[Re-accredited with 'A' Grade by NAAC]

Virudhunagar – 626 001

1. Arumugam .n, Murugan.T,Johnson Rajeswar.J,Ram Prabhu.R, 2009 Applied zoology,saras publication,Nagarkovil

Reference Books

1. Sharma, Bee Keeping in India, ICAR Publications.
2. Ganamani.M.R., 2010 Modern aspects of Commercial poultry keeping, Giri Publications, Madurai
3. Sulthan Ismail, Vermitechnology, Chennai
4. Jamson and Santhanakumar, Concepts of Aquaculture,

LAB IN CELLBIOLOGY, DEVELOPMENTAL BIOLOGY, PHYSIOLOGY, IMMUNOLOGYAND EVOLUTION & COMMERCIAL ZOOLOGY

(To be done at the end of the Sixth semester)

ALLIED I LAB: 2

CREDITS: 2

Subject Code: UIZYA6PX

Contact hours per week 2 hours.

Contact hours per semester 30hours

List of Practical

1. Preparation of Onion root tip and observe the Mitotic stages.
2. Preparation of Squamous epithelial cells.
3. Qualitative test for Ammonia ,Urea and Uric acid.
4. Qualitative test for Protein, Carbohydrateand lipids.
5. Antigen –antibody reaction
6. Mounting of mouth parts , sting of Honey bees- Demo only

List of Spotters

- 1 Mitochondria , Golgi Body , Endoplasmic reticulum ,lysosome and Ribosome
- 2 Mitosis –Stages identification
- 3 Meiosis -stages identification
- 4 Following stages of frog embryo i)Egg ii)Sperm iii)Blastula iv) Gastrula
- 5 Sheep placenta
- 6 Paper cutting of Giraffe neck growth to explain Lamarckism
- 7 Identification of catla ,Roghu, Mrigal
- 8 Model fish pond
- 9 Vermicompost
- 10 Newton's hive
- 11 Poultry feeds,feeder and waterers
- 12 Milk and their by products.

Skill based paper IV- Biodiversity and Conservation

Contact hours per Week – 2 hours

Subject Code: UIBYS61

Contact hours per Semester – 30 hours

Credits: 2

Objectives

To make them to know and appreciate the quantum of biological diversity

To create awareness about the Values of biodiversity and its conservation

Unit-I

6-Hrs

Biodiversity- definition- Types of biodiversity (Genetic, Species and Ecosystem diversity). Brief history of biodiversity (Geological era, periods and major events associated with them). Biodiversity Hotspots-Criteria for selection of hotspots- Indian hotspots. Key stone species and their significance.

Unit-II

6-Hrs



Biodiversity values –Direct use value (Food, Medicine, Biological control, Industrial materials, Recreational harvesting, Ecotourism)-Indirect use values (Ecosystem services) –Non use value (Option value, Bequest value, Existence value, Intrinsic value).

Unit-III

6-Hrs

Threats to biodiversity-Direct exploitation- Habitat loss, fragmentation and degradation-Introduced species and alien species- Red data Book

Unit-IV

6-Hrs

Biodiversity conservation- *in situ* and *exsitu* methods.*In situ* (National Parks- Wildlife reserves and Sanctuaries-Biosphere reserves (Nilgiris and Gulf of Mannar).) *Ex situ* conservation (Botanical garden –Germplasm collection- Seed banks-Cryopreservation.)

Unit- V

6-Hrs

Biodiversity legislation and Convention on Biological diversity-Trade related intellectual property rights (TRIP)-Convention on International Trade in Endangered species of Wild Fauna and Flora (CITES)-Ramsar Convention-Intellectual property rights (IPR).

Text Books:

1. Krishnamoorthy, K.V. (2004). An Advanced Textbook on Biodiversity. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi
2. Gaston, K.J. and Spicer, J.I. (2004). Biodiversity- An Introduction. Blackwell Science Ltd. USA.
3. Mandal, F.B. and Nandhi, N.C. (2009). Biodiversity: Concept, Conservation and Biofuture. Asian Books Pvt. Ltd., New Delhi.
4. Kumar (2005). Biodiversity principles and Conservation. International Book Distributors, Dehradun.

Reference Books.

1. Stiling , P. (2002). Ecology Theories and Applications. Prantice-Hall of India, New Delhi
2. Miller, G.T. (2006). Environmental Science. Cengage Learning India Pvt. Ltd., New Delhi

Non Major Elective - Mushroom Cultivation

Contact hours per Week – 2 hours

Subject

Code:

UIBYN61

Contact hours per Semester – 30 hours

Credits: 2

Course Objectives

To explore mushroom cultivation and its economic importance and spawn production technology. To understand about the compost preparation for mushroom cultivation

Unit – I

6-Hrs

General Characters of Mushroom (Morphology and Taxonomy) – History of Mushroom Cultivation .Common edible and Poisonous Mushrooms, Life cycle pattern.

Unit – II

6-Hrs

Food value of edible mushrooms, Preservation and Processing of Mushrooms,. Economic importance of mushrooms, Recipes of Mushroom

Unit – III

6-Hrs



Spawn & Spawning – Different kinds of Spawn (Virgin Spawn, Flake spawn, Brick spawn, Grain Spawn) – Advantages & Disadvantages of Grain spawn – Methods of preparation of grain spawn – Storage of Spawn, Factors determining spawn production.

Unit – IV

6-Hrs

Mushroom Cultivation, Farm design & Harvesting - Button Mushroom, Paddy Straw Mushroom and Oyster mushroom, Preservation & Processing of Mushrooms

Unit – V

6-Hrs

Disease of Mushrooms – Bacterial diseases and Fungal diseases, Physiological factors, Insect Pest & Nematodes, Marketing of mushroom products.

Text Books:

1. Nita bahl 2009. Hand book on Mushrooms. Oxford & IBH Publishers New Delhi

Reference:

2. Tripathi.D.P 2005. Mushroom Cultivation. Oxford & IBH Publishers New Delhi
 3. Muthusamy. A.D & Yesuraja.I 1999. Mushrooms Culture. TNAU Publishers New Delhi
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Course Name : Bachelor of Science

Discipline : Zoology

Sem	Part	Subject	Credit	Hour	Int+Ext=Total	Subject Code	Revision
V	Core – 7	Animal Physiology	5	5	25+75=100	U1ZYC51	Revised
	Core – 8	Genetics	5	5	25+75=100	U1ZYC52	Revised
	Core – 9	Microbiology and Immunology	4	4	25+75=100	U1ZYC53	Revised
	Core Lab – 7	Animal Physiology Practical	-	2	-----	---	Revised
	Core Lab – 8	Genetics Practical	-	2	-----	---	No Change
	Core Lab – 9	Microbiology and Immunology Practical	-	2	-----	---	No Change
	Allied II – 3	Mulberry Silkworm Rearing and Genetics of Silkworm	4	4	25+75=100	U1ZYA51	No Change
	Allied II – 3 Lab	Sericulture Practical	-	2	-----	---	No Change
	SBE – 5	Employability Skills	2	2	25+75=100	U1PS51	Revised
	NME – 1	Ornamental Fish Culture	2	2	25+75=100	U1ZYN51	New
VI	Core – 10	Ecology	5	5	25+75=100	U1ZYC61	Revised
	Core – 11	Biochemistry	5	5	25+75=100	U1ZYC62	Revised
	Core – 12	Evolution	5	4	25+75=100	U1ZYC63	No Change
	Core Lab – 10	Animal Physiology and Genetics Practical	2	2	40+60=100	U1ZYC6P1	Revised
	Core Lab – 11	Ecology and Biochemistry Practical	2	2	40+60=100	U1ZYC6P2	No Change
	Core Lab – 12	Microbiology and Immunology and Evolution Practical	2	2	40+60=100	U1ZYC6P3	No Change
	Allied II – 4	Silk Reeling Technology	4	4	25+75=100	U1ZYA61	No Change
	Allied II – 4 Lab	Mulberry Silkworm Rearing and Genetics of Silkworm & Silk Reeling Technology	2	2	40+60=100	U1ZYA6P	No Change
	SBE – 6	Biotechnology	2	2	25+75=100	U1ZYS61	Revised
	NME – 2	Human Biology	2	2	25+75=100	U1ZYN61	New

Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

1. 150 objective type questions with four alternatives for each question.
2. 30 questions to be asked from each unit.



3. Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries ½ mark.
3. Total marks to be reduced to 25.

SEMESTER – V

ANIMAL PHYSIOLOGY

CORE: 7

Contact hours per Week – 5 hours

Contact hours per Semester – 75 hours

CREDITS: 5

Subject Code: U1ZYC51

Objectives:

- To study the structure and functions of various organs
- To learn the physiological adaptations in animals
- To understand the role of hormones in physiological process

Unit I

(15 hours)

Nutrition and Digestion

Nutrition: Nutritive requirements.

Digestion and types– extra and intracellular.

Digestion of Carbohydrates, proteins and lipids.

Absorption and assimilation of digested food materials.

Unit II

(15 hours)

Respiration and Circulation

Types of respiration – external and internal respiration.

Respiratory pigments, Transport of oxygen – formation of oxyhaemoglobin and affinity of haemoglobin for Oxygen, Oxygen dissociation curves. Transport of CO₂ – Chloride shift, Bohr effect.

Blood and its constituents, Types of Circulation – Open and closed, Peripheral Circulation – Arteries, Veins, Capillaries and microcirculation

Structure of mammalian heart and its working mechanism – Heartbeat and cardiac Cycle. Blood coagulation and anti coagulants

Unit III

(15 hours)

Muscle, nerve and Sensory receptors

Types of muscles, Ultra structure of skeletal muscle.

Sliding filament Theory, Molecular basis of muscle contraction, neuromuscular junction

Structure of nerve cell. Nature of nerve impulse – resting potential and action potential. Properties of nerve impulse – threshold value, refractory period, all or none response.

Conduction of nerve impulse along an axon – local circuit theory and salutatory conduction theory. Structure of synapse, mechanism of synaptic transmission neurotransmitters

Classification of Sensory receptors: Photo receptor- eye, Phono receptor – ear chemoreceptor – taste buds.



Unit IV

(15 hours)

Excretion and Homeostasis

Definition of excretion. Forms of nitrogenous waste material, Classification of animals on the basis of excretory products.

Organization of mammalian excretory system, Structure and function of Nephron – Counter current mechanism.

Water and ionic regulation by freshwater and marine animals.

Temperature relation in Poikilotherms and Homeotherms,

Unit V

(15 hours)

Endocrine system

Hormones - Definition., Mechanism of hormone action

Hormones of hypothalamus, Adenohypophysis and Neurohypophysis.

Hormonal functions and disorders of thyroid, parathyroid, thymus, adrenal and pancreas.

Gonadal hormones and their functions in male and female.

Text books:

1. Essentials of Animal physiology – IV Edition S.C. Rastogi New age international publishers
2. Text book of Animal physiology – II Edition R.Nagabhushanam et.al Oxford & IBH publishing pvt. Ltd.

Reference books:

1. Animal physiology: mechanism and adaptations – II Edition Eckert / Randall CBI publishers
2. Animal physiology: adaptation and environment - V Edition Knut Schmidt Nielson Cambridge university press.
3. Animal physiology P.S Verma, B.S Tyagi, V.K . Agarwal. S.Chand & Company Ltd.
4. General and Comparative physiology, Hoar, S.William Hoar (2004) Prentice Hall of Indian Pvt.td.

CORE: 8

GENETICS

Contact hours per Week – 5 hours

CREDITS: 5

Contact hours per Semester – 75 hours

Subject Code: U1ZC52

Objectives:

- To understand the Genetics principles and fundamentals of inheritance.
- To familiarize the students with mechanism of inheritance of hereditary disease.
- To study the structure and function of Genetic material.

Unit I

(15 hours)

Mendelian Principle: Mendel and his experiments and law of inheritance: Law of Segregation, Law of Independent Assortment, back cross and test cross.

Gene interaction: Complementary genes: Flower colour in sweet peas. Epistasis: Plumage colour in poultry. Supplementary genes: Coat colour in mice.

Multiple alleles: ABO Blood groups and Rh factor in Human beings.

Multiple factors: Skin colour in human beings.

Unit II

(15 hours)



Linkage and Crossing over: Coupling and repulsion hypothesis, Linkage in Drosophila- Linkage groups, Crossing over in Drosophila- Mechanism of crossing over- Types of crossing over, Sex determination in man, Sex Linkage: Sex-linkage in man (Hemophilia and Colour blindness).

Chromosomal aberrations: Structural: Deletions, Duplications, Translocations and Inversions, Numerical: Euploidy (Monoploidy, Polyploidy), Aneuploidy (Monosomes, Nullisomes and Trisomes).

Extra Chromosomal Inheritance: Kappa particles in Paramecium, Plastid inheritance in Mirabilis.

Unit III

(15 hours)

Human Chromosomes: Normal human karyotype, **inherited disorders:** Allosomal (Klinefelter's syndrome and Turner's syndrome), Autosomal (Down syndrome).

Mendelian Traits: Strait hair, Curly hair, Widow's peak, Dimpled Cheeks, Mid digital hair, Hitchhiker's thumb, Claspings of hands and Hypertrichosis.

Pedigree studies: Symbols used in pedigree analysis- Pedigree analysis of genetic disease - Hemophilia.

Eugenics: Positive and Negative- Euthenics, Euphenics and Genetic Counseling.

Genetics and Society: Human genome project.

Unit IV

(15 hours)

Chemical basis of Heredity: Experimental proof of DNA and RNA as genetic material.

Nucleic Acids: DNA Structure, Types and Replication- RNA Types and Structure.

Gene Mutation: Types of gene mutations- substitution, insertion and deletion.

Genetics of Bacteria: Recombination in bacteria: Transformation, Conjugation, Transduction and Sexduction.

Unit V

(15 hours)

Genetic code: Features of genetic code.

Gene Action: Protein synthesis- Transcription and Translation in prokaryotes.

Regulation of Gene Expression: Regulation of Gene expression in prokaryotes- operon concept (Lac Operon).

Proteomics and genomics: A brief account

Text Books

1. Verma, P.S. and Agarwal, V.K. (2005) Genetics., S. Chand & Co., New Delhi.
2. Gupta, P.K. (2006 reprint) Genetics, 3rd Edition, Rastogi publications, Meerut.

Reference Books

1. Eldon John Gardener, Michael J. Simmons and D. Peter Snustad (2006) Principles of Genetics (VIIIth Edition), John Wiley & Sons Inc., Canada.
2. Stansfield, W.D. (2002) Theory and Problems of Genetics., McGraw Hill Publication, New Delhi.
3. James D. Watson, Tunia A. Baker, Stephen P. Bell, Alexander Gann, Michel Lavine and Richard Losick (2005) Molecular Biology of Gene., Dorling Kindersly (India) Pvt. Ltd., New Delhi.
4. Bhatnagar, S.M. (1999) Essentials of Human Genetics., 4th Edition, Orient Longman.
5. Robert H. Tamarin (2002) Principles of genetics., 7th Edition, Tata Mc-Graw Hill, India.



6. Gangane, S.D. (2001) Human Genetics., 2nd Edition, B.L. Churchill Livingstone Pvt. Ltd., New Delhi.
7. Manage, E.J. and Manage, A.P. (1997) Basic Human Genetics., Rastogi Publications, Meerut.
8. Primrose, S.A. and Twyman, R.M. (2006) Principles of Gene- Manipulation of Genomics., T.J. International , Padstow, UK.

CORE: 9MICROBIOLOGY AND IMMUNOLOGY

Contact hours per Week – 4 hours

CREDITS: 4

Contact hours per Semester – 60 hours

Subject Code: U1ZYC53

Objectives:

- To provide a broad understanding of structure of microorganisms.
- To give an insight in to the role of microbes in the day to day life.
- To understand the structure and function of immune systems.

Unit I

(12 hours)

Microbial structure and growth

General microbial classification – five kingdom concept

Structure of a prokaryotic cell: capsule, cell wall of gram positive and gram negative difference, outer and inner membrane, mesosome, ribosome and plasmids

Structure of Bacteriophage: T₄ phage

Bacterial growth: Growth curve, measurement of bacterial growth and factors affecting bacterial growth

Unit II

(12 hours)

Food Microbiology

Fermented foods- Yoghurt, sauerkraut, meat, fish

Food poisoning – Botulism, aflotoxin, gastroenteritis.

Principles and methods of food preservation: Asepsis, removal of microorganisms, maintenance of anaerobic conditions, preservation at high and low temperatures, preservation by drying, chemical preservation and irradiation

Unit III

Medical Microbiology

(12 hours)

Infections: sources of infection, methods of transmission, factors predisposing to microbial pathogenicity, types of infectious diseases and Nosocomial infections

Bacterial disease: Tuberculosis – Causative agent, transmission, symptom and treatment

Viral disease: AIDS - Causative agent, transmission, symptom and treatment

Fungal disease: Candidiasis - Causative agent, transmission, symptom and treatment

Production of antibiotic- Penicillin.

Unit IV

Basic concept of Immunology

(12 hours)

Organs of the Immune system: Primary and Secondary lymphoid organs – Spleen and lymph node

Types of Immunity: Innate and acquired immunity



Antigens and antibodies: properties of antigens, Antibodies – properties, structure and function of IgG

Antigen- antibody reactions: Precipitations and agglutinations

Unit V

(12 hours)

Vaccines and Immune diseases

Vaccines and its types

Hypersensitivity, Auto immune diseases, Immunodeficiency diseases

Transplantation immunology: Definition and types of grafts

Text Books

1. A Text Book of Microbiology, 2003. Dubey and Maheshwari, Chand & Company Ltd, New Delhi.
2. A text Book of Immunology, 2006, C.V.Rao, Narosa Publishing house Pvt Ltd. ISBN 978-81-7319-662-1

Reference Books

1. Microbiology, 4th edition, Prescott, Harley, Klein, 1999, WCB McGraw Hill Co.
2. Text Book of Microbiology, 5th edition, Ananthanarayanan, Jayaram Paniker, 1997, Orient Longman.
3. Food Microbiology, 4th edition, Frazier, Westhoff, 1995, Tata McGraw Hill Pvt Ltd.
4. Microbiology-A Laboratory Manual VI Edition by Cappuccino *et al*, Pearson Education ISBN-81-297-0265-7
5. Immunology-3rd Edition, 1996, Eli Benjamini, Geoffrey Sunshine, Sidney Leskowitz, Wiley-Liss, Inc., New York

MULBERRY SILKWORM REARING AND GENETICS OF SILKWORM

ALLIED II: 3

Contact hours per Week – 4 hours

CREDITS: 4

Contact hours per Semester – 60 hours

Subject Code: U1ZYA51

Objectives:

- To learn the technique of sericulture and to study the requirements of silkworm rearing.
- To provide the students with a knowledge of diseases of silkworm.
- To give an overall knowledge of silkworm genetics and breeding.

Unit –I

12 Hours

Rearing Programme

Site selection – Model rearing House-Equipments for silkworm rearing-Incubation of eggs-Hatching percentage-Brushing-feeding-Bed cleaning –spacing –seasonal and environmental conditions.

Unit-II

Rearing of young age silkworms

12Hours

Importance of chawki rearing- Feeding schedule – Leaf selection – Spacing – Cleaning care during moulting. Environmental requirements. Methods in young age silkworm rearing.

Unit –III

12Hours

Rearing of Late age silkworms Methods of rearing of late age silkworms – Environmental requirements – Feeding schedule- Leaf requirements – spacing – cleaning – care during moulting- mounting, Mounting density, types- spinning- harvesting of cocoons .



Unit-IV

12Hours

Silkworm diseases and pests

Protozoan, Bacterial, Viral and fungal diseases – Causative agent, Symptoms – Prevention and control measures. Insect pests of silkworm – Indian Uzi fly stored cocoon pest – Dermestid Beetle Preventive measure and control methods.

Unit – V

12Hours

Silkworm genetics

Silkworm as a laboratory tool for genetic studies –hereditary traits of silkworm and effects of environment on them (Egg, Larva, Pupa ,cocoon and adult characters)- chromosome numbers and nature of silkworm-Sex determination-Sex linked and sex limited traits –Inheritance of voltinism-Moultinism-environmental influence and hormonal control- prospects of biotechnology to improves silk production.

Text books

1. Ganga .G and Sulochana Chetty.J An introduction to sericulture IBH Publisher

Reference books

1. Krishna samy.S esricultural training manual FAO 1978
2. Dlip De Sarkar . Biology Genetics and breeding of silkworm.

SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code: U1PS51

Contact Hours per Semester: 30

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I : Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. **(6-hours)**

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. **(6-hours)**

Unit III: Reasoning **(6-hours)**

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning **(6-hours)**

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V: **(6-hours)**

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
2. Quantitative Aptitude - R.S.Aggarwal
3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
4. Malayala Manorama Year Book, 2014

ORNAMENTAL FISH CULTURE

NON MAJOR ELECTIVE: 1

CREDITS: 2

Contact hours per Week – 2 hours

Subject Code: U1ZYN51



Contact hours per Semester – 30 hours

Objectives:

- To study the general morphology of ornamental fishes.
- To provide a knowledge about the maintenance of aquarium.
- To demonstrate the diseases caused by microorganisms.

Unit I

Fish Taxonomy

(6 HOURS)

General characters of fishes-Morphology, Cycloid, Ctenoid and Placoidscales. Structure of gills. General characters of Orders with examples-Perciformes, Atheriniformes and Cypriniformes. General characters of Family- Anabantidae, Cichlidae, Cyprinodontidae, Cyprinidae and Characidae

Unit II

Aquarium fishes and Aquarium Plants

(6 HOURS)

Adaptations in fishes

Characters of Freshwater Aquarium fishes- Gold fish, Guppy fish, Blackmolly and Gourami fish.

Characters of Marine Aquarium fishes – Cloun fish, Regal Angel fish, Tailed Damsel fish and Polka

Aquarium Plants- Azolla plants, Ipomea, Eicchornia, Hydrilla and Myriophyllus.

Unit III

(6 HOURS)

Fish Keeping

Construction of Aquarium glass tank

Bedding materials for the aquarium

Bagging

Fish stocking

Tools for fish keeping-Hand net, Dip tube, Simple siphon, Automatic siphon, Razor blade Scrapper, Magnetic scrapper, Silicon gun with cartridge, Air line accessories, Feeding ring, Worm Feeder, submersible heater.

Fish feed and Feeding habits- Live feed, Artificial feed and types of feeding

Unit IV

(6 HOURS)

Fish Breeding

Guidelines for fish breeding

Breeding tank and breeding habit

Breeding methods in egg layers- Siamese fighter, Blue gourami and Gold

fish. Breeding methods in live bearing ornamental fish- Black molly, Guppy and Sword tail.

Unit V

(6 HOURS)

Fish Health, Hygiene, Diseases and Treatment

Conditions for good health of the fish

Hygienic conditions for fish culture

Ectoparasitic disease: Argulosis and Lernaeasis and its treatment

Protozoan disease and its treatment

Fungal disease and its treatment

Text book

1. Aquarium Fish Keeping - Dr.C.B.L. Srivastava, Emeritus Professor, Dept: of Zoology, Univ: of Allahabad 2006 Publication, Kitab Mahal, Allahabad



Reference Books

1. Manual of Ornamental fishes and Farming technologies- Jameson J.D and R.Santhanam, 1996. Fisheries college & Research Institute Tamil Nadu Veterinary & Animal Sciences, Thoothukudi.
 2. Aquarium Fish- Dick Mills, Dorling Kindersly, 1993 Edition New York.
-

SEMESTER – VI CORE: 10 ECOLOGY

Contact hours per Week – 5 hours

CREDITS: 5

Contact hours per Semester – 75 hours

Subject Code: U1ZYC61

Objectives

- To realize the importance of interrelationship between organisms and environment
- To study the adaptations of organisms to their immediate environment
- To understand the need of biodiversity for the welfare of living organisms

Unit I

(15 Hours)

Concept of Ecosystem

Abiotic factors: Electromagnetic spectrum, visible light, temperature, soil, water and air

Biotic factors: Autotrophs, phagotrophs and saprotrophs

Ecosystem: Definition – components – interaction between biotic and abiotic factors

Forest as an ecosystem

Concept of productivity – Food chain and food web

Ecological pyramids – Energy flow in the ecosystem

Biogeochemical cycles: Gaseous cycle – Carbon and Nitrogen cycles, sedimentary cycle, recycling pathways and recycle index

Unit II

(15 Hours)

Habitat Ecology

Biosphere: Classification – Lithosphere, Hydrosphere and Atmosphere

Physical features, fauna and their adaptations of

1) *Aquatic ecosystems:* Freshwater – lentic and lotic habitat

2) Marine – pelagic and benthic; estuaries

3) *Terrestrial ecosystems:* Biomes- forest, desert, grass land, tundra, savanna, alpine and cave biomes

Unit III

(15 Hours)

Population ecology

Properties of population: Density, Natality, Mortality, Age distribution, Biotic potential, environmental resistance and carrying capacity

Population growth forms: J and S shaped curves – population fluctuation and population control

Population interaction:

- i. Intra-specific interactions: Aggregation, Social organization, Divisions of Labour and Social Behavior, Territorialism and Migration.
- ii. Inter-specific interactions: Neutralism, commensalism, synergism, mutualism, symbiosis, Antagonism, parasitism, competition, allelopathy and predation.



Unit IV

(15 Hours)

Community Ecology and, Pollution

Definition and characteristics: species diversity; stratification; dominance; ecotone and edge effect; ecological indicators; community periodicity

Ecological succession: basic types of succession; processes in succession

Causes, effects and control measures of

Air pollution, Water pollution, Noise pollution, radioactive pollution, Solid waste pollution and Pesticide pollution

Unit V

(15 Hours)

Biodiversity

Definition – scope – Levels of biodiversity: global biodiversity, tropical biodiversity

Economics of biodiversity

Biodiversity hot spots

Climate change

Impact of green, white and blue revolution on biodiversity – Threats and conservation strategies

Deforestation and consequences

Wildlife management and conservation: Principles of conservation – Threatened and endangered species – conservation of forest and wild life – social forestry

Sustainable development: Earth Summit at Rio de Janeiro and World Summit at Johannesburg

Text Books

1. Sharma P.D. (2000). Environmental Biology. Rastogi Publications
2. Varma P.S. and Agarwal V.K. (1993). Environmental Biology. S. Chand and Co

Reference Books

1. Enger E.D. and Smith B.E. (2004). Environmental Science. Mc. Graw Hill, New Delhi
2. Eugene P Odum (2002). Fundamentals of Ecology. Natraj Publishers, Dehradun
3. J.L. Chapman and M.J. Reiss (1999). Ecology – Principles and Applications. Cambridge University Press.

