



**DEPARTMENT OF ZOOLOGY**

**COURSE OUTCOMES**

**I B.Sc. Zoology**

**SEMESTER: I**

**Subject Name: INVERTEBRATA**

**Subject Code: U22ZYC11**

**In this course, the students will**

<b>CO1:</b>	Students able to identify the animals by its taxonomy
<b>CO2:</b>	Understand the various organs and organ system in the animals
<b>CO3:</b>	Acquires the knowledge of morphology of the animals
<b>CO4:</b>	Students distinguish the difference between the animals belonging to different taxa
<b>CO5:</b>	Characterizes the animals and cite the examples of different taxa

**Subject Name: CHEMISTRY-I**

**Subject Code: U22CHAY11 /U3CHA1Y**

**In this course, the students will**

<b>CO1:</b>	Understand fundamental ideas about organic chemistry and isomerism
<b>CO2:</b>	Preparation properties of hydrogen isotopes
<b>CO3:</b>	Know the various types of colloids
<b>CO4:</b>	Become professionally trained in the area of petrochemicals products and fertilizers
<b>CO5:</b>	Understand importance of polymers in our daily life

**Subject Name: ANIMAL DIVERSITY AND ADAPTATION - I**

**Subject Code: U22ZYS11**

<b>CO1:</b>	To understand the animal diversity and adaptation of various groups of invertebrates
<b>CO2:</b>	To acquire knowledge about the marine animals
<b>CO3:</b>	To build up the familiarity among the students regarding the adaptive radiations in animals
<b>CO4:</b>	Acquires the knowledge on morphological difference of mouth parts of various animals.
<b>CO5:</b>	To transfer the information about the advanced invertebrates and its larval forms.

**Subject Name: APPLIED ZOOLOGY-I**

**Subject Code: U22ZYS12**

<b>CO1:</b>	To give the student a broad understanding about the role of animals in human life
<b>CO2:</b>	To understand the values of useful insects and their economic importance
<b>CO3:</b>	To understand the requirements for keeping and breeding of various animals for commercial purpose



<b>CO4:</b>	To generate motivation for Self-Employment
<b>CO5:</b>	Imparts knowledge about the culture techniques of invertebrates.

**SEMESTER: II**

**Subject Name: CHORDATA**

**Subject Code: U22ZYC21**

<b>CO1:</b>	Students able to identify the animals by its taxonomy
<b>CO2:</b>	Understand the various organs and organ system in the animals
<b>CO3:</b>	Acquires the knowledge of morphology of the animals
<b>CO4:</b>	Students distinguish the difference between the animals belonging to different taxa
<b>CO5:</b>	Characterizes the animals and cite the examples of different taxa

**Subject Name: LAB: INVERTEBRATA AND CHORDATA**

**Subject Code: U22ZYCP21**

<b>CO1:</b>	Student able to identify the Invertebrate animal
<b>CO2:</b>	Acquires the knowledge of anatomy of the organisms
<b>CO3:</b>	Expertise in dissecting the animals
<b>CO4:</b>	Understand the mounting of Appendages of the animals

**Subject Name: GENERAL CHEMISTRY —II**

**Subject Code: U22CHAY21/ U3CHA2Y**

<b>CO1:</b>	Understand various chromatography technique
<b>CO2:</b>	Know about proteins and Vitamins
<b>CO3:</b>	Understand the importance of significant numbers and various methods for expressing
<b>CO4:</b>	Concentration of the solution.
<b>CO5:</b>	Comprehend the method of estimation carbon, hydrogen, sulphur and halogens.
<b>CO6:</b>	Ability to draw the structure and explain the applications of dyes.



**Subject Name: LAB: VOLUMETRIC ANALYSIS**

**Subject Code: U22CHAYP21 /U2CHA2YP**

Upon completion of this lab, the students will be able

<b>CO1:</b>	Understand the apparatus used in volumetric analysis
<b>CO2:</b>	The precautions to using equipment
<b>CO3:</b>	Acquire the knowledge about the standard solutions
<b>CO4:</b>	Prepare standard solutions
<b>CO5:</b>	Acquire the knowledge about strength of the solutions

**Subject Name: ANIMAL DIVERSITY AND ADAPTATION-II**

**Subject Code: U22ZYS21**

<b>CO1:</b>	To understand the animal diversity and adaptation of various groups of vertebrates.
<b>CO2:</b>	To acquire knowledge about the adaptations in the Terrestrial animals.
<b>CO3:</b>	Students are able identify the poisonous and non poisonous reptiles.
<b>CO4:</b>	Acquires the knowledge on different types of feeding in various animals.
<b>CO5:</b>	To transfer the information about the flight adaptations in the aerial mode of living in animals.