CORE: 11BIOCHEMISTRY

Contact hours per Week – 5 hours

Contact hours per Semester – 75 hours

CREDITS: 5

Subject Code: U1ZYC62

Objectives:

- To learn the diversity of biological molecules in a systematic manner.
- To understand the form and functions of macromolecules.
- To familiarize the various biochemical techniques.

Unit -I: Biomolecules

(15 hours)

Chemistry of a cell - Chemical composition of organism- Structure of Atoms – Carbon, Hydrogen, Oxygen, Nitrogen, Phosphorous and Sulphur

Chemical bonds- Ionic bond, Covalent bond, VanDerwals bond and Hydrogen bond

Functional group of bio molecules – Alcoholic group, Keto group, Carboxylic acid group, Sulphydryl group

Minerals – Calcium, Iodine, Sodium, Iron, Phosphate and nitrates. Biological importance



Essential elements and Non-essential elements

Unit- II: Principles and Biochemical Techniques (15 hours)

Acids – Bases, Dissociation of Acids and Bases

Acid – Base balance

pH – Definition, Concept, Hendersson - Hassellbalch equation

pH Scale and pH paper

Principle and Application- pH meter, Electrophoresis, Spectrophotometry,

Centrifugation, Chromatography

Unit – III: Carbohydrates (15 hours)

General Classification of Carbohydrates

Monosaccharides – Definition, properties, Classification and Biological importance

Biochemical structure of Diose, Triose, Tetrose and Pentose sugar

Disaccharides – Glycosidic bond, Structure of Sucrose and Lactose

Polysaccharides – Properties and Classification of Polysaccharides

Structure of Starch and Glycogen

Unit- IV: Proteins and Lipids (15 hours)

Amino acids – General Structure and Classification of Amino acids

Peptide bonds

Polypeptide chain and General properties of proteins

Classification of Proteins – Simple, Conjugated and Derived proteins

Biological importance of Proteins

Structure of Simple lipid

Fatty acids – Saturated fatty acids and Unsaturated fatty acids

Classification of lipid

Biological importance of lipids

Unit -V : Enzymes and Hormones (15 hours)

Nomenclature and Classification of Enzymes

Mechanism of enzyme action

Factors affecting enzyme action

Isoenzyme and Coenzyme

Structure of Lactate DeHydrogenase

Properties of Vitamins

Biochemistry of Fat and Water soluble vitamins

Chemistry of Hormones – Thyroxin and Insulin

Text Books

1. Fundamentals of Biochemistry for Medical Students – Ambika Shanmugam (2007)
10, III cross street, West CIT, Nagar, Chennai

References

1. Fundamentals of Biochemistry – J.L>Jain, Chand & Company Ltd, Ram nagar, Chennai
2. Harpers Biochemistry – Robert.k.Murray, Darryl.K.Granner, A.Mayes& Victor, Practice Hall International, ISB No: 8385 – 3612 – 3.

CORE: 12EVOLUTION



Contact hours per Week – 4 hours

Contact hours per Semester – 60 hours

CREDITS: 5

Subject Code: U1ZYC63

Objectives:

- To study the mechanism of diversity of life.
- To understand the theories of evolution postulated by various evolutionists.
- To give a knowledge about the formation of new species.

Unit- I: Evidences of Evolution

(12 hours)

Origin of Life: Abiogenesis, Biogenesis, cosmic theory, Bio-chemical origin of life, Coacervates and microspheres, Urey – Miller experiment.

Evidences :

- (i) Morphological evidences – Homologous, Analogous, Vestigial Structures, Atavism and connecting link – Peripatus and lung fishes.
- (ii) Embryological evidences and
- (iii) Biochemical evidences

Unit- II: Theories of Evolution

(12 hours)

Lamarckism

Darwinism- HMS Beagle, Galapagos Island and Darwin's finches

Supplementary theories of Darwin – Sexual selection theory, Artificial selection theory and theory of Pangenesis

Mutation theory of Devries and

Modern Synthetic theory

Unit- III: Modes of Evolution

(12 hours)

Micro evolution: Evolutionary forces, Mechanism with examples, Adaptive colouration, Mimicry – Batesian and Mullerian mimics and their significance in evolution, co-evolution.

Macro evolution: Elementary forces and Mechanism with example

Convergent, divergent and Parallel evolution

Unit –IV: Population Evolution and speciation

(12 hours)

Hardy – Weinberg law and equilibrium

Isolation – Isolating mechanisms and role of isolation in speciation.

Species concepts, Mechanism of Allopatric and Sympatric speciation.

Unit – V: Palaeontology and Evolution

(12 hours)

Fossils: types, Methods of fossilization, Methods of dating fossils Geological time-scale and paleontological evidences

Horse Evolution: Trends, Fossil records, Orthogenesis

Human Evolution : fossil records, cultural evolution and future evolution of man

Text books

1. Dr. N. Arumugam, 2005, Organic Evolution, Saras Publications.

Reference books

1. Mohan P.Arora, 2009, Organic Evolution, Himalaya Publishing House.
2. Theodosius Dobzhansky et al., 1973, Surjeet Publications
3. Dr. Kavita, 2009, Organic Evolution, AITBS Publishers, India
4. Dr. Veer Bala Rastogi, 2005, Organic Evolution, Saras Publications.



ANIMAL PHYSIOLOGY AND GENETICS PRACTICAL

CORE LAB: 3

CREDITS: 2

Subject Code: U1ZYC6P1

Contact hours per week – 2 hours

Contact hours per semester – 30 hours

ANIMAL PHYSIOLOGY

1. Amylase activity in human saliva in relation to substrate concentration.
2. Estimation of oxygen consumption in fish with reference to body weight.
3. Qualitative analysis of nitrogenous waste products in fresh water fish.
4. Enumeration of Red Blood Corpuscles (RBC) by Haemocytometer
5. Differential count of Whit Blood Corpuscles (WBC)
6. Osmolarity of Red Blood Corpuscles (RBC) in different saline solutions
7. Sphygmomanometer - Demonstration only

GENETICS

1. Study of Mendelian traits in Man
2. Human Blood grouping
3. Study of Abnormal Karyotypes- Down's syndrome (Autosomal). Turner's syndrome and Klienfelter syndrome (sex chromosomal) (Pictures)
4. Pedigree analysis: Symbols used in sex chromosomal (X-linked) disorders
5. DNA and RNA models
6. Charts on- Conjugation, Transformation and Transduction

ECOLOGY AND BIOCHEMISTRY PRACTICAL

(To be done at the end of the Sixth Semester)

CORE LAB: 4

CREDITS: 2

Subject Code: U1ZYC6P2

Contact hours per week – 2 hours

Contact hours per semester – 30 hours

LAB IN ECOLOGY

1. Estimation of dissolved Oxygen in an aquatic ecosystem
2. Study of fresh water and marine planktons.
3. Study of animal association
4. Analysis of producers and consumers in grasslands
5. Construction of a food web diagram based on a field visit
6. Adaptations in aquatic and terrestrial animals based on the study of museum specimens such as Parasitic animals (*Ascaris*, *Taenia solium* and *Saculina*), Benthic animals (Model or paper cuttings), Flying (Birds and Bat) and Burrowing animals (Rat / Pangolin).
7. Study of vertebrate endangered species on the basis of Charts/ Models/ Photographs (any five)
8. A study tour to a minimum of three days duration should be conducted compulsorily, exposing the students to different habitats like forest ecosystem, pollution affected areas, wildlife sanctuaries, zoological parks, aquarium, marine habitat and museums. A report on the same should be submitted individually in hand written mode at the time of practical examination and assessed.

LAB IN BIOCHEMISTRY

1. Qualitative analysis of Protein , Carbohydrate and Lipids



2. pH Meter (Principles, Procedure, and operation)
3. Measurement of pH in biological samples (Milk, Mammalian blood, Avian blood, urine of mammal, salty lemon juice and Orange juice)
4. Paper Chromatography (Procedure and its applications)
5. Detection of Rf values of Amino acids using paper chromatography
6. Centrifuges
7. Isolation of blood components using centrifuge (Sheep blood sample)

MICROBIOLOGY AND IMMUNOLOGY & EVOLUTION PRACTICAL

(To be done at the end of the Sixth Semester)

CORE LAB: 5

CREDITS: 2

Subject Code: U1ZYC6P3

Contact hours per week – 2 hours

Contact hours per semester – 30 hours

MICROBIOLOGY

1. Pure culture techniques - Serial dilution, Pour plate, Spread plate and Streak plate methods
2. Gram staining
3. Isolation of bacteria from soil/water
4. Antibiotic sensitivity test

IMMUNOLOGY

1. Blood grouping
2. Widal slide test for Typhoid
3. Rapid Plasma Reagin (RPR) slide test for Syphilis
4. Anti Streptolysin-O slide test for Rheumatic fever

EVOLUTION

1. Homologous and Analogous organs
2. Vestigial organs
3. Fossils
4. Examples of Evolutionary importance:
 - i) Peripatus and
 - ii) Limulus
5. Animals with adaptive colouration: Leaf insect; Stick insect and Chameleon
6. Variation – Finger Print

SILK REELING TECHNOLOGY

ALLIED II: 4

CREDITS: 4

Subject Code: U1ZYA61

Contact hours per Week – 4 hours

Contact hours per Semester – 60 hours

Objectives:

- To understand the reeling of silk and the quality of cocoons.
- To familiarize the students with the organization of sericulture extension.
- To provide a concise account of economics of silkworm rearing.

Unit- I

12 Hours

Cocoon quality, cocoon sorting and marketing

Reeling as a cottage Industry – scope and limitation – importance of quality of cocoons – Physical and commercial characteristics of cocoons – sorting of good and defective cocoons –



cocoon markets – traditional and regulation market – Government Legislations cocoon certification centers – rules and acts pertained to marketing – price fixation.

Unit – II

12 Hours

Cocoon stifling, Boiling and Brushing

Methods of stifling –storage of cocoons – Deflossing – cocoon riddling – cocoon mixing – Objective of cocoon boiling – boiling methods – Brushing – brushing methods.

Unit – III

12 Hours

Silk Reeling

Reeling operation – Reeling apparatus – Reeling machines –reeling silk examination – Lacing and skeining – Book making and bailing - storage of silk.

Unit –IV

12 Hours

Silk processing

Physical and chemical properties of silk –uses of silk- silk throwing and silk weaving – chemical processing of silk yarns and Fabrics – Dyeing – silk Industrial by products.

Unit – V

12 Hours

Raw silk testing and Economics

Objective of Raw silk testing – testing methods and parameters – standard testing appliances and parameters –Raw silk classification – Economics of sericulture in India .

Text books

1. Ganga .G and Sulochana Chetty.J An introduction to sericulture IBH Publisher

Reference books

1. Krishna samy.S esricultural training manual-2 silkworm reaing FAO 1978
2. Dlip De Sarkar . Biology Genetics and breeding of silkworm.
3. Krishna samy.S esricultural training manual-3 Silk reeling.

MULBERRY SILKWORM REARING AND GENETICS OF SILKWORM & SILK REELING TECHNOLOGY

(To be done at the end of the Sixth Semester)

ALLIED II LAB: 2

CREDITS: 2

Subject Code: U1ZYA6P

Contact hours per week – 2 hours

Contact hours per semester – 30 hours

1. Model of rearing house
2. Disinfection of the rearing house
3. Rearing Equipments / appliances
4. Silk gland – Observation
5. Calculation of Hatching percentage
6. Rearing of early age (chawki) silkworms
7. Rearing of late age (Mature) silkworms
8. Mounting methods
9. Types of mountages
10. Cocoon harvesting and sorting
11. Identification of Protozoan, bacterial, viral and Fungal Diseases
12. Control of Pests of silkworms
13. Stifling and boiling of cocoons
14. Reeling Equipments – country charka, cottage basin and automatic machine



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15. Raw silk testing methods
 16. Economics of silk production
 17. Reeling centre –visit.
-

BIOTECHNOLOGY

SBE: 6

CREDITS: 2

SUBJECT CODE: U1ZYS61

Contact hours per Week – 2 hours

Contact hours per Semester – 30 hours

Objectives

- To introduce the basic principles of genetic engineering to produce recombinant organisms
- To understand the potential applications of biotechnology in human welfare

Unit I

(6 Hours)

Introduction

Concept and scope of biotechnology

Enzymes in Genetic engineering - Restriction enzymes – types and target sites; Ligases, Reverse transcriptase

Cloning vector: Plasmids (pBR 322)

Unit II

(6 Hours)

Recombinant DNA technology

Gene cloning in bacteria

Construction of Genomic library: Colony hybridization and plaque hybridization

Blotting techniques: Southern Blot, Northern Blot and Western Blot

Polymerase Chain Reaction (PCR)

Unit III

(6 Hours)

Applications of rDNA technology

Applications of recombinant proteins: Insullin, Growth hormone and Tumour Necrosis Factor

Production and application of monoclonal antibodies

DNA fingerprinting

Unit IV

(6 Hours)

Animal Cell Culture

Requirements of Cell-culture - Protocols for Primary Cell Culture - Subculture

Important products from cell culture: Tissue Plasminogen Activator, Factor VIII, Erythropoietin(EPO), Growth Hormone (GH), Interferons (IFN)

Production of recombinant vaccines: Hepatitis B and FMD

Unit V

(6 Hours)

Transgenic Animal Technology

Transgenic animals: Artificial Insemination, *In vitro* Fertilization, Embryo Transfer, Embryo cloning

Production of elite cow

Applications of Biotechnology in fisheries and sericulture

Text / Reference Books recommended:



1. Old, R.W. and Primrose, S.B. Principles of Gene Manipulation: An introduction to Genetic Engineering.
2. Purohit, S.S. 2000. Biotechnology Fundamentals and Applications Agrobios India.
3. R.C. Dubey, A Text Book of Biotechnology By (S. Chand)
4. M.M. Ranga, Animal Biotechnology (Agrobios)
5. B.D. Singh, Biotechnology

HUMAN BIOLOGY

NON MAJOR ELECTIVE: 2

CREDITS: 2

Subject Code: U1ZYN61

Contact hours per Week – 2 hours

Contact hours per Semester – 30 hours

Objectives:

- To learn the form and functions of various organs of the human body.
- To give an idea about the determination of sex in human.
- To study the socio-cultural aspects of human evolution.

Unit I

(6 hours)

Composition of food, digestion and absorption of food, Balanced Diet, Vitamins deficiencies, Calorific value of food, malnutrition and obesity

Unit II

(6 hours)

Respiration – Oxygen and Carbon dioxide transport; Blood – Blood Composition, Structure and function of heart, Electrocardiogram (ECG), Blood Pressure, Blood Urea – Structure of Kidney, Nephron – Formation of Urine

Unit III

(6 hours)

Sex determination in men – Chromosomal abnormalities (Down's, Turner's and Klinefelter's syndrome) – Human Blood Groups

Unit IV

(6 hours)

Structure of Human Sperm and Ovum – Menstrual cycle – Menopause – Pregnancy, Parturition, Twins, Test-Tube Baby, birth control measures

Unit V

(6 hours)

Human origin – Diversification, Biological and cultural evolution, Future evolution of man-STD- AIDS awareness – HIV, Gonorrhoea

Text books

1. Arumugam, N. (2008) – Developmental Biology, Saras Publication, Nagercoil.
2. Gupta, P.K. (1999), Genetics, Rastogi Publications, Meerut.

Reference books

1. Rastogi, V.B. (2006), Organic Evolution, Kedar Nath and Ramnath, Meerut.
2. Ambika Shanmugam (2006) – Fundamentals of Biochemistry for medical students, Books and Allied Publishers (p) Ltd, Chennai
3. Hoar, S. William (2005) – General and Comparative Physiology, Prentice Hall, India.
4. Verma, P.S & Agarwal, V.K. (2006) – Chordata Embryology, S. Chand & Co, New Delhi.



COURSE NAME : **Bachelor of Science**

DISCIPLINE : **Computer Science**

Semester	Part	Subject	Hour	Credit	Int+Ext=Total	Subject Code	Revision
V	Core 13	Software Engineering	4	4	25+75=100	U1CSC51	No Change
	Elective 1	Embedded System / Operating Systems / Data Mining	5	5	25+75=100	U1CSE51/ U1CSE52/ U1CSE53	New/ No change/ Nochange
	Elective 2	Computer Algorithm / Information Security / E-Commerce	5	5	25+75=100	U1CSE54/ U1CSE55/ U1CSE56	Nochange/ New / New
	Core 14 -Lab	PHP and MySQL Lab	5	3	40+60=100	U1CSC5P1	Nochange
	Core 15 -Lab	Client – Server Programming - Lab	5	3	40+60=100	U1CSC5P2	Nochange
	SBE- 3	Web Programming	2	2	25+75=100	U1CSS51	Nochange
	SBE- 4	Employability Skills	2	2	25+75=100	U1PS51	Revised
	NME-1	Office Automation Lab	2	2	25+75=100	U1CSN5P	Nochange

Semester	Part	Subject	Hour	Credit	Int+Ext=Total	Subject Code	Revision
VI	Core 16	Database Management Systems	6	5	25+75=100	U1CSC61	Nochange
	Core 17	Computer Networks and Security	6	4	25+75=100	U1CSC62	Revised
	Elective 3/ Project & viva-voce	Project & viva-voce	6	5	40+60=100	U1CSC6PV	Nochange
	Core 18-Lab	Computer Animation – Lab	6	3	40+60=100	U1CSC6P	Nochange
	SBE-5	Multimedia	2	2	25+75=100	U1CSS61	Nochange
	SBE- 6	System Software	2	2	25+75=100	U1CSS62	Nochange
	NME-2	Internet and Web Design – Lab	2	2	25+75=100	U1CSN6P	Revised

Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

1. 150 objective type questions with four alternatives for each question.
2. 30 questions to be asked from each unit.
3. Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries ½ mark.
3. Total marks to be reduced to 25.



SEMESTER V
SOFTWARE ENGINEERING

Contact Hours per week: 4Hrs

Subject Code: U1CSC51

Contact Hours per Semester: 60Hrs

Objective:

To make the students to understand the steps in Software Development and Maintenance and to make the students to involve themselves into the activities of Software Engineering in the class room.

UNIT I

(12 HRS)

Introduction and Planning a Software Project: Definitions-Size Factors-Quality and productivity factors-Defining the Problem-Developing solution strategy-Planning and development Process-Planning the Organizational structure.

UNIT II

(12 HRS)

Software Cost estimation: Software Cost Factors-Cost Estimations Techniques-Staffing Level Estimation-Estimating and Maintenance cost.

UNIT III

(12 HRS)

Software Requirements Definition: Software Requirement Specification-Formal Specification Techniques-Languages and Processors for Requirements

UNIT IV

(12 HRS)

System Design: Design Concepts-Modules and Modularization criteria-design notations-design Techniques-text plans-design Guidelines.

UNIT V

(12 HRS)

Verification and Validation and Maintenance: Quality assurance-static analysis-Symbolic Execution-Unit testing and Debugging-System Testing-Maintainability during Development-Maintenance Tools and Techniques.

Text Books:

Richard Fairley, Software Engineering Concepts ,TMH,1985,27th Reprint 2008

Unit 1: Chapters - 1.1, 1.2, 1.3

Unit 2: Chapters - 2.1, 2.2, 2.3,2.4

Unit 3: Chapters - 3.1, 3.2, 3.3,3.4

Unit 4: Chapters - 4.1, 4.2, 4.3

Unit 5: Chapters - 5.1, 5.2, 5.3,5.4,5.7,5.9

Reference Books:

1.Software Engineering- K.L.James,Prentice Hall of India Pvt.Ltd,New Delhi-2009.

2.Fundamentals of Software Engineering- Rajib Mall, Prentice Hall of India Pvt Ltd.,New Delhi-2003.

EMBEDDED SYSTEM

Contact Hours per week: 5 Hrs

Contact Hours per semester: 65 Hrs

Subject Code: U1CSE51

Objective:

The subject gives an insight in to the hardware and software of Embedded system which helps students to develop embedded applications.

UNIT I

(13 HRS)

Definition and classification, Overview of Processors, Hardware, Software, Exemplary embedded systems, SOC, VLSI.

UNIT II

(13 HRS)

I/O Devices, Serial Devices, Examples, Parallel Devices, Timer and Counting Devices-Advanced Buses



UNIT III

(13 HRS)

C program Elements, Macros and Functions, Pointers, Multiple Function calls, Function Pointer, Function Queues, Interrupt Service routine Queues, Embedded Programming Concepts.

UNIT IV

(13 HRS)

Definition of Process, Tasks and Threads, OS,RTOS,RTOS scheduling Models, Inter process Communication and RPC.

UNIT V

(13 HRS)

Micro C/OS II,RTOS System level Functions, Task service Functions, Time delay Functions, Memory Allocation, Semaphore Functions, Mail box related Functions, Queue related Functions.

Text Books:

Embedded Systems - S.Uma Maheswari and P.Epsiba, CHARULATHA PUBLICATIONS-First Edition

Reference Books:

1. Raj Kamal, "Embedded Systems", TMH, 2004.
2. Dr. Prasad, "Embedded Real Time System", Wiley Dreamtech, 2004.

CORE 8 – OPERATING SYSTEMS

Contact Hours Per Week : 5 hrs

Contact Hours Per Semester : 65 hrs

Subject Code: U1CSE52

Objective:

To give exposure on memory management, process management and disk management in operating system.

Units 1:

(13 Hrs)

Introduction to Operating Systems - Operating System Components and Goals - Operating System Architectures - Introduction to Process Concepts- Process States, Life-Cycle of a Process – Process Management – Interrupts – Inter Process Communication - Introduction to Thread concepts – Definition of thread – Motivation for Threads – Thread States – Thread Operations.

Units 2:

(13 Hrs)

Mutual Exclusion – Critical Section – Dekker`s and Peter`s algorithms – Mutual Exclusion with Semaphores – Counting and Implementing Semaphores – Introduction to Deadlock – Examples – Resources concepts – Four Necessary Conditions for deadlock – Prevention – Avoidance – Detection – Recovery.

Units 3:

(13 Hrs)

Introduction to Processor Scheduling – Scheduling levels – Preemptive & Non preemptive scheduling – Priorities – Scheduling objectives – Scheduling criteria – Scheduling algorithms: FIFO, Round-Robin, Shortest-Process-First, Highest-Response-Ratio-Next, Shortest- Remaining-Time.

Units 4:

(13 Hrs)

Memory Management Strategies – Contiguous & Noncontiguous Memory Allocations – Single User Contiguous memory allocation – Fixed Partition and Variable Partition Multiprogramming – Basic concepts of Virtual Memory – Block Mapping – Paging – Page Address Translation by Direct Mapping and by Associative Mapping – Segmentation – Segmentation Address Translation by Direct Mapping – Introduction to Virtual Memory



management, locality, Demand Paging – Page Replacement strategies: Random, FIFO, FIFO anomaly, Least-Recently-Used, Least-Frequently-Used, Not-Used-Recently.

Unit 5:

(13 Hrs)

Disk Scheduling – Disk Scheduling strategies – Files – File operations – File System: Directories – File organization – File allocation: Contiguous and Linked List Non-contiguous - Introduction to Multiprocessor Management - Multiprocessor Architectures – Multiprocessor Operating System Organization.

Text Book: “Deitel, Deitel, Choffnes”, *Operating Systems*, Pearson Education, 3rd Edition, 2004.

UNIT 1: 1.1, 1.2, 1.12, 1.13, 3.1 - 3.5, 4.1 - 4.5

UNIT 2: 5.1, 5.2, 5.2.2, 5.4.1, 5.4.2, 5.6, 5.6.1, 5.6.3, 5.6.4, 7.1, 7.2, 7.4 - 7.10

UNIT 3: 8.1- 8.6, 8.7.1 - 8.7.5

UNIT 4: 9.5 - 9.9, 10.2, 10.3, 10.4.1, 10.4.2, 11.1 - 11.3, 11.5, 11.6.1 - 11.6.6

UNIT 5: 12.4, 12.5, 13.3, 13.4.1, 13.5, 13.6.1, 13.6.2, 15.1 - 15.3

Reference books:

Operating Systems – Achyut Godbole, Tata McGraw Hill 2nd Edition

Operating Systems – D.M.Dhamdere, Tata McGraw Hill 2nd Edition

DATA MINING

Contact Hours per week: 5 Hrs

Contact Hours per semester: 65 Hrs

Subject Code: U1CSE53

Objective:

To make the students to explore the abundant data repositories available for developing intelligence and knowledge based systems.

UNIT I

(13 HRS)

Introduction: Data mining application – data mining techniques – data mining case studies the future of data mining – data mining software.

Association rules mining: Introduction -Basics-task and a Naive algorithm- Apriori algorithm – improve the efficiency of the Apriori algorithm – mining frequent pattern without candidate generation (FP-growth) – performance evaluation of algorithms.

UNIT II

(13 HRS)

Data warehousing: Introduction – Operational data sources- data warehousing – Data Warehousing design – Guidelines for data warehousing implementation - Data warehousing - Metadata.

Online analytical processing (OLAP): Introduction – OLAP characteristics of OLAP system – Multidimensional view and data cube - Data cube implementation - Data Cube operations OLAP implementation guidelines.

UNIT III

(13 HRS)

Classification: Introduction – decision tree – over fitting and pruning - DT rules - Naïve Bayes method- estimation predictive accuracy of classification methods - other evaluation criteria for classification method – classification software

UNIT IV

(13 HRS)

Cluster analysis: cluster analysis – types of data – computing distances-types of cluster analysis methods - partitioned methods – hierarchical methods – density based methods – Dealing with large databases – quality and validity of cluster analysis methods - cluster analysis software.



UNIT V

(13 HRS)

Web data mining: Introduction- web terminology and characteristics- locality and hierarchy in the web- web content mining-web usage mining- web structure mining – web mining software.

Search engines: Search engines functionality- search engines architecture – Ranking of web pages.

Text Books

Introduction to Data mining with case studies, G.K. Gupta, PHI Private limited, New Delhi, 2008

Unit I – Chapters 1 & 2

Unit II- Chapters 7 & 8

Unit III – Chapter 3

Unit IV – Chapter 4

Unit V – Chapters 5 & 6

Reference Books

1. Data Warehousing, Data Mining & OLAP, Alex Berson and Stephen J. Smith, Tata Mc Graw – Hill Edition, Tenth Reprint 2007.

2. Data Mining Concepts and Techniques, Jiawei Han and Micheline Kamber, Second Edition, Elsevier, 2007.

COMPUTER ALGORITHMS

Contact Hours per week: 5hrs

Contact Hours per semester: 65hrs

Subject Code: U1CSE54

Objective:

To give training to develop algorithm for solving problems using Divide and Conquer, Greedy, Dynamic Programming, Backtracking and Branch and Bound Techniques.

Unit I: (13 HRS)

Algorithms: Importance of developing efficient algorithms – Analysis – order – Branch and Bound: Illustrating with 0/1 Knapsack.

Unit II: (13 HRS)

Divide and Conquer: Binary Search – Merge sort – divide and conquer approach - Quick Sort – Arithmetic with large numbers – when not to use divide and conquer.

Unit III: (13 HRS)

Dynamic Programming: Binomial coefficients – Floyds algorithm for shortest paths – Dynamic programming and optimisation problems – chained matrix multiplication – Optimal binary search tree – The travelling salesperson problem.

Unit IV: (13 HRS)

Greedy Approach: Minimum spanning trees – Dijkstra's algorithm for single source shortest path – Scheduling - Huffman code.

Unit V: (13 HRS)

Backtracking: The Backtracking techniques - n Queens Problem – Monte carlo algorithm to estimate the efficiency of a backtracking algorithm - Sum of Subsets – Graph Colouring – Hamiltonian circuits

Text Books:

Foundations of Algorithms Using C++ Pseudocode, Third edition, Richard Neapolitan, Kumars Naimipour. Narosa Publication, 2004.

UNIT I - Chapters – 1 (1.1 to 1.4)

UNIT II - Chapters – 2 (2.1, 2.4, 2.6)

UNIT III - Chapters – 3 (3.1 to 3.6)

UNIT IV - Chapters – 4 (4.1 to 4.4)



UNIT V - Chapters – 5 (5.1 to 5.6)

ReferenceBooks:

1. Fundamentals of Computer Algorithms, Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, Galgotia publications 2005.
2. Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, Prentice Hall of India, 2006.

INFORMATION SECURITY

Contact Hours per week: 5hrs

Contact Hours per semester: 65hrs

Subject Code: U1CSE55

Objective:

To continually strengthen and improve the overall capabilities of the information security management system and also increase professional skills in terms of information security management and technology.

Unit 1: Introduction to Information Security (IS) (13 Hrs)

History – Security – Information Security – Critical Characteristics – Components of IS – Securing the Components of IS – Life Cycles

Unit 2: Security Investigation (13 Hrs)

Need for Security – Business needs – Threats – Attacks – Legal, Ethical & Professional Issues in IS

Unit 3: Security Analysis (13 Hrs)

Risk Management – Identifying Risks – Risk Assessment – Accessing and Controlling Risks

Unit 4: Logical Design (13 Hrs)

Policies, Standards and Practices – Security Models – Visa Model – Design of Security Architecture – Planning for Continuity

Unit 5: Physical Design (13 Hrs)

Security Technology – Intrusion Detection Systems – Scanning and Analysis Tools – Cryptography and Encryption Based Solutions – Access Control Devices – Physical Security – Security and Personnel

Text Books:

Information Security, S. Sharanya, Charulatha Publications, July 2012

Reference Books:

1. Scott Barman, "Writing Information Security Policies", Sams Publishing, 2002.
2. Thomas.R.Peltier, "Information Policies, Procedures and Standards", CRC Press, 2004

E-COMMERCE

Contact Hours per week: 5hrs

Contact Hours per semester: 65hrs

Subject Code: U1CSE56

Objective:

The subject gives the students knowledge about e-commerce, its management, issues, risks and opportunities.

UNIT I :

Foundation of E-Commerce (13 HRS)

Foundations of E-Commerce, Business to consumer electronic commerce, Business to Business electronic commerce.

UNIT II :

Network Infrastructure for E-Commerce (13 HRS)

Network Infrastructure for E-Commerce, The Internet, Intranet and Extranets.



UNIT III :

Web Security (13 HRS)

Web Security, Cryptography and Firewall.

UNIT IV :

Electronic Payment System (13 HRS)

Electronic Payment System, Credit card Payment.

UNIT V:

Mobile Commerce (13 HRS)

Mobile Commerce and WAP(Wireless Application protocol)

Text Books : E-Commerce by Mamta Bhusry(First Edition)

Reference Books: Introduction to E-Commerce(Second Edition), Tata McGraw Hill Edition

PHP & MYSQL LAB

Contact Hours per week: 5hrs

Contact Hours per semester: 65 hrs

Subject Code: U1CSC5P1

Objective:

To make the students as web developers by creating a dynamic web page as well as web sites using PHP Scripting language with manipulation of databases

1. Write a program to display three marks of five students in a table
 2. Write a PHP program to design a client page to get two numbers and add, subtract, multiply and divide then in server and display
 3. Write a PHP program to design a page to get age of a person and display he/she is eligible for vote or not in server page.
 4. Write a PHP program to design a client page to get five marks of a student and display total, Average, Grade in server page
 5. Write a PHP program to Get 'n' value in the client page and display its factorial value in the server page
 6. Write a PHP program to Get 'n' value in the client page and display Fibonacci series in the server page
 7. Write a PHP program to Get 'n' value in the client page and display multiplication table of n in the server page.
 8. Write a PHP program to Get two text value in client page, done string manipulation and display in server page(Any five functions)
 9. Write a PHP program to Get 'n' value in the client page and display Reverse number in the server page
 10. Write a PHP program to find Sum of digits
 11. Write a PHP program to find Biggest number using Function
 12. Write a PHP program to display Book details using Foreach Loop
 13. Write a PHP program to display registration Form
 14. Write a PHP program to Copy from one file to another file
 15. Write a PHP program to Multiples of 7 using REQUIRE
 16. SELECT commands in MY-SQL
 17. DML/TCL commands in MY-SQL
 18. Retrieve and process Employee Pay-bill calculation using PHP & MY-SQL
 19. Retrieve and process EB-Bill calculation using PHP & MY-SQL
 20. Inventory shop
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CLIENT SERVER PROGRAMMING LAB

Contact Hours per week: 5hrs

Contact Hours per semester: 65hrs

Subject Code: UICSC5P2

Objective:

To develop Data Communication skills in Client Server Programming using Visual Programming

1. Write a Visual Basic Program to develop an application using Key Events at field and form level.
2. Write a visual basic program to develop an application form for getting the atm card using the validate event and its properties.
3. Write a visual basic program to develop an application using the tree view control, list view control, form objects, data input forms and dialog boxes.
4. Process the VB application with the COM Component.
5. Processing of Student mark list using ADO Control.
6. Processing of Telephone Bill using Data control.
7. Processing of Employee pay bill using ADO control.
8. Creation of a simple address book using Ado control.
9. Creation of student information system using Dao control.
10. Program using ActiveX control.
11. Develop a TCP Client - Server using Win sock control.
12. Simple client server Chat program using Winsock control.

WEB PROGRAMMING

Contact Hours per week: 2hrs

Contact Hours per semester: 26hrs

Subject Code: U1CSS51

Objective:

The objective of Web programming subject is to train students in becoming proficient PHP&MYSQL web developers. Students will get idea about basic understanding of the web technology and be able to architect, write, debug and run complete web applications using PHP and MYSQL.

UNIT I:

(5 HRS)

Fundamentals of PHP: Introduction-My first PHP Program-Variables-Constants-Operators-Loops, Strings and Statements: loops-while loop-for loop-ForEach loop-Do while loop-Strings-if and switch statement-how to construct it? - False if statement-comparing integer values-false numeric condition-Else if-switch statement-switch default.

UNIT II:

(5 HRS)

Arrays and Functions: Arrays: creating an array with array identifier-: creating array in mix environment-counting number of elements in array-calculating array values-checking element existence Inside array-associative arrays-Functions: returning function-functions within function-passing arguments by value- passing arguments by reference-returning values and function-variable functions.

UNIT III:

(5 HRS)

Cookies, Sessions and forms: Cookies: retrieving cookies-Sessions: starting PHP Session-Starting Session-Session variable-isset function-cleaning and destroying session-Forms: Form to collect information-behind the scenes-running the program.

UNIT IV:

(5 HRS)

More on PHP: Date and Time: Time Stamp-Date and Time-Time-Day-Month-Year-other formatting-Files: creating a new file-Reading a file-Appending a file-Deleting a file-Include function-Require function: Require vs Include.



UNIT V:

(6 HRS)

Databases: Introduction: Database tables-Queries-PHP and MYSQL connecting to a database-connecting to a mysql database-closing a connection-PHP MySQL creating database and tables.

Text Books:

Straight to the point PHP FIREWALL MEDIA-Dinesh Maidasani

Unit I: chapters 1, 2

Unit II: chapter 3

Unit III: chapter 5

Unit IV: chapter 6

Unit V: chapter 4

Reference Books:

The complete reference PHP Tata McGraw-Hill Edition-Steven Holzner

SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code: U1PS51

Contact Hours per Semester: 30

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I : Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. **(6-hours)**

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. **(6-hours)**

Unit III: Reasoning **(6-hours)**

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning **(6-hours)**

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V: **(6-hours)**

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

- | | | |
|---|---|--------------|
| 1. Verbal & Non Verbal Reasoning | - | R.S.Aggarwal |
| 2. Quantitative Aptitude | - | R.S.Aggarwal |
| 3. Subjective & Objective Quantitative Aptitude | - | R.S.Aggarwal |
| 4. Malayala Manorama Year Book, 2014 | | |

OFFICE AUTOMATION LAB

Contact Hours per week: 2 Hrs

Contact Hours per semester: 26 Hrs

Subject Code: U1CSN5P

Objective:

To improve the Students' designing skills in preparing Document, Worksheet, Presentation, and handling Databases.

PROGRAM LIST

MS Word:

1. Open a word document to prepare your "RESUME" by performing the following operations.



-
- Formatting the text, Alignment and Font style.
 - Page setup (margin, alignment, page height and width).
2. Create a student mark sheet using table, find out the total and average marks and display the result.
 3. Design an invitation of your department function using different fonts, font sizes, bullets and word art / clip art.

MS EXCEL:

4. Create a suitable worksheet with necessary information and use data sort to display the results. Also use data filters to answer at least five different criteria.
5. Create a suitable worksheet with necessary information and make out a suitable chart showing gridlines, legends and titles for axes.
6. Prepare salary bill in a worksheet showing basic pay, DA, HRA, Gross salary, PF, Tax and Net salary using suitable Excel functions.

MSPOWERPOINT:

7. Create a presentation to explain various aspects of your college using auto play.
8. Create a PowerPoint presentation to explain the sales performance of a company over a period of five years. Include slides covering the profile of the company, year wise sales and graph with gridlines, legends and title for axes. Use clipart and animation features.
9. Prepare a presentation using auto content wizard and add your content to auto content wizard.
10. Create a power point presentation with the audio and video effect.

MSACCESS:

11. Create a table for storing marks of 10 students. The fields of the table are given below: Reg.No, Name, Mark1, and Mark2, Mark3, Test average (Best Two /2), Assignment, Seminar and total marks. The fields 'Mark1', 'Mark2', 'Mark3', should not allow the user to enter the mark greater than 25 and display proper message in such case. Similar constraint for the field 'Assignment' is 5 marks and for the field 'Seminar' it is 10 marks.
12. Create a table showing names of authors of at least 10 different books, title of books, the prices of these books, name of publishers and year of publication. Also create select, Action, and Cross-tab queries to display the records from this table meeting the criteria used in these queries.
13. Create a form to enter the data directly into this form. The fields required are basic pay, DA, HRA, Gross salary, Income Tax and Net salary.
14. Create a report that displays the customer name, address, phone number, item code, product quantity of the customers whose orders have been pending for over a month.

SEMESTER VI

DATABASE MANAGEMENT SYSTEMS

Contact Hours per week: 6 Hrs

Contact Hours per semester: 78 Hrs

Subject Code: U1CSC61

Objective:

To inculcate the basics of database concepts and its importance in the current world of database dominated systems and technology.

Unit I:

(15 HRS)

Databases and Database Users: Introduction – characteristics of Database approaches – actors on the scene- workers behind the scene- advantages of using the DBMS approach- a brief history of Database applications- when not to use a DBMS.



Database System Concepts and Architectures: Data models, schemas, and instances – Three schema architecture and Data Independence- Database Languages and Interfaces- the Database system environment- centralized and client-server architecture for DBMS- classification of Database Management Systems.

Unit II: (15 HRS)

Data modeling using the entity relationship model : Using high-level conceptual data models for database design- entity type, entity set, attributes and keys-relationship types, relationship sets, roles, structural constraints- weak entity types- refining the ER design for the company database- relationship types of degree higher than two.

The Enhanced Entity Relationship Model (EER): Subclasses, Super classes, and Inheritance- Specialization and Generalizations.

Unit III: (16 HRS)

The Relational Data Model and Relational Database Constraints: relational Model concepts- relational model constraints and relational database schemas.

The Relational Algebra and Relational Calculus: Unary Relational Operations- SELECT and PROJECT- Relational algebra operations from set theory- binary relational operations: JOIN and DIVISION- additional relational operations- Tuple relational calculus- the Domain relational calculus

Unit IV: (16 HRS)

Functional Dependencies and Normalization for Relational Databases: Informal design guidelines for relation schemas- Functional dependencies –normal forms based on primary keys- general definitions of second and third normal forms- Boyce code normal forms.

Unit V: (16 HRS)

Introduction to Transaction Processing concepts and theories: introduction to transaction processing- transaction and system concepts- desirable properties of transactions- characterizing schedules based on recoverability - characterizing schedules based on serializability.

Concurrency control techniques: control techniques- two phase locking techniques for concurrency control – concurrency control based on timestamp ordering.

Database Security: Introduction to database security issues –discretionary access control based on granting and revoking privileges- mandatory access control and role based access control for multilevel security- introduction to statistical database security- introduction to flow control- encryption and public key infrastructure.

Text Book:

Fundamentals of Database Systems - RAMEZ ELMASRI, SHAMKANT B.NAVATHE - Fifth Edition - Pearson Publications, New Delhi-2009.

Reference Books:

Database Management Systems - G.K.Gupta - Second Edition - PHI Learning Private Limited, New Delhi-2008.

Database Management concepts - Raghurama Krishnan, Johannes Gehrke - Third Edition - Tata Mc Graw Hill, New Delhi-2009.

COMPUTER NETWORKS AND SECURITY

Contact Hours per week: 6 HRS

Subject Code: U1CSC62

Contact Hours per Semester: 78 HRS

Objective:

The subject helps students to understand the concepts and mechanism of data communications and networking.



UNIT I:

(15 HRS)

Introduction-Data Communication, Networks, Protocols and Standards, Organizations. Basic Concepts-Line Configuration, Topology, Transmission mode, Categories of Networks.OSI Model-Layered Architecture, Functions of the layers, TCP/IP Protocol suite.

UNIT II:

(15 HRS)

TransmissionMedia:GuidedMedia,Unguidedmedia,Transmissionsimpairment,Performance.Error detection and Correction-Types of errors, Detection, VRC, LRC, CRC, Checksum, Error Correction.

UNIT III:

(16 HRS)

Datalink control-Line discipline, Flow control, Error Control. Local Area Networks-project 802,Ethernet,other Ethernet networks, Token bus, Token Ring, FDDI, Comparison.

UNIT IV:

(16 HRS)

Networking and Internetworking devices-Repeaters,Bridges,Routers,Gateways,other devices,Routing Algorithms,Distance Vector Routing,Link State Routing.Transport Layer-Duties,Connection,OSI Transport Protocol.

UNIT V:

(16 HRS)

Encryption, Decryption and Authentication. Network Security-Four aspects of security, Privacy, Digital Signature, PGP, Authorization.

Text Books:

Data Communications and Networking (2nd Edition) -Behrouz A.Forouzan,Tata McGraw-Hill Publishers

UNIT I - Chapters1,2,3

UNIT II - Chapters 7,9

UNIT III - Chapters 10,12

UNIT IV - Chapters 21,22

UNIT V - Chapters 23.2,27

Reference Books:

1. Data Communications and Computer Networks,Brijendra Singh.Prentice-Hall of India Pvt Ltd.New Delhi,Second Edition,2007.
2. Computer Networks-A.Tananbaum,Pearson Education Asia,prentice hall India 2007.

COMPUTER ANIMATION LAB

Contact Hours per week: 2hrs

Contact Hours per semester: 26 hrs

Subject Code: U1CSC6P

Objective:

The fundamental objective of the lab is to help students familiarize and get used to work on macromedia flash as a tool. To be given exposure on action script for the students.

1. Using multiple layers create a natural scenario using freehand sketch & applying colours.
2. Develop flash application to visualize your name by displaying letters one after another different text effects.
3. Design a certificate for sports meet of our college & display the same in web browser.
4. Develop flash application that scroll text with masking effect.
5. Using frame based animation create movement of a car.
6. Use frame based animation to display different stages of moon (new moon to full moon)
7. Using motion tween along with guide path creates an animation of earth around sun.
8. Create animation with motion tween to display ball bouncing on steps.
9. Illustrate shape tween with interesting animation.



10. Write an ActionScript for converting angle measurements (Ex: Radians/Degrees to Degrees/Radians)
11. Write an Action Script that Formats Currency Amount
12. Write an ActionScript for converting units of measurements (Ex: Temperature converter)
13. Write an ActionScript that implements sort for an input array
14. Write an ActionScript which start and stop the movement of a bird
15. Write an ActionScript that implements Quiz competition

MULTIMEDIA

Contact Hours per week: 2 Hrs

Contact Hours per semester: 26 Hrs

Subject Code: U1CSS61

Objective:

The subject gives introductory ideas to multimedia and helps students to develop applications in multimedia.

UNIT I

(4 HRS)

Introduction to Multimedia, Categories, Characteristics, History, Usage and Applications, Structuring information, Future.

UNIT II

(4 HRS)

Multimedia Hardware, Configuration, OCR, Touch Screen, Scanner, Digital Camera, Speaker, Printer, Plotter, Optical disk, Multimedia Network.

UNIT III

(6 HRS)

Multimedia File, Multimedia formats, Sound and Video formats.

UNIT IV

(6 HRS)

Adobe Photoshop overview, Features, Tool Basics, Common tools and features, Channel mask, Layers, Filters, Photoshop actions.

UNIT V

(6 HRS)

Flash Introduction, Flash basics, Flash drawing, Flash buttons, Flash tweening, Flash scripts.

Text Books:

Multimedia Applications-Darshan Singh Berwar, Vaya Education of India Publishers-First Edition

Chapters: 1,2,3,4.1 to 4.10,5.

Reference Books

1. Ralf Steinmetz and Klara, "Multimedia Computing, Communications and Applications", Pearson Education, 2004.
2. K.Andleigh, Kiran Thakrar, Multimedia Systems Design, PHI, 2007.

SYSTEM SOFTWARE

Contact Hours per week: 2hrs

Contact Hours per semester: 26hrs

Subject Code: U1CSS62

Objective:

To make the students to understand the basic System Software and to create awareness on system software design.

UNIT I

(4 HRS)

System software and Machine Architecture-SIC-CSIC-RISC Machines.

UNIT II

(4 HRS)

Basic Assembler Functions-Assembler Design Options-One pass Assemblers-Multi pass Assemblers.



UNIT III

(6 HRS)

Basic Loader Functions-Loader Design Options-linkage Editors-Dynamic Linking-Bootstrap Loaders.

UNIT IV

(6 HRS)

Basic Compiler Functions-Compiler design Options-Division into Passes-Interpreters-P-Code Compilers-Compiler-Compilers.

UNIT V

(6 HRS)

Other System Software-Database Management system -Text Editors-Interactive Debugging System.

Text Books:

System Software - Leland L.Beck, Third Edition

- Unit I** : Chapter 1
- Unit II** : Chapter 2 (2.1, 2.4)
- Unit III** : Chapter 3 (3.1, 3.4)
- Unit IV** : Chapter 5 (5.1,5.4)
- Unit V** : Chapter 7

Reference Books:

D.M.DHAMDHARE,"Systems programming and Operating Systems",Second Revised Edition,Tata McGraw-Hill,1999.

1. John J.Donovan "Systems programming", Tata McGraw-Hill,1972.

INTERNET AND WEB DESIGNING LAB

Contact Hours per week: 2 hrs

Contact Hours per semester: 26 hrs

Subject Code: U1CSN6P

Objective:

To learn the basic designing of web pages to meet the need of an hour.

Programs:

1. Write HTML code to develop a web page having the background in red and body "My First Page" in any other color.
2. Create a HTML document giving details of your name, age, telephone, address, roll no. using align tag.
3. Write HTML code to design a page containing a text in a paragraph give suitable heading style.
4. Design a page having background color given text color red and using all the attributes of font tab.
5. Write HTML code to create a WebPage that contains an Image at its center.
6. Create a web Page using href tag having the attribute alink, vlink.
7. Write a HTML code to create a web page of pink color and display moving message in red color.
8. Create a web page, showing an ordered list of name of your five friends.
9. Create a HTML document containing a nested list showing the content page of any book
10. Create a web page, showing an unordered list of name of fruits
11. Create the following table in HTML with Dummy Data

Name of Train	Place	Destination	Train No	Time		Fare
				Arrival	Departure	



12. Write HTML code to generate following output

1	2	3	4
5	Image		6
7			8
9	10	11	12

13. Write HTML code to create a web page that displays your class time table.

14. Create a web page which should generate following output:

Frame 1	Frame 2
	Frame 3

15. Create a web page having two frames one containing links and another with contents of the links. When link is clicked appropriate contents should be displayed on Frame2.

16. Design an application form using all input types.

17. Design a website of your own by using all html tags.



VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

[Re-accredited with 'A' Grade by NAAC]

Virudhunagar – 626 001

Course Name: **Bachelor of Science**

Discipline: **Information Technology.**

Semester	Part	Subject	Hour	Credit	Int+Ext=Total	Subject Code	Revision
V	Core 13	Java Programming	4	4	25+75=100	U1NTC51	No Change
	Elective 1	Data Communication and Networks	5	5	25+75=100	U1NTE51	Revised
	Elective 2	Software Engineering	5	5	25+75=100	U1NTE52	Revised
	Core 14 -Lab	Java Programming Lab	5	3	40+60=100	U1NTC5P1	Revised
	Core 15 -Lab	Web Programming Lab	5	3	40+60=100	U1NTC5P2	No Change
	SBE -3	Web Technology	2	2	25+75=100	U1NTS51	Revised
	SBE -4	Employability Skills	2	2	25+75=100	U1PS51	Revised
	NME-1	Fundamentals of Database systems	2	2	25+75=100	U1NTN51	New

Semester	Part	Subject	Hour	Credit	Int+Ext=Total	Subject Code	Revision
VI	Core 16	Dot Net	6	5	25+75=100	U1NTC61	New
	Core 17	Mobile Communication	6	4	25+75=100	U1NTC62	New
	Elective 3 /Project & Viva-voce	Project Viva-voce	6	5	40+60=100	U1NT6PV	No Change
	Core 18 -Lab	Dot Net Lab	6	3	40+60=100	U1NTC6P	New
	SBE -5	Computer Graphics	2	2	25+75=100	U1NTS61	New
	SBE -6	Linux Programming Lab	2	2	40+60=100	U1NTS6P	Revised
	NME-2	Multimedia	2	2	25+75=100	U1NTN61	New



Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

1. 150 objective type questions with four alternatives for each question.
2. 30 questions to be asked from each unit.
3. Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries ½ mark.
3. Total marks to be reduced to 25.

SEMESTER V

CORE 13 - JAVA PROGRAMMING

Contact Hours per week: 4hrs

Contact Hours per semester: 52 hrs

Subject Code: U1NTC51

Objective:

Java is purely object oriented language. Java is secure language which is suitable for internet programming. It has an amazing functionality in World Wide Web. It provides an opportunity for students to understand language features and improvement of programming skill.

UNIT I:

(10 HRS)

Fundamentals of Object oriented programming: Introduction – Object oriented paradigm – Basic concepts of OOP – Benefits of OOP – Applications of OOP

Java evolution: History – Features – How Java differs from C++

Overview of Java language: Simple Java program – Application with two classes – Java program structure – Java tokens – Java statements – Implementing a Java program - Java Virtual Machine – Command line arguments

UNIT II:

(10 HRS)

Constants, Variables & Data types: Constants – Variables – Data types – Declaration of variables – Symbolic constants – Type casting

Operators & Expressions: Arithmetic operators – Relational Operators – Logical Operators – Assignment operators – Increment and Decrement operators – Conditional operator – Bitwise operators – Special operators

Decision making and Branching: Simple if statement – if..else statement – Nested if...else statement – else if ladder – Switch statement

Decision making and Looping: while statement – for statement – do statement – Jump in loops – Labeled loops

UNIT III:

(10 HRS)

Classes, Objects and Methods: Defining a class – Fields declaration – Methods declaration – Creating objects – Accessing class members – Constructors – Method overloading – Static members - Nesting of methods - Inheritance: Extending a class - Overriding methods – Final variables and methods – Final classes – Abstract methods and classes

Arrays, Strings and Vectors: One dimensional array – Creating an array – Two dimensional arrays – Strings – Vectors – Wrapper classes



UNIT IV:

(11 HRS)

Interfaces: Defining interfaces – Extending interfaces – Implementing interfaces – Accessing interface variables

Packages: Java API packages – System packages – Naming conventions – Creating packages – Accessing package – Using a package – Adding a class to package – Hiding classes – Static import

UNIT V:

(11 HRS)

Multi threaded programming: Creating threads – Extending thread class – Stopping and blocking thread – Life cycle of thread – Using thread methods – Thread exceptions – Thread priority – Synchronization – Runnable interface

Errors and Exceptions: Types of errors – Exceptions – Syntax of exception handling code – Multiple catch statements – using finally statements – Throwing own exceptions

Applet: Introduction -Applet life cycle – Creating an Applet – Running an Applet

Text Books:

“Programming with Java”, E.Balagurusamy, 3rd edition, Tata McGraw Hill Ltd.

Unit I: Chapter 1, 2.1, 2.2, 2.3, 3.2, 3.4 to 3.10

Unit II: Chapter 4.2 to 4.5, 4.8, 4.9, 5.2 to 5.9, 6.3 to 6.7, 7.2 to 7.6

Unit III: Chapter 8.2 to 8.14, 8.16, 9.2 to 9.7

Unit IV: Chapter 10.2 to 10.5, 11.2 to 11.10

Unit V: Chapter 12.2 to 12.10, 13.2 to 13.7, 14.1, 14.5, 14.6, 14.10

Reference Books:

“Internet and Java Programming”, Krishnamoorthy, Prabhu

“Java Complete Reference”, Herbert Schildt

ELECTIVE 1 - DATA COMMUNICATION AND NETWORKS

Contact Hours per week: 5 Hrs

Contact Hours per semester: 65 Hrs

Subject Code: U1NTE51

Objective:

To enhance students knowledge in learning of Networking Concepts such as the basic network architecture, digital and analog transmission and the media, types of networks, ISDN protocols, network applications, protocols and standards.

UNIT I

(13 HRS)

Introduction – Fundamental concepts – Data communications – Protocols – Standards – Standards Organizations – Signal Propagation – Analog and Digital signals - Bandwidth of a Signal and Medium. Information Encoding - Introduction - Representing Different Symbols - Minimizing Errors - Multimedia - Multimedia and Data Compression.

UNIT II

(13 HRS)

Analog and Digital Transmission Methods - Analog signal, Analog Transmission - Digital Signal, Digital Transmission - Digital Signal, Analog Transmission - Baud Rate and Bits Per Second - Analog Signal, Digital Transmission - Nyquist Theorem. Modes of Data Transmission and Multiplexing: Introduction – Parallel and Serial Communication – Asynchronous, Synchronous and Isochronous communication – Simplex, Half Duplex and Full Duplex Communication – Multiplexing – Types of multiplexing – FDM versus TDM.

UNIT III

(13 HRS)

Transmission Errors: Detection and Correction: Introduction – Error classification – Types of Errors – Error Detection. Transmission Media: Introduction: Guided media – Unguided media - Shannon Capacity.



UNIT IV

(13 HRS)

Network Topologies, Switching and Routing Algorithms: Introduction – Mesh Topology - Star Topology - Tree Topology - Ring Topology, Bus Topology - Hybrid Topology – Switching Basics – Circuit Switching – Packet Switching – Message Switching – Router and Routing – Factors Affecting Routing Algorithms – Routing algorithms- Approaches to Routing. Networking Protocols and OSI model: Introduction – Protocols in Computer Communications – OSI model – OSI layer functions.

UNIT V

(13 HRS)

LAN – Ethernet – Token ring – FDDI – MAN – DQDB – SMDS – WAN Architecture, WAN Transmission Mechanism, WAN Addressing – Packet Forwarding – Next Hop Tables and Routing – Aloha. Internetworking: Introduction – Why Internetworking – Problem in Internetworking – Dealing with Incompatibility Issues – Virtual Networks – Internetworking Devices – Repeaters – Bridges – Routers – Gateways - A Brief History of the Internet - Internet Topology - Internal Architecture of an ISP.

Text Book:

Data Communications and Networks – Achyut S Godbole, Tata McGraw Hill, 2005

Unit 1: Chapter 1.0-1.8, 2

Unit 2: Chapter 3, 4

Unit 3: Chapter 5, 7

Unit 4: Chapter 8, 9

Unit 5: Chapter 10, 11, 15

Reference Book:

1. Computer Networks, Andrew S Tanenbaum.

2. Data Communication and Networking – Behrouz A. Forouzan.

ELECTIVE 2 - SOFTWARE ENGINEERING

Contact Hours per week: 5 hrs

Subject Code: U1NTE52

Contact hours per semester: 65 hrs

Objective:

Software development currently in hands of people drawn from various disciplines who have no formal training in Software engineering, its various aspects such as principles, fundamentals, theory and practice. This syllabus provides the integrated view of the principle and practice of software engineering.

UNIT I

Introduction to Software Engineering – Introduction: Software – What is a Good Software – Software Engineering – Components of Software Engineering – Software Development – Models – Comparative Analysis of Process Models.

Software Estimation – Size, Effort and Cost – Software Metrics: Introduction – Metrics Database – FPA and Mark II FPA Tool for Estimation – Case Illustration, FPA and MARK II FPA – Estimation of Effort and Schedule – COCOMO – Software Cost Estimation.

UNIT II

Quality Engineering for Software Quality Assurance – Quality – ISO 9001 Standard – Software Quality and Assurance – Testing Techniques for SQA – Test Case Design – Software Testing Strategies.

Software Engineering Tools – Introduction – Analysis Tools – Modeling for Representation – Requirements Engineering – Work Breakdown Structure – Prototyping – CASE, I-CASE Tools.



UNIT III

System Analysis – Systems – System Modeling – Structured System Analysis – Software Requirement Analysis – Software Requirement Specification – Information System.

System Design – Designing Systems: Introduction – The Design Development Process – Data Structure and Database Design – System Design Architecture – Systems Behaviour Design – Architecture and Choices – Architecture and Non-functional Requirements – Design Specification Documentation.

UNIT IV

Object Orientation and Object Basics – Object Oriented Approach and Technology – Basics of Objects – Object Properties – Object Oriented System Development Cycle – Object Oriented System Programming Language – Process Framework for OOSAD.

The Unified Approach and Unified Modeling Language – Static Class Diagram – Use Case Diagram – Behaviour Diagrams.

UNIT V

Testing for Software Quality – Testing for Quality – Functional Testing – System Testing – User Satisfaction Testing - Test Cases and Test Plans.

Text Book:

Software Engineering Principles and Practice by Waman S Jawadekar Tata McGraw Hill – 2008

Unit – I : Chapter 1,2

Unit –II :Chapter 4, 5

Unit – III: Chapter 7, 8

Unit – IV: Chapter 13, 14

Unit – V : Chapter 22

Reference Book:

Software Engineering Concepts by Richard Fairley Tata McGraw Hill- 2012

CORE 14 - JAVA PROGRAMMING LAB

Contact Hours per week: 5hrs

Contact Hours per semester: 65 hrs

Subject Code: U1NTC5P1

Objective:

- To improve programming skill in object oriented programming.
- To demonstrate general principles of a good programming style

1. Write a Java Program to demonstrate Command line arguments.
2. Write a Java Program to demonstrate Type conversions.
3. Write a Java Program to implement operations on complex numbers.
4. Write a Java program to check two strings are equal or not.
5. Write a Java Program for prime number checking using classes.
6. Write a Java program to calculate the roots of Quadratic equations.
7. Write a Java Program to implement any sorting technique for sorting given 'n' elements.
8. Write a Java Program using string methods
9. Write a Java Program to implement Method Overloading.
10. Write a Java Program to implement possible Operations on matrix
11. Write a Java Program to implement Constructor Overloading.
12. Write a Java Program to create a package and importing a package.
13. Write a Java Program to implement Exception Handling.
14. Write a Java Program for Student database using Interfaces.



15. Write a Java Program to writing all the properties of a thread.
16. Write a Java Program to draw traffic signal using applet.
17. Write a Java Program for bouncing ball using applet and thread.

CORE 15 - WEB PROGRAMMING LAB

Contact Hours per week: 5hrs

Contact Hours per semester: 65hrs

Subject Code: U1NTC5P2

Objective:

To provide the web designing skills to the Students by creating the Website via HTML and Scripting languages

1. Write a HTML Program to create College Website.
2. Write a HTML Program to display your bio-data.
3. JavaScript to greet the user as good morning/good afternoon depending on the time of day.
4. Write a JavaScript to perform arithmetic operations.
5. Display the day of week using JavaScript.
6. Write a JavaScript to display time using timers.
7. Write a JavaScript that reads five integers and determines the largest and the smallest integers in a group.
8. Write a JavaScript to find the number of occurrences of a given number in a set of stored numbers.
9. Simple VBScripts to handle mouse events (mousein, mouseover, etc.).
10. Creation of cookies using VBScript.
11. Write a VBScript to find sum of digits.
12. Create a JSP file and print "Hello Welcome "in bold text.
13. Write a JSP Program to Login Check using Redirection.
14. Write a JSP Program to find the number is Prime or not.
15. Write a JSP Program to find the number is Armstrong or not.
16. Write a JSP Program to student mark list Calculation.
17. Write a JSP Program to Calculate E.B Bill Calculation.
18. Write a Servlet program to Check the number is ODD or EVEN using Generic Servlet.
19. Write a Servlet program to find the factorial value using HTTPServlet.
20. Write a Servlet program to display selected books using doGet method.

SBE 3 - WEB TECHNOLOGY

Contact Hours per week: 2hrs

Contact Hours per semester: 26hrs

Subject Code: U1NTS51

Objective:

The objective of this subject is to make the student to understand Web programming language concepts, mainly designing web sites using different scripting languages.

UNIT I:

(5 HRS)

HTML: Introduction-SGML:-Outline of an HTML documents-head section: prologue-link-base-meta-script-style-body section: headers-paragraphs-textformatting-linking-internal linking-embedded images-lists-tables-frames-other special tags and characters-HTML Forms.

UNIT II:

(5 HRS)

JavaScript: introduction-language elements: identifiers-expressions-javascript keywords-operators-statements-functions-objects of JavaScript: the window object- the document object –forms object-text-boxes object and Text-areas-buttons, radio-buttons and checkboxes-the



select object-other objects: the date object-the Math object-the string object-regular expressions-arrays.

UNIT III:

(5 HRS)

VBSCRIPT: Introduction-embedding VBscript code in an HTML document-comments-variables: array variables-operators: assignment operators-numerical operators-string concatenation-procedures: sub procedure-function procedure-Conditional statements-looping constructs-objects and VBscript-Cookies: cookie variables-creating a cookie-a cookie with multiple values-reading cookie value

UNIT IV:

(5 HRS)

SERVLETS: Introduction-Advantages of servlets over CGI-installing servlets-the servlet life cycle-servlet API: The javax.servlet package- The javax.servlet.http package-servlet interface-HttpServlet class- HttpServletRequest Interface- HttpServletResponse interface- a simple servlet-handling HTTP GET requests-handling HTTP POST requests-cookies-session tracking-Multi tier applications using database connectivity-servlet chaining.

UNIT V:

(6 HRS)

JAVA SERVER PAGES: introduction-advantages of jsp-developing jsp components of jsp: directives-JSP Declaratives-servlets-Expressions-standard action-custom tags-reading request information-retrieving the data posted from a HTML file to a jsp file-jsp session-cookies: cookie class-examples regarding the use of cookies –disabling sessions.

Text Book:

Web Technology A developer's Perspective N.P.Gopalan, J.Akilandeswari PHI Learning Private Limited New Delhi-2010

Unit I: chapter 4

Unit II: chapter 5

Unit III: chapter 6

Unit IV: chapter 10

Unit V: chapter 11

Reference Books:

Internet & World Wide Web – How to program, Dietel, Dietel, Pearson Education. 3rd Edition.

SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code: U1PS51

Contact Hours per Semester: 30

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I : Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. **(6-hours)**

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. **(6-hours)**

Unit III: Reasoning

(6-hours)

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning

(6-hours)

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V:

(6-hours)



General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
2. Quantitative Aptitude - R.S.Aggarwal
3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
4. Malayala Manorama Year Book, 2014

NME 1 - FUNDAMENTALS OF DATABASE SYSTEMS

Contact Hours per week: 2 Hrs

Contact Hours per semester: 26 Hrs

Subject Code: U1NTN51

Objective:

To enable the Students to understand the Concepts and Applications of Database Systems and improve the effectiveness of the Computer Systems in an Integrated System Development based on database approach.

UNIT I

(4 HRS)

Introduction – Concept of System – Types of Decisions – Information System – Classification of Information System – Conventional File Processing System – Database System – Components of Database Management System – Economic Justification of Database Approach. Database Concepts – Introduction – Data – Information – Metadata – Terminologies of a File – Association between Fields – Association between Files – File Organization.

UNIT II

(4 HRS)

Data Models – Introduction – Classification of Data Model – Entity Relationship Model. Database Design – Introduction – Steps of Database Design – Normalization.

UNIT III

(6 HRS)

Implementation Design – Introduction – Implementation Design – Guidelines for Mapping Conceptual Data Model into a Desired logical Data Model – Program Design Guidelines.

UNIT IV

(6 HRS)

Relational Database Management systems – Introduction – Relational Database Language – Interactive SQL.

UNIT V

(6 HRS)

Distributed Database Management system – Introduction – Types of Data Processing Application – Distinction between Centralized Databases and Distributed Database – Database Partitioning – Case Study on Vertical Partitioning. Database Operations and Maintenance – Introduction – Database Administration – Security Mechanism – Concurrency Control – Database Recovery.

Text Book

Database Management System – R.Panneerselvam, IInd Edition PHI

Unit – 1: Chapter 1 & 2

Unit – 2: Chapter 4 & 5.1,5.2,5.3.

Unit – 3: Chapter 6

Unit – 4: Chapter 9

Unit – 5: Chapter 10 & 15.1,15.2,15.3,15.4,15.5

Reference Book:

1. Database System Concepts by Silberschatz, Korth and Sudarshan, McGraw Hill.
2. An Introduction to Database systems by Bibin C. Desai, Galgotia Publications



SEMESTER VI

CORE 16 - DOT NET

Contact Hours per week: 6

Subject Code:U1NTC61

Contact Hours per Semester: 78

Objective:

This subject enables students to target specific technologies by demonstrating in depth knowledge and enterprise in developing .Net framework Console Application, Windows Application with Database Access

UNIT I

(15 HRS)

.Net framework and VB .NET: Introduction – Evolution of the .Net Framework – Overview of the .Net Framework – DLL, COM, COM+, DCOM and Assemblies – VB .Net Languages – Development of the VB .Net Program

Features in VS .Net: Introduction – Start page – IDE Main Window – Class View Window – Object Browser – Code Window – Intellisense – Compiling the code – Code Debugging

Variables, Constants and Expressions: Introduction – Value Types and Reference Types – Variable Declaration and Initialization – Value Data Types – Reference Data Types – Boxing and Unboxing – Arithmetic Operators – Textbox Control – Label Control – Button Control

UNIT II

(15 HRS)

Control Statements: Introduction – If Statement – RadioButton Control – CheckBox Control – GroupBox Control – ListBox Control – CheckedListBox Control – ComboBox Control – Select ... Case Statement – While Statement – Do Statement – For Statement

Methods and Arrays: Introduction – Types of Methods – Arrays – One-dimensional Array – Multidimensional Arrays – Jagged Arrays

Classes, Properties and Indexers: Introduction – Definition and Usage of a Class – Constructor Overloading – Copy Constructor – Instance and Shared Class Members – Shared Constructors – Properties – Indexers

UNIT III

(16 HRS)

Inheritance and Polymorphism: Introduction – Virtual Methods – Abstract Classes and Abstract Methods – Sealed Classes

Interfaces, Namespaces and Components: Introduction – Definition and Usage of Interfaces – Multiple Implementation of an Interface – Interface Inheritance – Namespaces – Components – Access Modifiers

Delegates, Events and Attributes: Introduction – Delegates – Events – Attributes – Reflection

UNIT IV

(16 HRS)

Exception Handling: Introduction – Default Exception-handling Mechanism – User-defined Exception-handling Mechanism – Backtracking – The “Throw” Statement – Custom Exception

Multi-Threading: Introduction – Usage of Threads – “Thread” Class – Start(), Abort(), Join() and Sleep() Methods – Suspend() and Resume() Methods – Thread Priority – Synchronization

I/O Streams: Introduction – Streams – Binary Data Files – Text Files – Data Files – FileInfo and DirectoryInfo Classes

UNIT V

(16 HRS)

Additional Windows Controls: Introduction – Docking Controls – Timer Control – ProgressBar Control – LinkLabel Control – TrackBar Control – Panel Control – TreeView Control – Splitter Window – Menu Control – SDI and MDI – Dialog Boxes – ToolBar Control – StatusBar Control

Database Connectivity: Introduction – Advantages of ADO .NET – Managed Data Providers – Developing a simple ADO .Net based application – Creation of a Data table –



Retrieving Data form Tables – Table Updating – Disconnected Data Access Through Dataset Object

Text Books:

Visual Basic .Net, C.Muthu, Vijay Nicole Imprints Private Limited Publication, 2007

UNIT I: Chapter – 1,2,3

UNIT II: Chapter - 4,5,6

UNIT III: Chapter – 7,8,9

UNIT IV: Chapter – 10,11,12

UNIT V: Chapter – 14,15

Reference Books:

1. Visual basic .Net, Jesse Liberty, O'Reilly & Associates Publication, 2003
2. The Visual Basic .Net Programming language, Paul Vick, Microsoft Corporation, 2004

CORE 17 - MOBILE COMMUNICATIONS

Contact Hours per week: 6

Subject Code: U1NTC62

Contact Hours per Semester: 78

Objective:

This subject enables students to learn about ability of access data, information or other logical objects from any device in any network while on move.

UNIT I:

(15 HRS)

Introduction - Mobility of Bits and Bytes – Wireless The beginning – Mobile computing – Dialogue Control – Networks – Middleware and Gateways – Applications and Services- Developing Mobile Computing Applications – Security in Mobile Computing – Standards – why it is necessary – Standard Bodies – Players in the wireless space.

Mobile computing Architecture: History of computers – History of Internet – Internet – The Ubiquitous Network – Architecture for Mobile computing-Three-tier Architecture- Design consideration for mobile computing – mobile computing through Internet- making existing applications mobile enabled

UNIT II:

(15 HRS)

Emerging Technologies: Introduction-Bluetooth –radio Frequency Identification – wireless broadband – mobile IP – Internet Protocol version 6 – Java card.

Global System for Mobile Communication : Global System for Mobile communications – GSM Architecture – GSM Entities – call routing in GSM – PLMN Interfaces – GSM addresses and Identifiers – Network aspects in GSM – GSM Frequency Allocation – Authentication and security.

UNIT III:

(16 HRS)

Short Message Service(SMS): Mobile Computing on SMS - SMS - Value Added Services through SMS - Accessing the SMS Bearer

General Packet Radio Service: Introduction – GPRS and packet Data Network – GPRS Network Architecture – GPRS Network operations – Data Services in GPRS – Applications for GPRS – Limitations of GPRS – Billing and charging in GPRS

UNIT IV:

(16 HRS)

Wireless Application Protocol: Introduction – WAP – MMS – GPRS applications.CDMA and 3G: Introduction – Spread spectrum technology – Is95 – CDMA versus GSM – Wireless Data – Third Generation Networks – Applications on 3G

UNIT V:

(16 HRS)

Wireless LAN: Introduction – wireless LAN advantages – IEEE 802.11 standards – wireless LAN architecture – mobility in wireless LAN – deploying wireless LAN – Mobile adhoc Networks and sensor Networks – wireless LAN Security – WiFi versus 3G



Text Book:

Mobile computing, Technology applications and Service creation, Asoke K Talukder, Roopa R Yavagal, TMH publishing company New Delhi 2007

UNIT I - Chapters 1,2

UNIT II - Chapters 4,5

UNIT III - Chapters 6,7

UNIT IV - Chapters 8,9

UNIT V - Chapters 10

Reference Book:

Mobile Communication – Jochen Schiller 2nd edition Pearson 2003

CORE 18 - DOT NET LAB

Contact Hours per week: 6

Subject Code: U1NTC6P

Contact Hours per Semester: 78

Objective:

To improve students Programming Skills in developing .Net framework Console Application, Windows Application with Database Access

Write a **VB .Net program** for the following **console applications**:

1. Student details using Structure
2. Area Calculation using Enum
3. Displaying number in a Pyramid form using Class and Objects
4. Exception handling
5. Perform String Operations
6. Bank Transaction using Property
7. Railway Reservation using Constructors
8. Voter Checking using Class Events
9. Area Calculation using Constructor Overloading
10. Implementing FIFO using Collection Class
11. Display Employee Details using Inheritance
12. Vehicle Demo using Interface
13. File Manipulation using File Stream

Write a **VB .Net program** for the following **windows applications**:

14. Inventory Details Management
 15. Performing Animation using Timer
 16. Database Management for Student Details
 17. Use menu control to create a demo
 18. Use the Scrollbar control to decide the background colour of the colourbox control.
 19. Processing of Employee Paybill using Datagrid control to view records
-

SBE 5 - Computer Graphics

Contact Hours per week: 2 hrs

Contact Hours per semester: 26 hrs

Subject Code: U1NTS61

Objective:

To understand the Computer Graphics knowledge by computer graphics applications, graphic devices, graphical user interface, scan conversion, windows and clipping, 2D transformation, 3D transformation and multimedia.



Unit I:

Computer graphics applications : Introduction to computer graphics – applications of computer graphics-**Graphic devices:** introduction to graphic devices- display systems – hardware components.

Unit II:

Graphical user interface: Graphical user interface – an introduction-types of GUIs – designing a graphical user interface – principles for good GUI design – user interface engineering- Graphical User Interface(GUI) examples- creating graphical interfaces. **Scan conversion:** line drawing algorithms- DDA algorithms – Bresenham's line drawing algorithm – general Bresenham's algorithm- Bresenham's circle generation algorithm- polygon filling.

Unit III:

Windows and clipping: windows and viewports- window-to-viewport mapping- clipping- Sutherland-Cohen subdivision line clipping algorithm- midpoint subdivision algorithm-**2D Transformation:** 2-D transformation – an introduction-representation of points in matrix form- representation of any 2-D object in matrix form- transformation of points- transformation- transformation between coordinate systems-translation and homogeneous coordinates.

Unit IV:

2D Transformation: translation-2D rotation-reflection-scaling-general fixed point scaling-shearing-**3-D Transformation:** 3D transformation-an introduction-representation of points-representation of a 3D object in matrix form-three dimensional translation-3D rotation-3D reflection-3D scaling-3D shearing

Unit V:

Multimedia and its applications: What is multimedia?-Elements of multimedia system-multimedia applications-multimedia hardware-hardware peripherals-**Multimedia building blocks:** Introduction-text-audio-images-animation-video

Text Book:

Computer Graphics, ISRD group, Tata McGraw – Hill publishing company limited, New Delhi.

Chapters:

Unit I: Chapters 1, 2

Unit II: Chapters 3, 4

Unit III: Chapters 5, 6(Page No: 79-83)

Unit IV: Chapters 6(Page No: 84-95), 7(Page No: 107-122)

Unit V: Chapters 15, 16

Reference Book: Computer Graphics, Donald Hearn and M.Pauline Baker, Prentice Hall of India, Second Edition

SBE 6 - LINUX PROGRAMMING LAB

Contact Hours per Week: 2 hrs

Contact Hours per Semester: 26 hrs

Subject Code : U1NTS6P

Objective:

To improve the Programming skill in Linux with some specialized concepts viz., shell programming , awk and C implementations.

Program List

1. Studying the basic commands in Linux.
2. Write a Shell program to check the given number is odd or even.
3. Write a Shell program to find the sum of digits.
4. Write a Shell program to find the factorial of a given number.



5. Write a Shell program to check the given number is prime or not.
6. Write a Shell program to print the Fibonacci series of a number.
7. Write a Shell program to display character day of the week using Case Statement.
8. Write a Shell program to count the number of words, characters and lines in a file.
9. Write a Shell program to convert a file from Lower case to Upper case.
10. Write a Shell program to compare two files is similar or not.
11. Write a Shell program to check the given file is directory or not.
12. Write a Shell program to find who is the first user is logged in and last user logged in.
13. Write a Shell program to set the read, write and execute permission of files.
14. Write a C program to implement copy command in Linux.
15. Write an AWK program to perform Student mark Processing.

NME 2- Multimedia

Contact Hours per week: 2 hrs

Contact Hours per Semester: 26 hrs

Subject code: U1NTN61

Objective:

The Objective of this subject is to make the students to provide the knowledge in multimedia Applications with the study of Multimedia Products, Text, Audio, Video and Animation.

Unit I:

Introduction: Objectives-Brief History of Multimedia-What is Multimedia?-The Multimedia market-Resources for multimedia Developers. **Products and Evaluation:** Objectives-Types of Products- Evaluation.

Unit II:

Hardware, operating systems and software: Objectives-Computer Architecture-Computer Architecture standards-Operating systems and software-Multimedia Computer architecture.

Text: Objectives-Element of Text- Text data Files -Using Text in Multimedia Applications-Hypertext.

Unit III:

Graphics: Objectives-Element of Graphics- Images and Color- Graphics Files and Application Formats- Obtaining Images for Multimedia use -Using Graphics in Multimedia Applications.

Unit IV:

Digital Audio: Objectives-Characteristics of sound and Digital Audio- Digital Audio systems- MIDI-Audio File Formats-Using Audio in Multimedia Applications.

Unit V:

Digital Video and Animation: Objectives- Background on Video- Characteristics of Digital video- Video capture and Playback systems-Computer Animation-Using Digital video in Multimedia Applications

Text Book: Multimedia Technology And Applications, "David Hillman" GALGOTIA publication,1998, Reprint 2012

Chapters:

Unit I : Chapter 1,2

Unit II : Chapter 3

Unit III : Chapter 4,5

Unit IV : Chapter 6

Unit V : Chapter 7

Reference Book: Principles of multimedia,Ranjan Parekh,TMH,2006



VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

[Re-accredited with 'A' Grade by NAAC]

Virudhunagar – 626 001

Course Name: BACHELOR OF COMPUTER APPLICATIONS

Semester	Part	Subject	Hour	Credit	Int+Ext = Total	Subject Code	Revision
V	Core 15	Computer Networks	4	4	25+75=100	U1CAC51	Revised
	Elective 1	Web Technology, Data Mining, Cryptography	5	5	25+75=100	U1CAE51 U1CAE52 U1CAE53	Revised Revised
	Elective 2	Mobile Computing, Computer Algorithms, Cloud Computing	5	5	25+75=100	U1CAE54 U1CAE55 U1CAE56	Revised Revised New
	Core 16 – Lab	Multimedia Lab	6	3	40+60=100	U1CAC5P1	Revised
	Core 17 – Lab	Web Technology Lab	6	3	40+60=100	U1CAC5P2	New
	SBE – 5	Employability Skills	2	2	25+75=100	U1PS51	Revised
	NME - 1	Data Structure	2	2	25+75=100	U1CAN51	Revised New

Semester	Part	Subject	Hour	Credit	Int+Ext = Total	Subject code	Revision
VI	Core 18	Computer Graphics	5	4	25+75=100	U1CAC61	Revised
	Core 19	Dot Net Programming	4	4	25+75=100	U1CAC62	New
	Core 20	Security in Computing	5	3	25+75=100	U1CAC63	New
	Elective / Project and Viva-voce	Project and Viva-voce	6	5	40+60=100	U1CA6PV	No Change
	Core 21 – Lab	Dot Net Programming Lab	6	3	40+60=100	U1CAC6P	New
	SBE 6	Biometrics	2	2	25+75=100	U1CAS61	New
	NME - 2	Management Information System	2	2	25+75=100	U1CAN61	New

Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs



1. 150 objective type questions with four alternatives for each question.
2. 30 questions to be asked from each unit.
3. Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

1. 100 objective type questions with four alternatives for each question.
2. Each question carries ½ mark.
3. Total marks to be reduced to 25.

Core 15 - Computer Networks

Contact Hours per week : 4 Hrs

Subject Code : U1CAC51

Contact Hours per Semester: 48 Hrs

Credits : 4

Objectives:

- To introduce basic concepts of computer networking and the OSI model
- To learn about transmission media and multiplexing
- To gain knowledge about error detection and correcting those errors
- To know about networking devices and internetworking devices
- To be familiar with TCP/IP Protocol Suite

Unit I

9 Hrs

Introduction: Why Study Data Communications – Data Communication – Networks – Protocols and standards – Standards organizations.

Basic Concepts: Line Configuration – Topology – Transmission Mode – Categories of Networks – Internetworks.

The OSI Model: The Model – Functions of the layers – TCP/IP Protocol suite.

Unit II

9 Hrs

Transmission Media: Guided Media – Unguided Media – Transmission Impairment – Performance – Wavelength – Shannon Capacity – Media Comparison.

Multiplexing: Many to One/One to Many – Frequency Division Multiplexing (FDM) – Wave Division Multiplexing (WDM) – Time Division Multiplexing (TDM) – Multiplexing Application: The Telephone System – Digital Subscriber Line (DSL) – FTTC.

Unit III

10 Hrs

Error Detection and Correction: Types of Errors – Detection – Vertical Redundancy Check (VRC) – Longitudinal Redundancy Check (LRC) – Cyclic Redundancy Check (CRC) – Checksum – Error Correction.

Data Link Control: Line Discipline – Flow Control – Error Control

Switching: Circuit Switching – Packet Switching – Message Switching.

Unit IV

10 Hrs

Networking and Internetworking Devices: Repeaters – Bridges – Routers – Gateways – Other Devices – Routing Algorithms – Distance Vector Routing – Link State Routing

Transport Layer: Duties of the transport Layer – Connection – The OSI Transport Protocol.

Upper OSI Layer: Session Layer – Presentation Layer – Application Layer.



Unit V

10 Hrs

TCP/IP Protocol Suite: Part 1: Overview of TCP/IP – Network Layer – Addressing – Subnetting – Other Protocols in the network layer – Transport Layer.

TCP/IP Protocol Suite: Part 1, Application Layer: Client Server Model – Domain Name System – TELNET – File Transfer Protocol (FTP) – Trivial File Transfer Protocol (TFTP) – Simple Mail Transfer Protocol (SMTP) – Hyper Text Transfer Protocol (HTTP) – World Wide Web (WWW).

Text Book:

Data Communications and networking by Behrouz A.Forouzan, Tata McGraw Hill 2nd Edition, 2009.

Unit I: Chapter 1, 2, 3

Unit II: Chapter 7, 8

Unit III: Chapter 9, 10, 14

Unit IV: Chapter 21, 22, 23

Unit V: Chapter 24, 25.1, 25.3 to 25.7, 25.9, 25.10

Reference Books:

1) Computer Networks, Andrew Tanenbaum, 4th Edition, Prentice Hall of India, 2006.

2) Data and Computer Communications, William Stallings, Pearson education, 7th Edition 2003.

Elective 1 - Web Technology

Contact Hours per week : 5 Hrs

Subject Code : U1CAE51

Contact Hours per Semester : 60 Hrs

Credits : 5

Objectives:

- To provide introduction to the programming tools and skills required to build and maintain sites on the web.
- To provide an overview of how the Web works , as well as descriptions of many of the most widely used Web technologies.
- To learn XHTML in brief
- To understand the basics of javascript
- To know about PHP, ASP.NET

Unit I

12Hrs

Fundamentals : A Brief introduction to the Internet – The World Wide Web – Web Browsers – Web Servers – Uniform Resource Locators – Multipurpose Internet Mail Extensions – The Hypertext Transfer Protocol – Security.

Introduction to XHTML : Origins and Evolution of HTML and XHTML – Basic Syntax – Standard XHTML Document Structure – Basic Text Markup – Images – Hypertext Links – Lists – Tables – Forms – Frames – Syntactic Difference between HTML and XHTML.

Unit II

12Hrs

Cascading Style Sheets : Introduction – Levels of Style Sheets – Style Specification Formats – Selector Forms – Property Value Forms – Font Properties – List Properties – Color – Alignment of Text – The Box Model – Background Images – The and <div> Tags – Conflict Resolution.

The Basics of JavaScript : Overview of JavaScript – Object Orientation and JavaScript – General Syntactic Characteristics – Primitives , Operations , and Expressions – Screen Output and Keyboard Input – Control statements – Object Creation and Modification – Arrays – Functions – An Example –



Unit III

12Hrs

JavaScript and XHTML Documents : The JavaScript Execution Environment – The Document Object Model – Element Access in JavaScript – Events and Event Handling – Handling Events from Body Elements – Handling Events from Button Elements – Handling Events from Text Box and Password Elements – The DOM2 Event Model – The Navigator Object – DOM Tree Traversal and Modification.

Dynamic Documents with JavaScript : Introduction – Positioning Elements – Moving Elements – Element Visibility – Changing Colors and Fonts – Dynamic Content – Stacking Elements – Locating the Mouse Cursor – Reacting to a Mouse Click – Slow Movement of Elements – Dragging and Dropping Elements

Unit IV

12Hrs

Introduction to XML : Introduction – The Syntax of XML – XML Document Structure – Document Type Definitions – Namespaces – XML Schemas – Displaying Raw XML Documents – Displaying XML Documents with CSS – XSLT Style Sheets – XML Processors – Web Services.

The Basics of Perl : Origins and Uses of Perl – Scalars and Their Operations – Assignment Statements and Simple Input and Output – Control Statements – Fundamentals of Arrays – Hashes – References – Functions – Pattern Matching – File Input and Output – An Example.

Unit V

12 Hrs

Servlets and Java Server Pages: Overview of Servlets – Servlet Details – A survey Example – Storing Information on Clients – Java Server Pages.

Introduction to PHP : Origins and Uses of PHP – Overview of PHP – General Syntactic Characteristics – Primitives, Operations, and Expressions – Output – Control Statements – Arrays – Functions – Pattern Matching – Form Handling – Files – Cookies – Session Tracking. **Introduction**

to ASP.NET : Overview of the .NET Framework – Introduction to C# - Introduction to ASP.NET – ASP.NET Controls – Web Services

Text Books:

Programming the World Wide Web, Robert W. Sebesta, Pearson Education, Fourth Edition, 2009

Unit I :	Chapter 1 : to 1.8, 2
Unit II :	Chapter 3, 4
Unit III :	Chapter 5, 6
Unit IV :	Chapter 7, 8
Unit V :	Chapter 10, 11, 12

Reference Books:

1. Web enabled Commercial Application Development using HTML, DHTML, JavaScript, PerlCGI, Ivan Bayross, First Edition, BPB Publications, 2009.

2. Web Technology A Developer's Perspective, N.P.Gopalan, J.Akilandeswari, Third Edition, PHI, 2009

Web References:

1. www.w3schools.com

2. www.roseindia.net

Elective 1 - Data Mining

Contact Hours per Week : 5Hrs

Subject Code: U1CAE52

Contact Hours per Semester: 60 Hrs

Credits : 5

Objectives:



- To put forth the basic principles of data mining techniques to the students so that to update their knowledge in the related area.
- To motivate the students to apply these techniques in their researches and their projects
- To learn clustering techniques
- To know about decision trees
- To understand web mining

Unit I

12 Hrs

Data Mining: Introduction – What is data mining – Data Mining: Definitions – KDD vs Data Mining – DBMS vs DM – Other related techniques – DM Techniques – other mining problems - Issues and challenges in DM – DM application Areas – DM Applications – Case studies.

Unit II

12 Hrs

Association Rules: What is an Association Rules – methods to discover Association Rules – A Priori Algorithm – Partition algorithm – princer- search algorithm – FP- tree growth algorithm – Eclat and dEclat – Discussion on Different algorithm – Generalized association rule – Association rules with item constraints.

Clustering Techniques: Clustering paradigms – partitioning algorithms – K-Medoid algorithm – CLARA- CLARANS-Hierarchical Clustering – DBSCAN- BIRCH – CURE- STIRR-ROCK-CACTUS.

Unit III

12 Hrs

Decision Trees: Introduction – What is a decision tree- Tree construction principle – best split – splitting indices – splitting criteria - decision tree construction algorithms – CHAID-Decision Tree Construction with presorting – Rain Forest – CLOUDS-BOAT-Pruning Technique – Integration of pruning and construction-An Ideal Algorithm

Unit IV

12 Hrs

Rough Set Theory: Introduction – Reduct – Propositional Reasoning and PIAP to Compute Reducts-Types of Reducts – Rule Extraction – Rough sets and Fuzzy sets- Granular computing.

Other Techniques: Introduction – What is NN - Learning in NN – Unsupervised learning – Data mining using NN- Case study – Genetic Algorithm – Support vector machines.

Unit V

12 Hrs

Web Mining: Web mining – Web content mining – web structure mining – web usage mining – Text mining – Unstructured text – Episode Rule Discovery for Texts. **Temporal and spatial data mining:** Introduction – What is temporal data mining – Temporal association rules – sequence mining – the GSP algorithm – SPADE –SPIRIT-WUM-Episode discovery – Event prediction problem – Time series analysis – spatial mining – spatial mining tasks – spatial clustering –spatial trends.

Text Books:

Data Mining Techniques , Arun K Pujari , Second Edition , Universities Press(India) Private Limited, Himayat nagar, Hyderabad(AP), India, 2011.

Unit I : Chapter 3.1-3.11

Unit II : Chapter 4.2-4.6,4.8,4.9,4.11,4.14,4.15,5.2-5.14

Unit III : Chapter 6.1-6.7,6.11,6.13,6.14,6.16-6.20

Unit IV : Chapter 7.1 , 7.4-7.7 , 7.9 , 7.10,8.1-8.7

Unit V : Chapter 9.2-9.8,10.1-10.15

Reference Books:

Data warehousing in the Real world, by Sam Anahory and Dennis Murray, 5th Indian Reprint - 2002, Pearson Education Pvt Limited, New Delhi.



Elective 1 – Cryptography

Contact Hours per Week : 5Hrs

Contact Hours per Semester: 60 Hrs

Subject Code: U1CAE53

Credits : 5

Objectives:

- To know the methods of conventional encryption.
- To understand the concepts of public key encryption and number theory
- To understand authentication and Hash functions.
- To know the network security tools and applications.
- To understand the system level security used.

Unit I

12 Hrs

Attacks on Computers and Computer Security: Introduction - Need for security – Security approaches – Principles of Security – Types of Attacks. **Cryptography:** Concepts and Techniques Plain text and Cipher Text – Substitution techniques – Encryption and Decryption – Symmetric and Asymmetric Key Cryptography – Steganography – Key Range and Key Size – Possible Types of Attacks.

Unit II

12Hrs

Symmetric Key Algorithms and AES: Algorithms types and modes – Overview of Symmetric key Cryptography – Data Encryption Standard (DES) – International Data Encryption Algorithm (IDEA) – RC4 – RC5 – Blowfish – Advanced Encryption Standard (AES)

Unit III

12 Hrs

Asymmetric Key Algorithms, Digital Signatures and RSA: Brief history of Asymmetric Key Cryptography – Overview of Asymmetric Key Cryptography – RSA algorithm – Symmetric and Asymmetric key cryptography together – Digital Signatures – Knapsack Algorithm – Some other algorithms.

Unit IV

12 Hrs

Digital Certificates and Public Key Infrastructure (PKI): Digital Certificates – Private Key Management – The PKIX Model – Public Key Cryptography Standards (PKCS) – XML – PKI and Security.

Unit V

12 Hrs

Internet Security Protocols: Basic concepts – Secure Socket Layer (SSL) – Transport Layer Security (TLS) – Secure Hyper Text Transfer Protocol (SHTTP) – Time Stamping Protocol (TSP) – Secure Electronic Transaction (SET) – SSL vs SET – 3-D Secure Protocol – Electronic Money, E-mail Security – Wireless Application Protocol (WAP) Security – Security in GSM – Security in 3G.

Network Security, Firewalls and Virtual Private Networks: Brief Introduction to TCP/IP – Firewalls – IP Security – Virtual Private Networks (VPN) – Intrusion.

Text Books:

Cryptography and Network Security by Atul Kahate, 2nd Edition, Tata McGrawHill, 2010

Unit I: Chapter 1 and 2

Unit II: Chapter 3

Unit III: Chapter 4

Unit IV: Chapter 5

Unit V: Chapter 6 and 9

Reference Books:

Cryptography and Network Security-Principles and Practices, William Stallings, Second Edition, 2002, Prentice Hall of India.



Elective 2 - Mobile Computing

Contact Hours per week: 5 Hrs

Subject Code : U1CAE54

Contact Hours per Semester: 60 Hrs

Credits: 5

Objectives:

- Able to understand the concept of Mobile Computing and architecture of Mobile Communication.
- Able to understand the latest technologies in Mobile Communications.
- Able to understand the architecture of latest Mobile Operating Systems.
- Able to understand the Security Issues in Mobile Communications.
- To understand mobile operating system

Unit I

12 Hrs

Introduction: Mobility Of Bits And Bytes – Wireless The Beginning - Mobile Computing - Networks - Middleware And Gateways - Applications And Services - Standard Bodies. **Mobile computing Architecture:** Architecture For Mobile Computing - Three Tier Architecture

Unit II

12 Hrs

Emerging Technologies: Bluetooth - Radio Frequency Identification (RFID) - Wireless Broadband (Wimax) - Mobile IP -Internet Protocol Version 6(IPv6). **Global System For Mobile Communications (GSM):** Global System For Mobile Communications - GSM Architecture - GSM Entities - Call Routing In GSM.

Unit III

12 Hrs

General Packet Radio Service: GPRS network architecture- GPRS network operations - Data services in GPRS - Applications for GPRS. **Wireless application protocol (WAP):** Introduction – WAP – MMS – GPRS Application.

Unit IV

12 Hrs

CDMA AND 3G: Third generation networks. **Wireless LAN:** Wireless LAN advantages - IEEE 802.11 standards - wireless LAN architecture. **Client Programming:** Introduction - Moving Beyond The Desktop - A Peek Under The Hood: Hardware Overview - Mobile Phones – PDA - Design Constraints In Applications For Handheld Devices.

Unit V

12 Hrs

Programming for the palm OS: Palm OS Architecture. **Wireless devices with Symbian OS:** Symbian Os Architecture. **Wireless devices with windows CE:** Windows CE Architecture. **Security issues in mobile computing:** Introduction-Information Security-Security Techniques and Algorithms-Security Protocols-Public Key Infrastructure.

Text Book:

Asoke.K.Talukder, Roopa.R.Yavagal. Mobile Computing Technology, Applications and Service Creation. Tata McGraw Hill Publishing Company. 2009.

Unit I: Chapter 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.11, 2.4, 2.5

Unit II: Chapter 4.2, 4.3, 4.4, 4.5, 4.6, 5.1, 5.2, 5.3, 5.4

Unit III: Chapter 7.3, 7.4, 7.5, 7.6, 8.1 to 8.4

Unit IV: Chapter 9.6, 10.2, 10.3, 10.4, 12.1 to 12.6

Unit V: Chapter 13.3, 14.2, 16.3, 18.1 to 18.5

Reference Books:

1. Mobile Computing Technology, Applications and Service Creation – Asoke.K.Talukder, Roopa.R.Yavagal, Hasan Ahmed – Tata McGraw Hill Publishing Company – 2011 Second Edition.
2. Mobile Computing Theory and Practice – Kumkum Garg – Pearson Education 2010
3. Mobile computing – Sipra Dasbit, Biplab K. Sikdar – PHI Learning – 2009 – Eastern Economy Edition.



4. Principles Of Mobile Computing, Uwe Hansmann, Lothar Merk, Martin S. Nicklous, Thomas Stober – Second Edition – Springer (India) Private Limited – Seventh Indian Reprint 2008

Elective 2 - Computer Algorithms

Contact Hours per week: 5 Hrs

Subject Code : U1CAE55

Contact Hours per Semester: 60 Hrs

Credits : 5

Objective:

- To introduce computer algorithms and its concepts
- To emphasis on design as well as analysis to organize the study of algorithms
- To focus major topics in computer algorithms in detail
- To learn backtracking
- To know about dynamic programming

Unit I

12 Hrs

Introduction: What is an algorithm – Algorithm Specification – Performance Analysis.

Unit II

12 Hrs

Divide and Conquer: General Method – Binary Search – Finding the maximum and minimum – Merge Sort – Quick Sort – Selection – Strassen's Matrix Multiplication

Unit III

12 Hrs

The Greedy Method: The General Method – Container Loading – Knapsack Problem – Tree Vertex Splitting – Job Sequencing with Deadlines – Minimum Cost Spanning Trees – Optimal Storage on Tapes – Optimal Merge Patterns – Single Source Shortest Paths.

Unit IV

12 Hrs

Dynamic Programming: The General Method – Multistage Graphs – All pairs Shortest Paths – Single Source Shortest Paths: General Weights – Optimal Binary Search Trees – String Editing – 0/1 Knapsack – Reliability Design – The Traveling Salesperson Problem – Flow Shop Scheduling

Unit V

12 Hrs

Backtracking: The General Method – The 8 Queens Problem – Sum of Subsets – Graph Coloring – Hamiltonian Cycles – Knapsack Problem

Text Book:

Fundamentals of Computer Algorithms by Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, Second Edition, Universities Press Private Limited, 2008

Unit I: Chapter 1.1, 1.2, 1.3

Unit II: Chapter 3.1, 3.3 to 3.8

Unit III: Chapter 4

Unit IV: Chapter 5

Unit V: Chapter 7

Reference:

Data Structure and Algorithm Analysis in C by Mark Allen Weiss Second Edition, Addison Wesley Publishing Company, 1997.

Elective 2 - Cloud Computing

Contact Hours Per Week : 5 Hrs.

Subject Code : U1CAE56

Contact Hours Per Semester : 60 Hrs

Credits : 5

Objectives:

- To understanding cloud computing in different ways.
- To evaluate cloud based solutions against the time, energy, expense required to leverage them.



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- To gain knowledge about how to access the cloud.
- To know the future of cloud computing
- To learn some standards of Cloud

Unit I

12 Hrs

Cloud Computing Basics: Cloud Computing Overview-Applications-Intranets and the Cloud-First Movers in the Cloud. **Your Organization and Cloud Computing:** When you can use cloud computing-Benefits-Limitations-Security Concerns.

The Business Case for Going to the Cloud: Cloud Computing Services – How those applications help your business.

Unit II

12 Hrs

Hardware and Infrastructure: Clients-Security-Network-Services.

Accessing the Cloud : Platforms-Web Applications-Web APIs-Web Browsers.

Unit III

12 Hrs

Cloud Storage: Overview-Cloud Storage Providers. **Standards:** Application-Client-Infrastructure-Service

Unit IV

12 Hrs

Software as a Service: Overview-Driving Forces-Company Offerings-Industries. **Software plus Services:** Overview-Mobile Device Integration-Providers-Microsoft Online **Developing Applications:** Google-Microsoft-Intuit QuickBase-Cast Iron Cloud-Bungee Connect-Development-Troubleshooting-Application Management.

Unit V

12Hrs

Migrating to the Cloud: Cloud Services for Individuals- Cloud Services Aimed at the Mid Market – Enterprise – Class Cloud Offerings-Migration. **Best Practices and the Future of Cloud Computing:** Analyze your Service-Best Practices-How Cloud Computing Might Evolve.

Text Books:

Cloud Computing by A Practical Approach by Anthony T.Velte, Toby J.Velte, Robert Elsenpeter, Tata McGraw-Hill Education Private Limited, New Delhi,2010 Edition, Fifth Reprint 2011.

Unit I : Chapter 1, Chapter 2(Page No-23 to 39), Chapter 4(Page No 69 to 81).

Unit II : Chapter 5,6.

Unit III : Chapter 7,8.

Unit IV : Chapter 9,10,11.

Unit V : Chapter 13,14.

Reference Book

Cloud Computing by Michael Miller, Pearson Education, New Delhi, 2009.

Core 16 - Multimedia Lab

Contact Hours per Week : 6 Hrs

Subject Code: U1CAC5P1

Contact Hours per Semester: 72 Hrs

Credits : 3

Objectives:

- To increase the ability to edit and add special features to the images.
- To increase the ability to create flash movie.
- To design various applications such as cards, invitations, certificates etc.

PHOTOSHOP



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1. Make anyone of one of the parrots black & white in a given picture using Photoshop.
2. Use appropriate tool(s) from the toolbox, cut the objects from 3 files (f1.jpg, f2.jpg & f3.jpg); organise them in a single file and apply feather effects using Photoshop.
3. Type a word and apply the effects shadow emboss using Photoshop.
4. Remove the arrows and text from the given photographic image using Photoshop.
5. Position the picture preferably on a plain background of a colour of your choice – positioning includes rotation and scaling using Photoshop.
6. Adjust the brightness and contrast of the picture so that it gives an elegant look using Photoshop.
7. Design a visiting card containing at least one graphic and text information.
8. Implement Flaming Hot Fire Text using Photoshop.
9. Implement Rain effect Using Photoshop.
10. Using Photoshop to change the color of an image.

FLASH

11. Create an animation with the following features using Flash
WELCOME
 - i) Letters should appear one by one.
 - ii) The fill color of the text should change to a different color after the display of the full word.
12. Simulate movement of a Cloud using Flash.
13. Create an animation to indicate a ball bouncing on steps using Flash.
14. Create an animation to represent the growing moon using Flash.
15. Create an animated cursor using `STARTDRAG("SS", TRUE); MOUSE.HIDE();`
16. Display the background given through your name using Mask.
17. Change a circle into square using Flash.
18. Create a Fog effect using Flash.
19. Animate a Globe using Flash.
20. Create motion guide layer using Flash.

Core 17 - Web Technology Lab

Contact Hours per week : 6 Hrs

Subject Code : U1CAC5P2

Contact Hours per Semester : 72 Hrs

Credits: 3

Objective:

- To make the students well versed in the recent web technologies that engineer creative websites.

HTML

1. Create a HTML static web page which shows the use of different tags.
2. Create a website for a showroom.
3. Design a website for your college using frames.
4. Create an image map
5. Design a resume.

VB Script

6. Write a VBscript code to design E- Book website.

Java Script

7. Create a HTML form which displays some validation using Javascript.
8. Write a java script code to change the background color at frequent intervals.
9. Write a java script code to conduct online exam.

Cascading Style Sheets, DHTML



10. Create a HTML form with the use of Cascading Style Sheets.

11. Write a program implementing DHTML filters.

12. Write a program implementing DHTML Transitions.

ASP

13. Write an ASP code to design a simple application.

14. Write an ASP code displaying student mark list.

JSP

15. Write a program to demonstrate JSP.

Servlet

16. Write a simple application using servlet

SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code: U1PS51

Contact Hours per Semester: 30

Credits: 2

Objectives:

To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I : Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. **(6-hours)**

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. **(6-hours)**

Unit III: Reasoning **(6-hours)**

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning **(6-hours)**

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V: **(6-hours)**

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
2. Quantitative Aptitude - R.S.Aggarwal
3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
4. Malayala Manorama Year Book, 2014

NME 1 - Data Structure

Contact Hours per week: 2 Hrs

Subject Code: U1CAN51

Contact Hours per Semester: 24 Hrs

Credits: 2

Objective:

- To provide a foundation of data Structure which leads to efficient programming
- To be familiar with concepts and techniques behind data structure
- To gain knowledge about the applications that use data structures in real time
- To know about binary trees
- To understand linked lists

Unit I

4 Hrs

Introduction: Data Structures and Algorithms – Data Structure Definition and Classification.



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Arrays: Introduction – Array Operations – Number of elements in an Array Representation of Arrays in Memory – Applications

Unit II **5Hrs**

Stacks: Introduction – Stack Operations – Applications.

Queues: Introduction – Operations on Queues – Circular Queues – Other Types of Queues – Applications.

Unit III **5Hrs**

Linked Lists: Introduction – Singly Linked Lists – Circularly Linked Lists – Doubly Linked Lists – Multiply Linked Lists.

Unit IV **5 Hrs**

Linked Stacks and Linked Queues: Introduction – Operations on Linked Stacks and Linked Queues – Dynamic Memory Management and Linked Stacks – Implementation of Linked Representations – Applications.

Unit V **5 Hrs**

Trees and Binary Trees: Introduction – Trees: Definition and Basic Terminologies – Representation of trees – Binary Trees: Definition and Basic Terminologies and types – Representation of Binary trees – Binary Tree Traversals – Threaded Binary Trees – Application.

Text Books:

Data Structures and Algorithms – Concepts, Techniques and Applications by G.A. Vijayalakshmi Pai, Tata McGraw-Hill Education Private Limited – Third reprint 2009

Unit I: Chapter 1.4, 1.5, 3

Unit II: Chapter 4, 5

Unit III: Chapter 6.1 to 6.5

Unit IV: Chapter 7

Unit V: Chapter 8

Reference Books:

1. Classic Data Structures by Debasis Samanta, PHI Learning Private Limited, Second Edition, 2009.
2. Fundamentals of Data Structure by Ellis Horowitz, Sartaj Sahni, Galgotia BookSource, 2000

VI Semester

Core 18 - Computer Graphics

Contact Hours per Week : 5 Hrs.

Subject Code: U1CAC61

Contact Hours per Semester : 60 Hrs

Credits: 4

Objectives:

- To know applications of computer graphics and various graphics system
- To know the various output primitive functions.
- To learn various algorithms for drawing line, circle, ellipse.
- To gain knowledge in 2D and 3D Transformation
- To learn various clipping algorithms for line, point, text, polygon, curve.

Unit I **14 Hrs**

A Survey of Computer Graphics: Computer-Aided Design-Presentation Graphics-Computer Art-Entertainment-Education and Training-Visualization-Image processing-Graphical User Interface.

Overview of Graphics Systems : Video Display Devices-Raster-Scan Systems-Random-Scan Systems-Input Devices-Hard-Copy Devices-Graphics Software.

Unit II **12 Hrs**

Output Primitives: Points and Lines-Line Drawing Algorithms-Circle Generating Algorithms-Ellipse Generating Algorithms-Other Curves-Filled-Area Primitives

Unit III **10 Hrs**



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Attributes of Output Primitives:Line Attributes-Curve Attributes-Color and Grayscale Levels-Area-Fill Attributes-Character Attributes-Bundled Attributes-Inquiry Functions-Antialiasing

Unit IV **10 Hrs**

Two-Dimensional Geometric Transformations:Basic Transformation-Matrix Representation-Composite Transformations-Other Transformations-Transformation Between Coordinate Systems.

Unit V **14 Hrs**

Two Dimensional Viewing: The Viewing Pipeline-Viewing Coordinate Reference Frame-Window-to-Viewport Coordinate Transformation-Two Dimensional Viewing Functions-Clipping Operations-Point Clipping-Line Clipping-Polygon Clipping-Curve Clipping -Text Clipping-Exterior Clipping.

Text Book:

Computer Graphics C Version, Donald Hearn,M.Pauline baker,Second Edition,Pearson Education,2009.

Unit I : Chapter 1,2(2.1,2.2,2.3,2.5,2.6,2.7)

Unit II : Chapter 3(3.1,3.2,3.5,3.6,3.7,3.11)

Unit III : Chapter 4(4.1 to 4.8)

Unit IV : Chapter 5(5.1 to 5.5)

Unit V : Chapter 6(6.1 to 6.11)

Reference Book:

Computer Graphics ISRD Group,Tata McGraw-Hill Publishing Company Limited,New Delhi,Fifth Reprint 2008.

Core 19 - Dot Net Programming

Contact Hours per week : 4 Hrs

Subject Code : U1CAC62

Contact Hours per Semester : 48 Hrs

Credits : 4

Objective :

- To know basic concepts in VB.NET
- To learn windows forms
- To gain knowledge object oriented concepts in VB.NET

Unit I . **10 Hrs**

Essential Visual Basic. NET - The Visual Basic Language : Operators , Conditionals , and Loops : In Depth – Immediate Solutions. - The Visual Basic Language : Procedures , Scope , and Exception Handling : In Depth – Immediate Solutions.

Unit II **9 Hrs**

Windows Forms : In Depth – Immediate Solutions. Windows Forms : Textboxes , Rich Text Boxes , Labels , and Link Labels : In Depth – Immediate Solutions.

Unit III **10Hrs**

Windows Forms : Buttons , Checkboxes , Radio Buttons , Panels , and Group Boxes : In Depth – Immediate Solutions. Windows Forms : ListBoxes , Checked List Boxes , Combo Boxes and Picture Boxes : In Depth – Immediate Solutions.

Unit IV **9 Hrs**

Windows Forms : Scroll Bars , Splitters , Track Bars , Pickers , Notify Icons , Tool Tips, and Timers : In Depth – Immediate Solutions. Windows Forms : Menus , Built –in Dialog Boxes , and Printing : In Depth – Immediate Solutions.

Unit V **10Hrs**

Windows Forms : Image Lists , Tree and List Views , Toolbars , Status and Progress Bars , and Tab : In Depth – Immediate Solutions. Object Oriented Programming : In Depth – Immediate Solutions. Object Oriented Inheritance : In Depth – Immediate Solutions.

Text Books :



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Visual Basic.Net Programming Black Book, Steven Holzner , Dream Tech Press, 2010.

Unit I: Chapters 1, 2, 3

Unit II: Chapters 4, 5

Unit III: Chapters 6, 7

Unit IV: Chapters 8, 9

Unit V: Chapters 10, 11, 12

Reference Books :

1. Visual Basic.Net, C.Muthu , Tata McGrawHill Education , 2008.

2. The Complete Reference Visual Basic.Net, Jeffrey R.Shapiro , Tata McGraw Hill Education , 2002

Core 20 - Security in Computing

Contact Hours per week : 5 hrs

Subject Code : U1CAC63

Contact Hours per Semester: 60 hrs

Credits: 3

Objectives:

- To illustrate the students how to control the access to information by unauthorized parties.
- To indicate risks involved in security in computing.
- To know about program security
- To learn to design trusted operating system
- To understand database security

Unit I

12 Hrs

Is there a security problem in Computing: What does “secure” mean – Attacks – The meaning of Computer Security- Computer Criminals – Methods of Defense

Unit II

12Hrs

Program Security: Secure Programs - Non-malicious Programs Errors – Viruses and Other Malicious Code – Targeted Malicious Code

Unit III

12 Hrs

Protection in General-Purpose Operating Systems: Protected Objects and Methods of Protection – Memory and Address Protection – Control of Access to General Objects – File Protection Mechanisms – User Authentication.

Designing Trusted Operating Systems: What is Trusted System – Models of Security – Trusted Operating System Design.

Unit IV

12 Hrs

Database Security: Security Requirements – Reliability and Integrity - Sensitive Data – Inference – Multilevel Databases – Proposals for Multilevel Security

Unit V

12Hrs

Security in Networks: Network Concepts – Threats in Network –Firewalls – Intrusion Detection Systems- Secure E-mail.

Text Books:

Security in Computing, Charles P.Pfleeger, Shari Lawrence Pfleeger and Deven Shah, Forth Edition, Published by Dorling Kindersley Pvt. Ltd., New Delhi, 2009.

Unit I : Chapter 1.1 to 1.5

Unit II : Chapter 3.1 to 3.4

Unit III: Chapter 4.1 to 4.5, 5.1, 5.3, 5.4

Unit IV: Chapter 6.2 to 6.7

Unit V : Chapter 7.1, 7.2, 7.4 to 7.6



Reference Books:

Applied Cryptography, Bruce Schneier, John Wiley & Sons Inc, 2001.

Project and Viva - Voce

Contact Hours per Week : 6 Hrs

Subject Code : U1CA6PV

Contact Hours per Semester : 72 Hrs

Credits : 5

Objective:

- The Project Lab is designed to help students develop practical ability and knowledge about practical tools / techniques in order to solve real life problems related to the industry, academic institutions and computer science research.
 - The Project Lab is one that involves practical work for understanding and solving problems in the field of computing.
 - Students will select individually Commercial or Technical Project based on Application Development Technologies.
 - With the known technologies they can develop the software.
-

Core 21 - Dot Net Programming Lab

Contact Hours per week : 6 Hrs

Subject Code : U1CAC6P

Contact Hours per Semester : 72 Hrs

Credits: 3

Objective:

- To develop simple applications using VB.NET
- To implement object oriented concepts in VB.NET
- To perform operations in DataBase

VB.NET:

1. Write a program in VB.Net to perform String Operations.
 2. Write a program in VB.Net to perform Listbox Operations.
 3. Write a program in VB.Net to perform Array List Operations.
 4. Write a program in VB.Net to perform Binary Search.
 5. Write a program in VB.Net to demonstrate Constructor Overloading.
 6. Write a program in VB.Net to draw Shapes using Enumeration.
 7. Develop a VB.Net application using Datagrid to display records.
 8. Write a program in VB.Net to perform Number Checking.
(Armstrong, Adam, Palindrome, Sum of Digits)
 9. Write a program in VB.Net to design a Calculator.
 10. Write a program in VB.Net to perform Bank Transaction using Constructor.
 11. Develop a VB.Net Quiz application.
 12. Write a program in VB.Net to display Student Mark List Using Exception.
 13. Write a program in VB.Net to show Car Show Room Details using Property.
 14. Develop a VB.Net application for Hospital Management using Interface.
 15. Write a program in VB.Net to perform Payroll Calculation of Employees using Inheritance.
 16. Write a program in VB.Net to implement Operator Overloading.
 17. Develop a database application to perform insert, modify, update and delete operations.
-



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SBE 6 - Biometrics

Contact Hours per Week : 2Hrs

Contact Hours per Semester: 24 Hrs

Subject Code: U1CAS61

Credits : 2

Objectives:

- To Study physiological or behavioral characteristics or both, that can be utilized to verify the identity of individuals.
- Able to know about how authentication technologies work
- To understand facial and voice recognition
- To know about eye biometrics
- To learn esoteric biometrics

Unit I

6 Hrs

How Authentication Technologies Work: What you know: Password and PINs-What you Have: Cards and Tokens-What you are: Biometrics-Multi-factor Authentication-Subverting the system-Deploying Authentication Systems-Economics of Authentication.**How Biometrics Work:** Brief History of Biometrics-Why use Biometrics? –Key elements of Biometric Systems-User Training.

Unit II

6 Hrs

Fingerprint and Hand Geometry: History of Fingerprints – Fingerprint cards-Manual Matching of fingerprint-The first age of Automation-The second age of Automation – Template Extraction and size-Robustness, Expected Accuracy- Vulnerabilities. Hand Geometry: History of Hand Geometry-The Technology – Uses of Hand Geometry- Robustness, Expected Accuracy- Vulnerabilities. **Facial and Voice Recognition:** Facial Recognition Applications – Facial Recognition Technology – Voice Verification.

Unit III

4 Hrs

Eye Biometrics: Iris and Retina Scanning: Iris Scanning- Iris Recognition Technology-Applications.-Retina Scanning- Accuracy. **Signature Recognition and Keystroke Dynamics:** Signature Recognition-How Signature Recognition Works- History and Development-Implementation Studies- Limitations- Keystroke Dynamics- History-Application-Digraph Representation- Other Uses.

Unit IV

4 Hrs

Esoteric Biometrics: Vein Pattern- Facial Thermography – DNA-Sweat Pores – Hand Grip-Fingernail bed- Body Odor- Ear- Gait-Skin Luminescence – Brain wave Pattern- Footprint and Foot Dynamics- The Future.

Unit V

4 Hrs

Biometrics in Large-Scale Systems: Getting Started- Document and Procurement Process-Specifying the Systems-Sample AFIS RFP Overview.

Text Books:

Biometrics: The Ultimate Reference – John D. Woodward, Jr.Nicholas M. Orlans Peter T.Higgins Published by Dreamtech Press, 2009, New Delhi.

Unit I : Chapter 1,2

Unit II : Chapter 3,4

Unit III : Chapter 5,6

Unit IV : Chapter 7

Unit V: Chapter 9

Reference Books:

Biometrics Identity Verification in a Networked world, Sanir Nanavati, Michael Thieme, WileyComputerPublishingLtd, NewDelhi, 2003.

NME 2 - Management Information System



Contact Hours per Week : 2 Hrs

Subject Code: UICAN61

Contact Hours per Semester: 24

Credits: 2

Objective:

- To introduce MIS and its concepts
- To give emphasis on decision making and information
- To cover the major topics in Management Information System in depth
- To know about Systems Analysis and Design
- To learn Strategic Management of Business

Unit I

4 Hrs

Introduction: MIS Concept – Definition – Role of MIS – Impact of the MIS – MIS and Computer – MIS and Academics – MIS and the User. **Role and Importance of Management:** Introduction to Management – Approaches to Management – Functions of the Manager – Managers and the Environment – Management as a Control System – Management by Exception – MIS: A Support to the Management.

Process of Management: Management Effectiveness – Planning – Organising – Staffing – Coordinating and Directing – Controlling – MIS: A Tool for Management Process.

Unit II

5 Hrs

Organisation structure and Theory: Basic Model of Organisation Structure – Modifications to the Basic Model of Organisation Structure – Organizational Behaviour – Organisation as a system – MIS: Organisation. **Strategic Management of Business:** The Concept of Corporate Planning – Essentiality of Strategic Planning – Development of the Business Strategies – Types of Strategies – Short Range Planning – Tools of Planning – MIS: Business Planning. **Decision Making:** Concepts – Decision Methods, Tools and Procedures – Behavioural Concepts in Decision Making – Organisation Decision Making – MIS and Decision Making Concepts.

Unit III

5 Hrs

Information: Concepts – A Quality Product – Classification of the Information – Methods of Data and Information Collection – Value of the Information – General Model of a Human as an Information Processor – Summary of Information Concepts and their Implications – Organisation and Information – MIS and the Information Concepts. **Systems:** System Concepts – Systems Control – Types of System – Handling System Complexity – Post Implementation Problems in a System – MIS and System Concepts.

Unit IV

5 Hrs

Systems Analysis and Design: Introduction – The Need for System Analysis – System Analysis of the existing system and new requirement – System Development Model – SSAD – Computer System Design – MIS and the System Analysis. **Development of MIS:** Development of Long Range plans of the MIS – Ascertaining the Class of Information – Determining the Information Requirement – Development and Implementation of the MIS – Management of Quality in the MIS – Organisation for Development of the MIS – MIS: The factors of success and failure.

Unit V

5 Hrs

Choice of Information Technology: Nature of IT Decision – Strategic Decision – Configuration Design – Evaluation – IT implementation plan – Choice of IT and MIS. **Applications in Service Sector:** Introduction – Creating a Distinctive Service – MIS Applications in Service Industry – MIS: Service Industry.

Text Book:

Management Information System, W S Jawadekar, Tata McGraw-Hill Publishing Company Private Ltd, Second Edition 2002.

Unit I: Chapter 1, 2, 3,

Unit II: Chapter 4, 5, 6,



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Unit III: Chapter 7, 8,

Unit IV: Chapter 9, 10,

Unit V: Chapter 11, 13,

Reference Book:

Management Information Systems by Jerome Kanter, Second Edition, Prentice Hall of India private Limited, New Delhi, 2001.



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Course Name: **Master of Computer Applications**

Semester	Part	Subject	Hour	Credit	Int+Ext = Total	Subject Code	Revision
V	Core 22	Cryptography	5	5	25+75=100	P1CAC51	Revised
	Core 23	Principles of Compiler Design	5	5	25+75=100	P1CAC52	Revised
	Core 24	Mobile Computing	5	5	25+75=100	P1CAC53	New
	Core 25 – Lab	Advanced Java Programming Lab	5	3	40+60=100	P1CAC5P1	New
	Core 26 – Lab	Dot Net Programming Lab	5	3	40+60=100	P1CAC5P2	Revised
	Elective III	Digital Image Processing/ Embedded Systems/ Object Oriented Analysis and Design	5	5	25+75=100	P1CAE51/ P1CAE52/ P1CAE53	New/ New/ Revised

Semester	Part	Subject	Hour	Credit	Int+Ext = Total	Subject Code	Revision
VI	Project and Viva-voce	Project and Viva-voce	-	12	100+100=200	P1CA6PV	No Change

Core 22 CRYPTOGRAPHY

Contact Hours per Week : 5Hrs

Subject Code: P1CAC51

Contact Hours per Semester: 60 Hrs

Credits : 5

Objectives:

- To know the methods of conventional encryption.
- To understand the concepts of public key encryption and number theory
- To understand authentication and Hash functions.
- To know the network security tools and applications.
- To understand the system level security used.

Unit I

10 Hrs

Introduction: Attacks, services, and Mechanisms-security attacks-security services - A model for Internetwork security. Conventional Encryption: Classical Techniques, Conventional Encryption Model – Stenography-Classical Encryption Techniques.

Unit II

14 Hrs

Conventional Encryption: Modern Techniques, Simplified DES- Block Cipher Principles-The Data Encryption Standard- The Strength of DES-Differential and linear Cryptanalysis-Block Cipher Design Principles – Block Cipher Modes of Operation – Conventional Encryption: Algorithms, Triple DES – International Data Encryption Algorithm-Characteristics of Advanced Symmetric Block Ciphers.

Unit III

14 Hrs

Public Key Cryptography: Principles of Public-Key Cryptosystems-The RSA Algorithm- Key Management – Diffie-Hellman Key Exchange-Elliptic Curve Cryptography-Digital Signature and



Authentication Protocols: Digital Signatures- Authentication Protocols- E-mail Security: Pretty Good Privacy- S/MIME.

Unit IV

12 Hrs

IP Security: IP security Overview- IP Security Architecture- Authentication Header- Encapsulating Security Payload-Combining Security Associations-Key Management. **Web Security:** Web Security Requirements – Secure Sockets Layer and Transport Layer Security-Secure Electronic Transaction.

Unit V

10 Hrs

System Security: Intruders, Viruses and Worms: Intruders – Viruses and Related Threads – Firewalls: Firewall Design Principles- Trusted Systems.

Text Book:

Cryptography and Network Security - Principles and Practices, William Stallings, Pearson Education, Second Edition, 2002.

Unit I : Chapter 1 and 2

Unit II : Chapter 3 and 4 (4.1,4.2, and 4.7)

Unit III : Chapter 6,10 (10.1 and 10.2) and 12

Unit IV : Chapter 13 and 14

Unit V : Chapter 15 and 16

Reference Books:

1.Cryptography and Network Security, Atul Kahate, Tata McGraw-Hill, 2003.

2.Applied Cryptography,Bruce Schneier, John Wiley & Sons Inc, 2001.

3. Security in Computing, Charles B. Pfleeger, Shari Lawrence Pfleeger, Third Edition, Pearson Education, 2003.

Core 23 Principles of Compiler Design

Contact Hours per Week : 5Hrs

Subject Code: P1CAC52

Contact Hours per Semester: 60 Hrs

Credits : 5

Objectives:

- To introduce compiler design and its principles
- To give emphasis on solving the problems universally encountered in designing a compiler
- To know about finite automata and lexical analysis
- To learn basic parsing techniques
- To understand code optimization

Unit I

12 Hrs

Introduction to Compilers: Compilers and translators – Why do we need translators – The structure of a compiler – Lexical Analysis – Syntax Analysis – Intermediate Code Generation – Optimization – Code Generation – Bookkeeping – Error Handling – Compiler Writing Tools.

Finite Automata and Lexical Analysis: The role of the lexical analyzer – A simple approach to the design of lexical analyzers – Regular Expressions – Finite automata – From regular expressions to finite automata –Implementation of a lexical analyzer.

Unit II

12 Hrs

The Syntactic Specification of Programming Languages: Context free Grammars – Derivations and parse trees – Capabilities of context free grammars.

Basic Parsing Techniques: Parsers – Shift reduce parsing – Operator precedence parsing – Top down parsing – Predictive parsers.

Unit III

12 Hrs

Automatic Construction of Efficient Parsers: LR parsers – The canonical collection of LR(0) items – Constructing SLR parsing tables – Constructing canonical LR parsing tables – Constructing



LALR parsing tables – Using ambiguous grammars – An automatic parser generator – Implementation of LR parsing tables – Constructing LALR sets of items.

Unit IV

12 Hrs

Syntax-Directed Translation: Syntax directed translation schemes – Implementation of Syntax directed translators – Intermediate code – Postfix notation – Parse trees and syntax trees – Three address code, quadruples and triples – Postfix translations – Translation with a top down parser.

Symbol Tables: The contents of a symbol table – Data structures for symbol tables – Representing scope information.

Unit V

12 Hrs

Error Detection and Recovery: Errors – Lexical phase errors – Syntactic phase errors – Semantic errors.

Introduction to Code Optimization: The principal sources of optimization – Loop optimization – The DAG representation of basic blocks – Value numbers and algebraic laws – Global data flow analysis.

Text Book:

Principles of Compiler Design by Alfred V.Aho, Jeffrey D.Ullman Narosa Publishing House, 2002.

Unit I: Chapter 1, 3

Unit II: Chapter 4, 5

Unit III: Chapter 6

Unit IV: Chapter 7, 9

Unit V: Chapter 11, 12

Reference Book:

Compilers Principles, Techniques and Tools by Alfred V.Aho, Monica S.Lam, Ravi Sethi, Jeffrey D.Ullman, Second edition, Pearson Publications, 2007.

Core 23 Mobile Computing

Contact Hours per Week : 5Hrs

Subject Code: P1CAC53

Contact Hours per Semester: 60 Hrs

Credits : 5

Objectives:

- To understand the concept of Mobile Computing and architecture of Mobile Communication.
- To understand the latest technologies in Mobile Communications.
- To understand the architecture of latest Mobile Operating Systems.
- To know about GSM
- To understand the Security Issues in Mobile Communications.

Unit I

10 Hrs

Introduction: Mobility Of Bits And Bytes – Wireless: The Beginning - Mobile Computing - Networks - Middleware And Gateways - Applications And Services - Standard Bodies. **Mobile computing Architecture:** Architecture For Mobile Computing - Three Tier Architecture.

Emerging Technologies: Bluetooth - Radio Frequency Identification (RFID) - Wireless Broadband (Wimax) - Mobile IP - Internet Protocol Version 6(IPv6).

Unit II

13 Hrs

Global System For Mobile Communications (GSM): Global For Mobile Communications - GSM Architecture - GSM Entities - Call Routing In GSM. **Short message Service (SMS):** Mobile computing over SMS – Short Message service – Value added service through SMS. **General Packet Radio Service:** Introduction – GPRS and Packet Data Network - GPRS network architecture - GPRS



network operations - Data services in GPRS - Applications for GPRS – Limitations for GPRS – Billing and Charging in GPRS – Enhanced Data Rates for GSM Evolution(EDGE).

Unit III

10 Hrs

Wireless Application Protocol (WAP): Introduction – WAP – MMS – GPRS Application. - **CDMA AND 3G:** Third generation networks – Applications on 3G. **Wireless LAN:** Wireless LAN advantages - IEEE 802.11 standards - wireless LAN architecture.

Unit IV

13 Hrs

Client Programming: Introduction - Moving Beyond The Desktop - A Peek Under The Hood: Hardware Overview - Mobile Phones – Features of Mobile Phones – PDA - Design Constraints In Applications For Hand Held Devices.

Programming for the palm OS: Palm OS Architecture.

Wireless devices with Symbian OS: Symbian Os Architecture.

Wireless devices with windows CE: Windows CE Architecture.

Unit V

14 Hrs

Multimedia: Networked Multimedia Application – Issues in Multimedia delivery over the Internet – Multimedia Delivery over the Internet – Multimedia Networking Protocols.

IP Multimedia Subsystem: Introduction – IMS and its Evolution – Benefits from IMS – Architecture of IMS Networks – Protocols used in IMS – Building Blocks in IMS Networks.

Security issues in mobile computing: Introduction-Information Security-Security Techniques and Algorithms-Security Protocols-Public Key Infrastructure.

Text Books

Asoke.K.Talukder, Roopa.R.Yavagal, Hasan Ahmed. Mobile Computing Technology, Applications and Service Creation. Tata McGraw Hill Publishing Company. 2011. Second Edition.

Unit I: Chapter 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.11, 2.4, 2.5, 4.2, 4.3, 4.4, 4.5, 4.6

Unit II: Chapter 5.1, 5.2, 5.3, 5.4, 6.1, 6.2, 6.3, 7.1 to 7.9

Unit III: Chapter 8.1 to 8.4, 9.6, 9.7, 10.2, 10.3, 10.4

Unit IV: Chapter 12.1 to 12.7, 13.3, 14.2, 16.3

Unit V: Chapter 18.6 to 18.9, 19.1 to 19.6, 20.1 to 20.5

Reference Books:

1. Mobile Computing Technology, Applications and Service Creation – Asoke.K.Talukder, Roopa.R.Yavagal – Tata McGraw Hill Publishing Company – 2009.

2. Mobile Computing Theory and Practice – Kumkum Garg – Pearson Education 2010

3. Mobile computing – Sipra Dasbit, Biplob K. Sikdar – PHI Learning – 2009 – Eastern Economy Edition.

4. Principles Of Mobile Computing, Uwe Hansmann, Lothar Merk, Martin S. Nicklous, Thomas Stober – Second Edition – Springer (India) Private Limited – Seventh Indian Reprint 2008

Core 25 - Advanced Java Programming Lab

Contact Hours per Week : 5Hrs

Subject Code: P1CAC5P1

Contact Hours per Semester: 60 Hrs

Credits : 3

Objectives:

- To reveal the advanced concepts like RMI, Networking, JSP in Java language to the students so as to be ready for getting placement in campus interview and for doing their final year projects.
 - To apply these advanced concepts in their projects and in their higher studies and researches.
1. Write a java program for doing mathematical operation by sending data from client to server using RMI.
 2. Write a java program for bank transactions between client and server using RMI.



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3. Write a java program for EB bill preparation using RMI.
4. Write a java program for getting Detailed IP address of a system
5. Write a java program to send data from client to server using UDP
6. Write a java program to send data from client to server using TCP
7. Write a java program to get the data stored in the data base using UDP or TCP.
8. Write a java program to receive multiple connections for a single server socket using thread concept.
9. Write a java program to send a file from server to multiple clients.
10. Write a java program for doing simple operation on JSP.
11. Write a java program for preparation of payroll on JSP.
12. Develop the simple java application for finding simple and compound interest using net beans.
13. Develop the java application for displaying the employee details whose salary is greater than particular amount.
14. Develop an application using JNI.

Core 26 - Dot Net Programming Lab

Contact Hours per week : 5 Hrs

Subject Code : P1CAC5P2

Contact Hours per Semester : 60 Hrs

Credits : 3

Objectives:

- To let the students gain knowledge about the programming concepts in .Net Framework such as:
- How to create and use new types (enumerations, classes, and structures), and explain the differences between reference types and value types.
- Write efficient code that includes appropriate sequence, selection and iteration constructs.
- To familiar with Framework libraries, inbuilt function, interfaces.

VB.NET :

1. Write a program in VB.Net to maintain Departmental Stores.
2. Write a program in VB.Net to design an Image Viewer.
3. Write a program in VB.Net to perform File Operations using Streams.
4. Write a program in VB.Net to implement GUI using Pen and Brush.
5. Write a program in VB.Net to perform Matrix Manipulations.

C#

6. Write a C# windows application that represents a simplified Library System.
7. Write a program in C# to open a file to write and read and handle the Exception.
8. Write a program in c# to create and use a Thread pool.
9. Write a program in c# to use Regular Expression to Validate Website URL.
10. Write a program in C# Language to use Structures.
11. Write a program in C# Language to demonstrate Interfaces.
12. Write a program in C# Language to demonstrate the usage of Delegates.
13. Write a program in C# to demonstrate Error Handling.
14. Demonstrate Use of Virtual and Override key words in C# with a simple program.
15. Write a C# program to implement Multi Level Inheritance.

ASP.NET

16. Write a Program to perform Money Conversion.
17. Write a Program to create Multiplication table.
18. Write a Program to display Student Results from database.
19. Create a Web Service to perform Arithmetic Operations.



Elective III - Digital Image Processing

Contact Hours per Week : 5 Hrs

Subject Code: P1CAE51

Contact Hours per Semester: 60 Hrs

Credits : 5

Objectives:

- To put forth fundamentals of DIP to the students so that to solve the related problems in their projects and their researches.
- To identify the research problems in DIP to the students and to motivate the students to solve them.
- To learn image enhancement techniques
- To know about image compression
- To understand image segmentation

Unit I

10 Hrs

Digital Image Fundamentals: Elements of visual perception - Image sampling and quantization - Basic relationship between pixels -An Introduction to the Mathematical tools used in Digital Image Processing.

Unit II

16 Hrs

Intensity Transformations and Spatial Filtering: Background - some basic intensity transformation functions – Histogram processing – Fundamentals of spatial filtering – Smoothing Spatial Filters- Sharpening Spatial Filters- Combining spatial enhancement methods- Using fuzzy techniques for Intensity transformations and spatial filtering.

Filtering in the Frequency Domain: Background- The Discrete Fourier Transform(DFT) of one variable-The basics of filtering in the Frequency Domain – Image smoothing using Frequency Domain Filters – Image sharpening using Frequency domain filters – selective filtering-Implementation.

Unit III

12 Hrs

Image Restoration and Reconstruction: A Model of Image Degradation/Restoration process - Noise models- Inverse filtering –Minimum Mean Square Error(Wiener) Filtering – Constrained Least Squares filtering – Geometric mean filter – Image Reconstruction from Projections.

Unit IV

12 Hrs

Image Compression: Fundamentals-Some Basic Compression methods: Huffman coding - Golomb coding – Arithmetic coding – LZW coding – Run length coding – symbol based coding – bit plane coding – block transform coding – predictive coding – wavelet coding - Digital Image water marking.

Unit V

10 Hrs

Image Segmentation: Fundamentals - Point, Line and Edge Detection - Thresholding - Region Based segmentation.

Representation and Description: Representation – Boundary(Border) following - chain codes-Polygonal approximations using minimum perimeter polygons - Boundary segments. Boundary Descriptors- some Simple descriptors-Fourier descriptors - Regional descriptors –some Simple descriptors- Texture.

Text Book :

Digital Image Processing by Rafael C Gonzalez, Richard E Woods 3rd Edition, - Pearson Education 2009.

Unit I – Chapter 2.1 , 2.4 - 2.6

Unit II - Chapter 3.1 -3.8 , 4.1(4.1.1) , 4.4 , 4.7-4.11

Unit III - Chapter 5.1-5.2 , 5.7- 5.11(5.11.1 , 5.11.5 , 5.11.6)

Unit IV - Chapter 8.1 - 8.3



Unit V - Chapter 10.1 - 10.4 , 11.1(11.1.1 -11.1.3 , 11.1.6), 11.2 (11.2.1 , 11.2.3), 11.3(11.3.1 ,11.3.3)

Reference Book s:

Digital Image Processing and Computer Vision by Sonka , Hlevac , Boyle, 5th Indian Reprint, 2011 Cengage learning India Private Limited..

Elective III - Embedded Systems

Contact Hours per week : 5 Hrs

Subject Code : P1CAE52

Contact Hours per Semester: 60 Hrs

Credits : 5

Objectives:

- To understand the concept of Embedded Systems and architecture of advanced Processors.
- To understand the working principle of Processors.
- To understand the programming methods for designing an Embedded System.
- To gain knowledge about the hardware and software tools used to develop an Embedded System.
- To know about inter process communication

Unit I

11 Hrs

Introduction to Embedded System. 8051 and Advanced Processor Architectures, Memory Organization and real – world Interfacing: 8051 Architecture – Real World Interfacing – Processor and Memory organization – Memory types, Memory maps and Addresses.

Unit II

13 Hrs

Devices and Communication Buses for Devices Network: IO types and Examples – Serial communication Devices – Parallel Device ports – Timer and Counting Devices – Serial Bus Communication Protocol and parallel Bus Communication Protocol – Internet Enabled Systems – Network protocols – Wireless and Mobile System Protocols. **Device Drivers and Interrupts Service Mechanism.**

Unit III

12 Hrs

Programming Concepts and Embedded Programming in C, C++ and Java. Interprocess Communication and synchronization of Processes, Threads and Tasks: Multiple processes in an application – Multiple Threads in an application – Tasks – Task States – Task and Data – Clear cut distinction between Functions, ISRs and Tasks by their Characteristics – Concept of Semaphores – Interprocess Communication.

Unit IV

13 Hrs

Real time Operating system. Real time Operating system Programming – II: Windows CE, OSEK and Real Time Linux Functions: Windows CE – OSEK – Linux 2.6.x and RTLinux

Unit V

11 Hrs

Embedded Software Development Process and Tools: Introduction to Embedded Software Development Process and Tools – Host and Target Machines – Linking and Locating Software – Getting Embedded Software into the Target System – Issues in Hardware - Software Design and Co-design. **Testing, Simulation and Debugging techniques and Tools:** Testing on Host Machine – Simulators – Laboratory tools.

Text Book:

Raj Kamal. Embedded System Architecture, Programming and Design. Second Edition. Tata McGraw – Hill Publishing Company Limited. 2009.



Unit I: Chapter 1, 2.1, 2.2, 2.4, 2.7

Unit II: Chapter 3.1, 3.2, 3.3, 3.6, 3.10, 3.11, 3.12, 3.13, 4.1 to 4.9

Unit III: Chapter 5.1 to 5.7, 7.1 to 7.7, 7.9

Unit IV: Chapter 8.1 to 8.11, 10.1 to 10.3

Unit V: Chapter 13.1 to 13.5, 14.1 to 14.3

Reference Book:

Microcontrollers Theory and Applications, Ajay V. Deshmukh, Tata McGraw – Hill Publishing Company Limited. 2006.

Elective III - Object Oriented Analysis and Design

Contact Hours per week : 5 hrs

Subject Code : P1CAE53

Contact Hours per Semester : 60 hrs

Credits : 5

Objectives:

- To explore the basic code qualities of cohesion, coupling, redundancy, testability, readability, encapsulation and dispersion
- To develop a model that describes computer software as it works to satisfy a set of customer-defined requirements
- To use the UML design diagrams
- To learn modeling concepts
- To know about Object interaction

Unit I

10 Hrs

What is Object-Oriented – Introduction – Basic Concepts – The Origin of Object-Oriented – Object Oriented Languages Today.

Modelling Concepts: Introduction – Models and Diagrams – Drawing Activity Diagrams – A Development Process.

Requirement Capture: Introduction – User Requirements – Face Finding Techniques – User Involvement- Documenting Requirements – Use Cases – Requirements Capture and Modelling.

Unit II

15 Hrs

Requirement Analysis: Introduction – What must a Requirements Model Do? – Use Case Realization – The Class Diagram – Drawing a Class Diagram – CRC Cards – Assembly the Analysis Class Diagram.

Refining the Requirements Model: Introduction – Component-based Development – Adding Further Structure – Software Development Patterns

Object Interaction: Introduction – Object Interaction and Collaboration – Interaction Sequence Diagrams – Collaboration Diagrams – Model Consistency.

Unit III

10 Hrs

Specifying Operations: Introduction – The Role of Operation Specifications – Contracts – Describing Operation Logic – Object Constraint Language – Creating an Operation Specification.

Specifying Control: Introduction – States and Events – Basic Notation – Further Notation – Preparing a Statechart - Consistency Checking.

Unit IV

10 Hrs

Moving into Design: Introduction – How is Design Different from Analysis? – Logical and Physical Design- System Design and Detailed Design – Qualities and Objectives of Analysis and Design – Measurable Objectives in Design – Planning for Design.

System Design: Introduction – The Major Elements of System Design – Software Architecture – Concurrency – Processor Allocation – Data Management Issues – Development Standards – Prioritizing Design Trade-offs – Design for Implementation.



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Object Design: Introduction – Class Specification – Interfaces – Criteria for Good Design – Designing Associations – Integrity Constraints – Designing Operations – Normalization.

Unit V

15 Hrs

Design Patterns: Introduction- Software Developments Patterns – Documenting Patterns – Pattern Templates – Design Patterns – How to use Design Patterns – Benefits and Dangers of Using Patterns.

Human- Computer Interaction: Introduction – The User Interface – Approaches to User Interface Design – Standards and Legal Requirements.

Designing Boundary Classes: Introduction – The Architecture of the Presentation Layer – Prototyping the User Interface – Designing Classes – Designing Interaction with Sequence Diagrams – The Class Diagram Revisited – User Interface Design Patterns – Modelling the Interface Using Statecharts.

Reusable Components: Introduction – Why Reuse? – Planning a Strategy for Reuse – Commercially Available Component ware

Text Books:

Object-Oriented Systems Analysis and Design Using UML, Simon Bennett, Steve McRobb and Ray Farmer, 2nd Edition, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2008.

Unit I : Chapter 4, 5 & 6

Unit II : Chapter 7, 8 & 9

Unit III: Chapter 10,11

Unit IV: Chapter 12, 13 & 14

Unit V : Chapter 15,16, 17 & 20.1 to 20.4

Reference Books:

1. Object-Oriented Analysis and Design, John Deacon, 01 edition, published by Pearson Education Ltd., 2009.
2. Object Oriented Analysis and Design with Applications, Grady Booch, 2nd edition, Pearson Education Ltd., 2001

Project and Viva-voce (Industry/Institutional Based)

Credits : 12

Subject Code : P1CA6PV

Objectives:

- To solve real life problems in the Industry/Academic Institutions/Computer science research.
- The Project and Viva-voce is one that involves practical work for understanding and solving problems in the field of computing.
- Students will do individually Commercial or Technical Project based on their Industry /Academic Institutions needs.
- With the known/needed technologies they can develop the software.



Course Name: **Bachelor of Science**

Discipline : **Microbiology**

Semester	Part	Subject	Hour	Credit	Int+Ext=Total	Subject Code	Revision
V	Core 9	Microbial Genetics and Genetic Engineering	4	4	25+75=100	U1MBC51	New
	Core 10	Environmental & Agricultural Microbiology	4	4	25+75=100	U1MBC52	Revised
	Core 11	Medical Microbiology	4	4	25+75=100	U1MBC53	Revised
	Core 12 Lab	Major Practical III	6	6	40+60=100	U1MBC5P	New
	Allied 13	Biology – Cell Biology	4	4	25+75=100	U1MBA51	New
	Allied 14 Lab	Biology	2	---	--	---	-
	SBE 3	Biocomputing	2	2	25+75=100	U1MBS51	New
	SBE 4	Employability Skills	2	2	25+75=100	U1PS51	New
	NME 1	Entrepreneurship in Microbiology	2	2	25+75=100	U1MBN51	New

Semester	Part	Subject	Hour	Credit	Int+Ext=Total	Subject code	Revision
VI	Core 13	Biotechnology	4	4	25+75=100	U1MBC61	Revised
	Core 14	Food and Industrial Microbiology	4	4	25+75=100	U1MBC62	New
	Core 15	Bioinformatics	4	4	25+75=100	U1MBC63	New
	Core 16 Lab	Major Practical IV	6	6	40+60=100	U1MBC6P	New
	Allied 15	Biology – Applied Ecology	4	4	25+75=100	U1MBA61	New
	Allied 16 Lab	Biology	2	2	40+60=100	U1MBA6P	New
	SBE 5	Microbial Nanotechnology	2	2	25+75=100	U1MBS61	NEW
	SBE 6	Pharmaceutical Microbiology	2	2	25+75=100	U1MBS62	New
	NME 2	Human Diseases and Diagnostic Microbiology	2	2	25+75=100	U1MBN61	New

Employability Skills

Question Pattern

Summative Examination

Maximum marks : 75

Duration of the Examination 3 hrs

- 150 objective type questions with four alternatives for each question.
- 30 questions to be asked from each unit.
- Each question carries ½ mark.

Internal Examination

Maximum marks : 25

Duration of the Examination 2 hrs

- 100 objective type questions with four alternatives for each question.
- Each question carries ½ mark.
- Total marks to be reduced to 25.

V – SEMESTER



Microbial Genetics and Genetic engineering

Hours per week -4

Hours per Semester-60

Credit: 4

Subject code: U1MBC51

Objectives

Understanding microbial genetics, genomes, and gene expression is essential for the biology and evolution.

To improve the knowledge on genetics of microbes and basic concept and applications of genetic engineering

Unit I

(14 hours)

DNA and RNA as genetic material, Genetic recombination in bacteria: transformation, transduction and conjugation. Mutations: spontaneous and induced – chemical and radiations, base pair changes, frame shift, deletions, inversions, insertions, useful phenotypes – auxotrophy, conditional lethal.

Unit II

(12 hours)

Basic mechanism of DNA Replication enzymes involved in replication. Transcription mechanism, translation, Genetic code, wobble hypothesis.

Unit III

(12 hours)

DNA damage and repair mechanisms repair-Excision and recombination repair, Restriction endonucleases, DNA Ligase, Reverse transcriptase, DNA methylase. Gene cloning strategies, Plasmid Vectors, pBR22, Cosmid, Phagemids, M13 vector. Linkers, adaptors.

Unit IV

(10 hours)

cDNA Library, Southern, Northern and Western blotting, PCR-RFLP, AFLP, RAPD. Screening of recombinants-Insertional inactivation, Recombinant vaccines.

Unit V

(12 hours)

Genetically Modified Organisms - Transgenic sheep, transgenic plant-herbicide resistant crop, Gene therapy, Biosafety of GMOs, Intellectual property rights (IPR), Trademarks, and Copyrights Patenting of microbiological materials.

Text Books:

Unit 1 & 2

1. S R Maloy, D Freifelder and J E Cronan. Microbial Genetics. Jones and Barlett Publishers.
2. Darnell, J., Lodish, H., Baltimore, D., 1990, Molecular Cell Biology, Scientific American Books, New York.
3. Freifelder, D., Malacinski, G.M., 1987, Essentials of Molecular Biology, John and Bartlett Publishers, London.

Unit 3, 4, & 5

4. An introduction to Genetic Engineering (Second Edition) by Desmond S.T. Nicholl (Studies in Biology Series) I South Asian Edition 2002. Cambridge University Press.
5. T.A. Brown, Gene Cloning (1999), Bios Scientific publishers, Oxford.

Reference Books

1. Watson J.D.Gilman (1992) recombinant DNA Technology.
2. Old R., N and S.B. Primrose, principles of Gene manipulation 1996 Blackwell Sciences Publication, Berlin
3. Microbial genetics, David Friefelder, 1987, Narosa publishing House.
4. GENE IX Benjamin Lewin 2007 oxford university Press
5. Watson, Baker, Bell, Gann, Levine, Losick. 2004. Molecular biology of the gene.5th ed
6. Click B.R. and Paeric Jack.J Molecular Biotechnology ASM Press London

Environmental and agricultural

Microbiology

Contact Hours per week: 4

Credits: 4

Contact Hours per Semester: 60

SubjectCode: U1MBC52

Objectives

This paper is aimed to give complete knowledge about soil, water and air microorganism by understanding both its beneficial and harmful roles



Unit I

(12 hours)

Distribution of soil microorganisms in soil-bacteria, fungi and actinomycetes- Interactions among microorganisms, mutualisms, comensalism, amensalism- Interactions between microbes and plants - rhizosphere, phyllosphere, mycorrhizae.

Unit II

(12 hours)

Biogeochemical cycle - carbon cycle - role of microbes in carbon cycle - Nitrogen cycle - mechanism of biological nitrogen fixation - ammonification - nitrification - denitrification and microorganisms involved in such processes. Phosphorous cycle - Sulphur cycle. Biodegradation of xenobiotics (chlorinated pesticides)

Unit III

(12 hours)

Air pollution - sources, major pollutants -acid rain- Green house effect -Global warming - Ozone layer depletion and its effect - Airborne diseases (influenza, tuberculosis), their symptoms and preventive measures.

Water pollution - sources and nature of pollutants in water – waterborne diseases (Amoebiasis, cholera). Assessment of microbiological quality of water - MPN technique, membrane filtration and Biological Oxygen Demand. domestic solid (compost) and liquid waste treatment –Eutrophication

Unit IV

(12 hours)

Biofertilizer for sustainable agriculture *Rhizobium*, *Azotobacter*, *Azolla*, BGA -mass production methods - applications methods of biofertilizers - significance of biofertilizers. Biopesticides- types bacterial-*Bacillus thuringiensis*, Viral –NPV, fungal-*Trichoderma*, Mode of action.

Unit V

(12 hours)

Study of microbes as plant pathogens-bacteria- *Puccini*, *Pyricularia*, *Xanthomonas*; Mycoplasma-Sandal spike, grassy shoot; Viruses-TMV, Tomato leaf curl. Fungi- tikka disease of ground nut, cotton wilt (*Fusarium*), late blight of potato.

Text books

Unit I

1. Subbarao. 1995. Fourth edition, soil microorganisms and plant growth. Oxford and IBH, New york

Unit II

1. Ronald M. Atlas and Richard Bartha. 2nd and 4th Edition. Microbial Ecology. The Benjamin Cummins Publication Co. Inc.

Unit III

1. Ronald M. Atlas and Richard Bartha. 2nd and 4th Edition. Microbial Ecology. The Benjamin Cummins Publication Co. Inc.

Unit IV

1. Subbarao. 1995. Fourth edition, soil microorganisms and plant growth. Oxford and IBH, New york
2. Mehrotra and ashok agarwal.2006. Plant pathology. Tata Mcgraw-hill publishing company Ltd.Delhi

Unit V

1. Mehrotra and ashok agarwal.2006. Plant pathology. Tata Mcgraw-hill publishing company Ltd.Delhi

References

1. Michael T. Madigan, John M. Martinko. Jack Parker. 1997. 8th Edition. Prentice Hall International Inc.
2. Ronald M. Atlas and Richard Bartha. 2nd and 4th Edition. Microbial Ecology. The Benjamin Cummins Publication Co. Inc.
3. Prescott, L.M., Harley, J.P. and Klein, D.A., 2001. Microbiology, Wm. C Brown Publication Iowa. U.S.A.
4. Dubey and Maheshwari. 2006. A text book of Microbiology. Chand publications
5. Mehrotra and ashok agarwal.2006. Plant pathology. Tata Mcgraw-hill publishing company Ltd.Delhi
6. Subbarao. 1995. Fourth edition, soil microorganisms and plant growth. Oxford and IBH, New York.



Medical Microbiology

Contact hours per week: 4

Contact hours per semester: 60

Credits: 4

Subject code: U1MBC53

Objectives:

- To introduce the basis of medical microbiology.
- To understand the mechanism of pathogenesis of microbes.
- To understand the proper treatment and preventive methods for microbial diseases.

Unit I

(12 hours)

Beneficial Microbial Interactions with Human: Normal microbial population of healthy human body - Skin, mouth, upper respiratory tract, intestinal tract, urino-genital tract, eye.

Unit II

(12 hours)

Harmful Microbial Interactions with Human : Entry of pathogens into the host, types of bacterial pathogens, Mechanism of bacterial pathogenicity, colonization and growth, Virulence, Virulence factors – exotoxins and endotoxins.

Unit III

(12 hours)

General characters, pathogenesis, diagnosis and treatment for *E. coli* Staphylococci, Streptococci, Mycobacteria, *Treponema pallidum* and *Salmonella typhi* infections.

Unit IV

(12 hours)

Pathogenesis, lab diagnosis and treatment for HIV, Hepatitis B and Polio infections. Pathogenesis, lab diagnosis and treatment for candidiasis.

Unit V

(12 hours)

General characters, life cycle, diagnosis and treatment for *Entamoeba histolytica* and *Plasmodium falciparum* infections. Antimicrobial agents and resistance of microbes to antimicrobial agents.

Textbooks

Unit I

Prescott, Harley and Klein, 2008, Microbiology, 6/e, McGraw-Hill.

Unit II

Ananthanarayan and Paniker, 2013, Textbook of Microbiology, 9/e, University Press.

Unit III

Ananthanarayan and Paniker, 2013, Textbook of Microbiology, 9/e, University Press.

Unit IV

Patric R. Murray, Ken S. Rosenthal, George S. Kobayashi and Michael A. Pfaller, 1998, Medical Microbiology, 3/e, Mosby, London.

Unit V

Ananthanarayan and Paniker, 2013, Textbook of Microbiology, 9/e, University Press.

References

1. Patric R. Murray, Ken S. Rosenthal, George S. Kobayashi and Michael A. Pfaller, 1998, Medical Microbiology, 3/e, Mosby, London.
2. Ananthanarayan and Paniker, 2013, Textbook of Microbiology, 9/e, University Press.
3. Prescott, Harley and Klein, 2008, Microbiology, 6/e, McGraw-Hill.
4. Jawetz, Melnic and Adelberg, 2004. Medical Microbiology, 22/e, McGraw-Hill.

Major practical III

Contact Hours per week: 6

Contact Hours per Semester: 90

Credit: 6

Subject Code: U1MBC5P

1. Diagnosis of typhoid- widal slide test
2. Throat swab- identification of hemolytic *Streptococci*
3. Minimal inhibitory concentration of antibiotics to pathogens
4. Antibiotic sensitivity test (Disc diffusion method)
5. Enumeration of microorganism from soil
6. Enumeration of microorganism from water sample
7. Isolation of *-Rhizobium* from root nodules
8. Microbial analysis of Coliforms by MPN technique
9. Demonstration of antibiosis



References

1. Dubey, R.C. and O.K. Maheshwari, (2005). Practical Microbiology 91st Edition).S. Chand and Co.Ltd., New Delhi.
2. Aneja K.R. Experiments in Microbiology, Plant pathology, Tissue culture and Mushroom cultivation, New Age International, New Delhi.
3. J.G.Cappuccino and N.Sherman, Microbiology: A laboratory manual, Addison Wesley, 2002.
4. P.Gunasekaran, Microbiology: A laboratory manual, New Age international publishers, 1996.

Cell Biology

Contact Hours per semester: 60

Subject code: U1MBA51

Contact hours per week: 4

Credits: 4

Objectives:

- To develop the knowledge of cells and their functions.
- To improve the knowledge of metabolism in various organelles.
- To enlighten the students about the functions of organelles.

Unit-I

(12 hrs)

Cell structure-Prokaryotic and eukaryotic cells, Plant and animal cells-Structural features. Plasma membrane- composition and ultra structure-different types of models and functions.

Unit-II

(12 hrs)

Lysosome-ultrastructure and functions-Lysosomal enzymes.Ribosomes-ultrastructure and functions. Chloroplast: ultrastructure and function. Mechanism of photosynthesis and generation of ATP. Mitochondria: ultrastructure and functions.

Unit-III

(12 hrs)

Structure and functions of endoplasmic reticulum and Golgi complex. Nucleus-Nuclear envelope-structure.chromatin: Eu-heterochromatin, Nucleosomes, Chromosomes - Kinds-structure - Polytene chromosomes, Nucleolus-structure and functions.

Unit-IV

(12 hrs)

Cell cycle-Mitosis and meiosis-stages and significance. Cell growth- cancerous and their causes, prevention and treatment.

Unit – V

(12 hrs)

Ultra centrifugation, differential and density and density dependant centrifugation. Histochemical staining: Protein-mercuric bromophenol blue method. Lipid and lipoproteins-Sudan black B method.

Text books

Unit – I

- 1.B.Albert,D.Bray,J.Lewis,M.Raff,K.Roberts and J.D.Watson(1983)Molecularbiology of the cell.Newyork,Garland.
- 2.P.S.Verma and V.K.agarwal (1995)Text book of Cytology.S.Chand&Co.,New Delhi.

Unit- II

- 1.E.D.P.De Robertis,F.A.Saez.ad E.M.F.De Robertis(1990)Cell and biology.
- 2.K.V.Krishnamoorthy (1988) Methods in plant histochemistry.S.Viswanathan Printers and Publishers.

Unit – III

- 1.De Robertis.E.D.P.and De Robertis,Jr.E.M.E.,Essentials of cell and molecular biology.
- 2.Fawcett,d.W.-The cell,it's organelles and inclusions-PhiladelphissW.B.Saunders.1966.
- 3.K.V.Krishnamoorthy (1988) Methods in plant histochemistry.S.Viswanathan Printers and Publishers.

Unit – IV

1. P.S.Verma and V.K.agarwal (1995)Text book of Cytology.S.Chand&Co.,New Delhi.
- 2 B.Albert,D.Bray,J.Lewis,M.Raff,K.Roberts and J.D.Watson(1983)Molecularbiology of the cell.Newyork,Garland.

Unit – V

1. P.S.Verma and V.K.agarwal (1995)Text book of cell biology,Genetics,Evolution and ecology.S.Chand&Co.,New Delhi.



2. De Robertis, E.D.P. and De Robertis, Jr. E.M.E., Essentials of cell and molecular biology.

3. Fawcett, D.W. - The cell, its organelles and inclusions - Philadelphia W.B. Saunders, 1966

References:

1. B. Albert, D. Bray, J. Lewis, M. Raff, K. Roberts and J.D. Watson (1983) Molecular biology of the cell. New York, Garland.

2. E.D.P. De Robertis, F.A. Saez and E.M.F. De Robertis (1990) Cell and biology.

3. K.V. Krishnamoorthy (1988) Methods in plant histochemistry. S. Viswanathan Printers and Publishers.

4. P.S. Verma and V.K. Agarwal (1995) Text book of Cytology. S. Chand & Co., New Delhi.

5. P.S. Verma and V.K. Agarwal (1995) Text book of cell biology, Genetics, Evolution and ecology. S. Chand & Co., New Delhi.

6. De Robertis, E.D.P. and De Robertis, Jr. E.M.E., Essentials of cell and molecular biology.

7. Fawcett, D.W. - The cell, its organelles and inclusions - Philadelphia W.B. Saunders, 1966.

BIOCOMPUTING

Hours per semester: 30

Credit: 2

Hours per week: 2

Subject code: U1MBS51

Objective

To have an overview idea about modern biology and computation.

To study the various techniques involved in nucleic acid structure prediction, protein structure prediction and phylogenetic analysis

To enable the student to understand the various computing approaches used to analyze and predict various biological molecules.

Unit I

(6 hours)

Brief overview of information technology. Introduction to biocomputing- software, database management system.

Unit II

(6 hours)

Protein analysis-protein structure prediction and analysis-Methods and Software (Protparam, GOR, STRAP).

Unit III

(6 hours)

Protein structure database (SCOP) Homology modeling (Swiss-Model) DNA Structure, RNA Structure, Representing and visualizing macromolecules (PY MOL).

UNIT IV

(6 hours)

Multiple sequence alignment –Methods and software (ClustalW, Clustal X) Phylogenetic software (Phylip).

UNIT V

(6 hours)

Cheminformatics: Chemical structure Drawing packages. Searching for chemicals on the internet (Pub Chem, emolecules). Application of Chem informatics in Drug Research.

Text Books -For all Units

1. Shina PK (2002). Fundamentals of computers. BPB Publication, New Delhi

2. N. Gautham, Bioinformatics: Databases and algorithms, Narosa publishing house, Chennai 2006.

3. P. Shanmughavel. Principles of Bioinformatics, Pointer publishers, Jaipur 2005.

4. Sharma, Munjal and Shankar (2008). A text Book of Bioinformatics. Rastogi Publication, Meerut.

5. Introduction to bioinformatics by T.A Atwood

Reference Books

1. David Mount, Bioinformatics: Sequence and Genome Analysis, Second Edition, CBS Publishers 2005.

2. J. Pevzner Bioinformatics and functional genomics, 2nd edition, John Wiley & sons, 2009

SEMESTER – V - SKILL BASED PAPER- EMPLOYABILITY SKILLS

Contact Hours per week: 2

Subject Code: U1PS51

Contact Hours per Semester: 30

Credits: 2

Objectives:



To enrich the Employability Skills by imparting Reasoning skills, Aptitude skills and General Knowledge.

Unit I : Quantitative Aptitude – Averages, Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance, Clock. **(6-hours)**

Unit II : Quantitative Aptitude –Problems on Ages, Boat & Stream, Simple Interest, Compound Interest, Area, Partnerships. **(6-hours)**



Unit III: Reasoning

(6-hours)

Verbal Reasoning - Analogy, Classification, Series, Coding & Decoding, Blood Relations, Direction Sense Test.

Unit IV: Reasoning

(6-hours)

Verbal Reasoning - Number Test, Ranking & Time sequence Test, Alphabet Test, Logical Venn Diagrams.

Unit V:

(6-hours)

General Knowledge: Abbreviations, Acronyms, Famous Personalities, Important Days, Capital Cities, Currencies, Books and Authors, Inventions.

Reference Books:

1. Verbal & Non Verbal Reasoning - R.S.Aggarwal
2. Quantitative Aptitude - R.S.Aggarwal
3. Subjective & Objective Quantitative Aptitude - R.S.Aggarwal
4. Malayala Manorama Year Book, 2014

ENTREPRENEURSHIP IN MICROBIOLOGY

Contact Hours per week: 2

Credit: 2

Contact Hours per Semester: 30

Subject Code: UIMBN51

Objective

This paper is aimed at developing the skill and personality of students to become Successful entrepreneur.

Unit I

(6 hours)

Evolution of the concept of entrepreneur – Entrepreneurship: Definitions - concept of Entrepreneurship, development - need - role of resource, talent and spirit – process of Entrepreneurship to socio-economic gains.

Unit II

(6 hours)

Definition and scope of Microbiology – History and recent developments – Spontaneous generation – Biogenesis; Contributions of Leeuwenhoek, Louis pasteur, Robert koch, and Fleming.

Unit III

(6 hours)

General characteristics of Bacteria (E.coli), Fungi (Yeast) and viruses (TMV), differences between bacteria and Virus.

Unit IV

(6 hours)

Mushroom – Structure, types, cultivation methods, nutritive and medicinal value, Economics of mushroom production

Unit V

(6 hours)

Spirulina – Structure, cultivation methods, nutritive and medicinal value, Economics of Spirulina production.

Text books

Unit I

1. Nagendra S., (2008) Entrepreneurship and management Sanguine technical publishers

Unit II

1. Dubey and Maheshwari. 2006. A text book of Microbiology. S. Chand publications

Unit III

1. Dubey and Maheshwari. 2006. A text book of Microbiology. Chand publications

Unit IV

1. Dubey RC (2005). A Text of Biotechnology .Multicolour Illustrative edition, S.Chand and Company Ltd., New Delhi.



Unit V

1.Kumarasan V (2001). Biotechnology. Published by Saras Publication,Nagercoil, Tamil Nadu.

References

1. Michael T. Madigan, John M. Martinko. Jack Parker. 1997. 8th Edition. Prentice Hall International Inc.
2. Prescott, L.M., Harley, J.P. and Klein, D.A., 2001. Microbiology, Wm. C Brown Publication Iowa. U.S.A.

SMESTERVI

Biotechnology

Contact Hours per week: 4

Contact Hours per Semester: 60

Credit: 2

Subject Code: U1MBC61

Objectives:

To understand the basics and application of biotechnology in industrial, agricultural and human welfare.

UNIT I

(12 hours)

Biotechnology – Introduction – Enzyme biotechnology – enzyme production from microbes ; Amylase, Lipase - applications – enzyme immobilization – Adsorption, Entrapping, Ionic bonding, cross linking and encapsulations.

UNIT II

(12 hours)

Algal Biotechnology – cultivation methods of spirulina – biotechnological potentials of microalgae – Food, Feed and Fuel production. Pharmaceutically valuable compounds.

UNIT III

(12 hours)

Biotechnological products production – SCP (Mushroom), Biofertilizer – VAM and Rhizobium. Biopesticides – *Bacillus thuringiensis*, Biopolymers – *Xanthomonas campestris*.

UNIT IV

(12 hours)

Pharmaceutical products – Insulin, interferon, Growth hormones. Gene Therapy - DNA Vaccines.

UNIT V

(12 hours)

Biosafety, Biohazards of rDNA technology, Biosafety guidelines, IPR – legislations Covering IPR in India, Patenting of Biotechnological Products.

Text Books:

Unit I: Satyanarayana U (2005). Biotechnology. 1st Edition, Books and Allied (P)Ltd., Kolkata.

Unit II Jogdand SN (2005). Gene Biotechnology. Himalaya Publishing House,Mumbai.

Unit III Singh BD (2005). Biotechnology.2nd revised and enlarged Edition, Kalyani Publishers, Chennai.

UNIT IV and V Kumarasan V (2001). Biotechnology. Published by Saras Publication, Nagercoil, Tamil Nadu.

REFERANCES

1. Bernad R Glick and Jack J Pasternak (1998). Molecular Biotechnology. Principles and Applications of Recombinant DNA.2nd Edition. ASM Press, Washington, D.C.
2. Dubey RC (2005). A Text of Biotechnology.Multicolour Illustrative edition, S.Chand and Company Ltd., New Delhi.
3. Satyanarayana (2005). Biotechnology.First edition, Books and Allied (P) Ltd., Kolkata.
4. Bernad R Glick and Jack J Pasternak (1998). Molecular Biotechnology.Principles and Applications of Recombinant DNA.Second edition, ASM Press, Washington, D.C.
5. Ramawat K and ShailyGoyal (2010). Molecular Biology and Biotechnology. First edition, S.Chand and company Ltd., New Delhi.

Food and Industrial Microbiology

Contact Hours per Semester: 60

Contact Hours per week: 4

Credit: 4

Subject Code: U1MBC62

Objectives:

The subject based on

- The knowledge about the role of microorganisms in our daily diet
- The basic ideas about the fermentation technology



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- Elaborate the various types of industrial products synthesis and its recovery

Unit I

(10 hours)

Scope - Food as a substrate for microorganisms – Intrinsic and extrinsic factors affecting growth of microorganisms in foods – Important Microorganisms in Food Microbiology.

Unit II

(12 hours)

Preservative methods :Physical and Chemical methods. Contamination and Spoilage of Cereals, Meat, Milk and Milk products.

Unit III

(12 hours)

Fermentor : Basic design and its function – Fermentor types: Air lift, CSTR, Tower and Packed bed fermentor – control and monitoring of variables: temperature, pH, agitation, pressure.

Unit IV

(13 hours)

Fermentation types : aerobic, anaerobic, solid state and submerged fermentation – Bioreactor operations – batch, fed batch and continuous process. Fermentation Process: Inoculum preparation, industrial strain development, raw materials and media for industrial fermentation.

Unit V

(13 hours)

Downstream Process: microbial cells and solid matter removal – Foam separation - Filtration: Depth filtration – Batch filters, continuous filters – Centrifugation- Chromatography- Ultra filtration – Drying: vacuum tray drier and freeze drying – Crystallisation.

Text Books

Unit I & II

1. Frazier, W. C. and Westhoff, D.C., 1989. Food Microbiology. Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. Adams, M.R. and Moss, M.O., 2000. Food Microbiology. New Age International (P) Ltd., New Dehli.
3. Moshrafuddin Ahamed and Basumatary, S.K., 2008. Applied Microbiology. MJP Publishers, Chennai.

Unit III, IV & V

1. Patel, A.H. 2000. Industrial Microbiology (1st edition). Macmillan Publishers India.
2. Kalaichelvan, P.T. and Arulpandi. 2007. Bioprocess Technology. MJP publishers, chennai.
3. Jebakumar Solomon, 2009. Foundations in Bioprocess Technology – Theory and Practice. Ratna Printers, TamilNadu.

Reference Books

1. Peppler, H. J. 1979. Microbial Technology, Volumes I & II –. Academic Press, New York
 2. Stanbury, P.F. and Whitaker, A. 1984. Principles of Fermentation Technology – Pergamon Press.
 3. Casida, L.E., 2007. Industrial Microbiology –Jr. John Wiley and Sons.
 4. Patel, A.H. 2000. Industrial Microbiology (1st edition). Macmillan Publishers India.
-



Bioinformatics

Contact Hours per week: 4

Contact Hours per Semester: 60

Credit: 4

Subject Code: U1MBC63

Objective:

From this paper, students will receive an introduction and historical perspective to the field of bioinformatics and learn the key methods and tools used in bioinformatics.

Unit I

(12 hours)

Introduction to Bioinformatics: applications of Bioinformatics - challenges and opportunities- Elementary commands and protocols, ftp, telnet, http, world wide web – browsers

Unit II

(12 hours)

Nucleotide databases (Genbank, EMBL, DDBJ)-Genome (NCBI, EBI, TIGR, SANGER) – Protein DB (SWISS PROT, TrEMBL,PDB, PIR – PSD)

Unit III

(12 hours)

Derived Databases (Prosite, PRODOM, Pfam, PRINTS) - Metabolic Pathway DB (KEGG, EMP, EcoCyc, BioCyc and MetaCyc)

Unit IV

(12 hours) Pair wise

sequence alignment: Similarity- Identity and Homology - Global Alignment, Local Alignment (BLAST & FASTA) Dynamic Programming, Significance of Sequence Alignments.

Unit V

(12 hours)

Multiple sequence alignment: Significance of MSA - Various approaches for MSA (Progressive & Iterative) Motif analysis and alignment. Phylogeny and evolutionary trees(Phylip).

Textbooks

Unit I

1. Rastogi, S.C. & others. 2003. Bioinformatics- Concepts, Skills, and Applications. CBS Publishing.

Unit II

2. S. Ignacimuthu, S.J. 1995. Basic Bioinformatics. Narosa Publishing House, New Delhi.

Unit III

3. Attwood, T. K., parry-Smith, D J. 2005. Introduction to Bioinformatics(1st Edition). Pearson Education.

Unit IV

4. C S V Murthy. 2003. Bioinformatics. Himalaya Publishing House.

Unit V

5. Stephen A. Krawetz, David D. Womble. 2003. Introduction To Bioinformatics A Theoretical and Practical Approach. Humana Press.

References

1. . Leach, A. R. 2001. Molecular Modeling: Principles and Applications. Prentice Hall.

2. Gibas, C. and Jambeck. P, 2001. Developing Bioinformatics Computer Skills. Oreilly & Associates Inc

3. Baxevanis, A. D. and B. F. Francis Ouellette. 2001. [Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins](#). Wiley-IEEE

Major practical IV

Contact Hours per week: 6

Contact Hours per Semester: 90

Credit: 6

Subject Code: U1MBC6P

1. Methylene blue reductase test – Milk Sample
2. Enumeration of number of bacteria in milk by standard plate count.
3. Enumeration of yeast and molds from spoiled fruits
4. Enumeration of yeast and molds from spoiled vegetables.
5. Immobilization of cells – Yeast
6. Production of extracellular amylase enzyme by Submerged fermentation - Demonstration
7. Production of extracellular amylase enzyme by Solid State fermentation – Demonstration
8. Separation of biomass – Wet and Dry mass

References

1. J.G.Cappuccino and N.Sherman, Microbiology: A laboratory manual, Addison Wesley, 2002.

2. P.Gunasekaran, Microbiology: A laboratory manual, New Age international publishers, 1996.



3. N.Kannan, Laboratory manual in General Microbiology, Panima publishers, 2002.
4. Sundaraj, T. and S. Aswathy, (2002). Microbiology Laboratory Manual (1st Edition). Chennai.
5. Dubey, R.C. and O.K. Maheshwari, (2005). Practical Microbiology 91st Edition).S. Chand and Co.Ltd., New Delhi.
6. Aneja K.R. Experiments in Microbiology, Plant pathology, Tissue culture and Mushroom cultivation, New Age International, New Delhi.

Applied Ecology

Contact hours per week: 4

Credits: 4

Contact hours per semester:60

Subject Code: U1MBA61

Objectives:

To develop the knowledge of environmental sciences.

To help the students to identify and solve the problem of environmental crisis.

To create the awareness about the environmental problems and their causes.

Unit - I

(12 hrs)

Ecosystem concept – different types of ecosystems and the components of ecosystems-Biotic and abiotic factors – (Air, Light, Temperature and water)- Productivity – primary and secondary – Food chain and food web- Trophic levels in ecosystems-ecological pyramids-energy flow through ecosystems.

Unit – II

(12 hrs)

Renewable and non-renewable energy resources, Solar and wind energy and their uses. Aquatic resources: Fresh water and marine fish resources water resources and their conservation. Terrestrial resources: Forests-deforestation and consequences, agriculture and their uses. Wild life conservation: Role of sanctuaries and National parks.

Unit – III

(12 hrs)

Causes and consequences of air, water, noise and radiation pollution - environmental pollution management – legislation - environmental education.

Unit – IV

(12 hrs)

Population-population parameters and their estimation-reproductive effort - Population growth models - Species interaction and competition-Population – regulation - Density dependant and independent.

Unit - V

(12 hrs)

Environmental biology and it's relevance to human civilization-Population explosion of man and it's consequences-Man's interference with nature and it's impacts. Silent valley project and Narmada projects as examples.

Text books:

Unit –I

- 1.Kormandy ,J.1976.Concepts of ecology-III ed .Prentice-Hall,engelwood Cliffs
- 2.Verma P.S.,and V.K.Agarwal., 1995.Environmental biology,S.Chand&Co.,New Delhi.

Unit - II

- 1.Environmental conservation – III Ed,- R.Dasman.
- 2.Odum,E.P.1971.fundamentals of ecology.W.B.Sanders,Toppan co ltd,Tokyo,Japan.
- 3.Ehrlich,P.W.Holm,Man and the ecosphere,1989.

Unit – III

- 1.Ecotoxicology-The study of pollutants and ecosystems majority.
- 2.Ecology and quality of our environment – C.H.Southwick.

Unit - IV

- 1.Kormandy ,J.1976.Concepts of ecology-III ed .Prentice-Hall,engelwood Cliffs.
- 2.Odum,E.P.1971.fundamentals of ecology.W.B.Sanders,Toppan co ltd,Tokyo,Japan.

Unit - V

- 1.Verma P.S.,and V.K.Agarwal., 1995.Environmental biology,S.Chand&Co.,New Delhi.
- 2.Sharma,P.D.2005.Environmental Sciences and Toxicology, Rastogi Publications,Meerut.

References:

- 1.Kormandy ,J.1976.Concepts of ecology-III ed .Prentice-Hall,engelwood Cliffs.
- 2.Odum,E.P.1971.fundamentals of ecology.W.B.Sanders,Toppan co ltd,Tokyo,Japan.



3. Ehrlich, P.W. Holm, Man and the ecosphere, 1989.
4. Verma P.S., and V.K. Agarwal., 1995. Environmental biology, S.Chand & Co., New Delhi.
5. Sharma, P.D. 2005. Environmental Sciences and Toxicology, Rastogi Publications, Meerut.
6. Ecotoxicology- The study of pollutants and ecosystems majority.
7. Ecology and quality of our environment – C.H. Southwick

Biology Practical- 2

Contact hours per week: 2

Credits: 2

Contact hours per semester: 30

Subject Code: U1MBA6P

1. Parts and functions of compound Microscope.
2. Study of cell inclusions: Starch grains-smear of Potato, banana and rice, cytolith's-section of ficus leaves and Memordica leaves.
3. Study of cell organelles by photomicrograph's.
4. Study of Mitosis by smear technique using *Allium cepa* roots
5. Study of Meiosis by using Rhoeo flower buds. (Demonstration only)
6. Study of vegetation by quadrat method.
7. Estimation of dissolved oxygen in different water samples.
8. Estimation of salinity in different water samples.
9. Estimation of alkalinity in different water samples.
10. Soil testing for pH.

References :

1. K.V. Krishnamoorthy (1988) Methods in plant histochemistry. S. Viswanathan Printers and Publishers.
2. P.S. Verma and V.K. agarwal (1995) Text book of Cytology. S.Chand & Co., New Delhi.
3. Odum, E.P. 1971. fundamentals of ecology. W.B. Sanders, Toppan co ltd, Tokyo, Japan.
4. Ecotoxicology- The study of pollutants and ecosystems majority.

MICROBIAL NANOTECHNOLOGY

Contact Hours per week: 2

Credit: 2

Contact Hours per Semester: 30

Subject Code: U1MBS61

Objectives:

To understand the basics of nanotechnology and microbial applications of nanotechnology.

UNIT I

(7 hours)

Introduction to nanotechnology - Structural and functional principles of nanotechnology - Applications of nanotechnology. Bionanoparticles – Carbon nanotubes, Carbon nanocones.

UNIT II

(7 hours)

Nanotechnology : Nanoparticle synthesis by plants, bacteria and yeast. Methods of Nanobiotechnology - Analysis of bimolecular Nanostructures by Atomic Force Microscopy, Scanning Probe Electron Microcopy and XRD.

UNIT III

(5 hours)

Biosensors – optical nanosensors, multi-functional biochip (MFB) and Detection of the *Mycobacterium* by MFB.

UNIT IV

(6 hours)

Application of Nanobiotechnology in medicine – Cancer diagnosis and treatment, Drug designing and delivery.

UNIT V

(5 hours)

Nanotechnology and Food safety – Food Packaging and Processing. Nanotechnology in Agriculture – crop improvement and Pest management. Bio security

Text Books

Unit I & II

M.H. Fulekar, 2010, Nanotechnology: Importance and Applications, I. K. International Pvt Ltd, New Delhi

Unit III

Bernd Rehm, 2006. Microbial Bionanotechnology: Biological Self-assembly Systems and Biopolymer-based Nanostructures, Horizon Scientific Press, 2006

Unit IV & V



R. K. Rathi, 2009, Nanotechnology 1st Edition. S. Chand & Company Ltd, New Dehli.

REFERENCES:

1. Biomaterials Sciences: An Introduction to Materials in Medicine 2nd Edition, Buddy D. Ratner, Allan S. Hoffman, Frederick J. Schoen and Jack E. Lemons.
2. Lehninger's Principles of Biochemistry, 4th Edition, David L. Nelson and Michael M. Cox, 2006
3. Nanobiotechnology: Concepts, applications and perspectives, **Christof M. Niemayer, Chad A. Mirkin**, Wiley VCH publishers 2004.
4. Bionanotechnology: Lessons from Nature, **David. S. Goodsell**. Jhonwiley 2006.
5. Naobiotechnology: Molecular Diagnosis, **K.K. Jain, Tailor L.** Francis Group.

Pharmaceutical Microbiology

Contact Hours per week: 2

Credit: 2

Contact Hours per Semester: 30

Subject Code: U1MBS62

Objectives:

The goal of Medicinal Chemistry is to understand drug actions of microorganisms and develop new and improved products for medicine and Microbiology.

Unit I

(7 hours)

Introduction to drug – Requirements of ideal drug – Drug metabolism: Phase I and Phase II – Role of cytochrome P450 in drug metabolism.

Unit II

(7 hours)

Structure of antibiotics: Pencillin, Streptomycin, Chloramphenicol, Tetracyclin. Mode of action of penicillin G.

Unit III

(5 hours)

Antiseptics: Formaldehyde, Nitrofurazones, Phenol and natural antiseptics (Carvacrol and Thymol).
Surfactants: Anionic and Cationic surfactants – Mechanism of action of surfactants.

Unit IV

(5 hours)

Sterilization: Moist heat sterilization, Dry heat sterilization, Gas sterilization- Sterilization by filtration –
Quality Evaluation: sterility test, antibiotic assay, microbial limit tests and preservative efficacy test.

Unit V

(6 hours)

Introduction to patents on drugs – Quality assurance- Regularity affairs: Regulatory process, Fast tracking and orphan drugs - Good manufacturing practice (GMP) – Good Laboratory Practice (GLP) – Chemical and Process development.

Text Books

Unit I & II

1. Graham L. Patrick. 2006. An introduction to Medicinal Chemistry (3rd edition). Oxford University Press, New Delhi.
2. Bagavathi Sundari, K. 2006. Applied Chemistry. MJP Publishers, Chennai.

Unit III

Bagavathi Sundari, K. 2006. Applied Chemistry. MJP Publishers, Chennai.

Unit IV & V

1. Dubey, R. C. and Maheswari, D.K. 2012. A Textbook of Microbiology. S. Chand & Company Ltd, New Dehli.
2. Graham L. Patrick. 2006. An introduction to Medicinal Chemistry (3rd edition). Oxford University Press, New Delhi.

References

1. Jayashree Ghosh. 1998. Text book of Pharmaceutical Chemistry. S.Chand & Company, New Delhi.
2. David A. Williams and Thomas L. Lemke. 2007. Foye's Principles of Medicinal chemistry. Lippincott Williams and Wilkins.
3. Graham L. Patrick. 2006. An introduction to Medicinal Chemistry (3rd edition). Oxford University Press, New Delhi.

Human diseases and diagnostic Microbiology

Contact hours per week: 2

Credits: 2

Contact hours per semester: 30

Subject code: U1MBN61



Objectives:

- To introduce the basic concepts of microbiology.
- To understand the role of microbes in human health.
- To understand the mechanism of pathogenesis of microbes.
- To understand the proper treatment and preventive methods for microbial diseases.

Unit I

(6 hours)

Bacterial morphology. Microbial flora in health and diseases: common microbes colonizing the respiratory tract and skin surfaces.

Unit II

(6 hours)

General characters, pathogenesis and diagnosis of *Escherichia coli* and *Mycobacterium tuberculosis*.

Unit III

(6 hours)

General characters of immune response. Vaccines. Serologic diagnosis of infectious diseases: Widal and ELISA.

Unit IV

(6 hours)

General characters, pathogenesis and diagnosis of HIV infections. Microbiological analysis of water: MPN technique.

Unit V

(6 hours)

General characters, life cycle and diagnosis of *Entamoeba histolytica* and *Plasmodium falciparum*. Antimicrobial susceptibility testing.

Textbooks

Unit I

1. Prescott, Harley and Klein, 2008, Microbiology, 6/e, McGraw-Hill.

Unit II

1. Ananthanarayan and Paniker, 2013, Textbook of Microbiology, 9/e, University Press.

Unit III

1. Ananthanarayan and Paniker, 2013, Textbook of Microbiology, 9/e, University Press.

2. Lisa Anne Shimeld and Anne T. Rodgers, 1999, Essentials of Diagnostic Microbiology, Delmar Publishers, New York.

Unit IV

1. Patric R. Murray, Ken S. Rosenthal, George S. Kobayashi and Michael A. Pfaller, 1998, Medical Microbiology, 3/e, Mosby, London.

Unit V

1. Ananthanarayan and Paniker, 2013, Textbook of Microbiology, 9/e, University Press.

References

1. Lisa Anne Shimeld and Anne T. Rodgers, 1999, Essentials of Diagnostic Microbiology, Delmar Publishers, New York.
 2. Patric R. Murray, Ken S. Rosenthal, George S. Kobayashi and Michael A. Pfaller, 1998, Medical Microbiology, 3/e, Mosby, London.
 3. Ananthanarayan and Paniker, 2013, Textbook of Microbiology, 9/e, University Press.
 4. Prescott, Harley and Klein, 2008, Microbiology, 6/e, McGraw-Hill.
 5. Jawetz, Melnic and Adelberg, 2004. Medical Microbiology, 22/e, McGraw-Hill.
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