**Subject Name: APPLIED ZOOLOGY-II**

**Subject Code: U22ZYS22**

<b>CO1:</b>	To gain knowledge and skill in the fundamentals of animal
<b>CO2:</b>	To disseminate information on economic aspects of culture skill and animal farming
<b>CO3:</b>	To inculcate knowledge on physiology and pathology of fishes
<b>CO4:</b>	Provides knowledge of animal breeding which is highly professional and attractive avenue for youth
<b>CO5:</b>	To generate motivation for Self-Employment
<b>CO6:</b>	To gain skill on value added products



## **COURSE OUTCOME**

### **SEMESTER III**

#### **CELL BIOLOGY**

Subject Code: U3ZYC3

- CO 1:** Students, understand the usage of Microscope to observe the minute organisms
- CO 2:** Applies the knowledge of preserving the rare specimens of animals through the Cytological Techniques
- CO 3:** Students able to know the structure and functions of cell organelles.
- CO 4:** Students imbibe the knowledge of genetic materials and understand the chromosomal details for the life.
- CO 5:** This unit enable the students to understand the genetic codes and the codons for the Protein synthesis mechanism and acquires the concept of Aging.

#### **ALLIED - General Chemistry-III**

Subject Code: U2CHA3Y

- To gain basic knowledge of photochemistry and nuclear chemistry.
- To understand the concept data analysis.
- To acquire basic knowledge in water quality parameters.
- To study the versatility of insecticides

#### **ANCILLARY - SERICULTURE- I**

Subject Code: U3ZYA3

- CO 1:** Analyze the status of sericulture industry at global, national and regional levels
- CO 2:** Identify the improved mulberry varieties suitable for Indian farmers
- CO 3:** Devise appropriate mulberry cultivation practices required for profitable cocoon production
- CO 4:** Assess the impact of chemical fertilizers and organic manures in mulberry leaf production
- CO 5:** Manipulate the damages caused by pests and pathogens to mulberry plants

### **SEMESTER IV**

#### **DEVELOPMENTAL BIOLOGY**

Subject Code: U3ZYC4

- CO 1:** To understand the vertebrate developmental stages through the embryonic development from egg to adult.
- CO 2:** During the course of study students able to understand the anatomy of testis, spermatogenesis process, types of egg and fertilization followed by without mating the young one are produced through the parthenogenesis etc.
- CO 3:** The students can able to understand the developmental stages from the fertilized egg to Cleavage, Blastula and gastrula. The fate map is very useful to see the developmental stages of the organism using certain stain and movement of germinal layers can able to see during the completion of the core paper.
- CO 4:** This unit covers the early developmental stages of frog from egg to adult and followed by regeneration of salamander limbs through the experimental evidences,



**VIRUDHUNAGAR HINDU NADARS' SENTHIKUMARA NADAR COLLEGE**

*(An Autonomous Institution Affiliated to Madurai Kamaraj University)*

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

Virudhunagar – 626 001.

---

**CO 5:** To study the different types of vertebrate placentation in mammals-and how to reduce the population rate through the contraceptive devices and test tube baby for inability human to get the young ones.

**ALLIED - General Chemistry-IV**

Subject Code: U2CHA4Y

- To study the mode of action of drugs.
- To learn some chemicals day to day life utility.
- To acquire basic idea about the alkaloids and Terpenoids.
- To gain knowledge about the soil chemistry.
- To study the role of catalyst in chemical reactions.

**LAB: Organic Qualitative Analysis**

Subject Code: U2CHA4YP

- To gain fundamental knowledge about organic analysis

**ANCILLARY - SERICULTURE- II**

Subject Code: U3ZYA4

**CO 1:** Identify the mulberry and non-mulberry silkworms

**CO 2:** Categorize the races of silkworm used for rearing

**CO 3:** Describe the structure and functions of organ systems

**CO 4:** Paraphrase the factors influencing the growth and development

**CO 5:** Demonstrate the management of silkworm diseases for profitable sericulture



## **COURSE OUTCOME**

### **SEMESTER – V**

#### **ANIMAL PHYSIOLOGY**

Subject Code:U3ZYC51

- CO1:** Student understand the concept of nutrition and digestion in animals
- CO2:** Students acquire the knowledge of various organs in the animals
- CO3:** Critically analyze the functions of the organ system and adaptations in animals
- CO4:** Acquires the comparative physiology of body osmotic balance in the organisms
- CO5:** To understand the role of hormones in physiological process

#### **GENETICS AND BIostatISTICS**

Subject Code: U3ZYC52

- CO1:** Understand the Genetics principles and fundamentals of inheritance
- CO2:** Familiarize the students with mechanism of inheritance of hereditary disease
- CO3:** Recognize the structure and function of Genetic material
- CO4:** Acquire the basic knowledge about statistical methods
- CO5:** Analyze the biological data using statistical tools.

#### **MICROBIOLOGY AND IMMUNOLOGY**

SubjectCode:U3ZYC53

- CO1:** Identify the structure of microorganisms
- CO2:** Relate the association of microbes with food in daily life
- CO3:** Distinguish the symptoms and mode of transmission of various infectious diseases
- CO4:** Describe the various components of the immune systems
- CO5:** Categorize the vaccines and investigate the aetiology of autoimmune diseases.

#### **ALLIED: SERICULTURE III**

Subject Code:U3ZYA51

- CO 1:** Understand the requirements and preparation of a silkworm rearing house
- CO 2:** Identifythe improved technologies in silkworm rearing and its impact on cocoon productivity.
- CO3:** Comprehend the process of spinning and harvesting of cocoon
- CO 4:** Recognize the procedure of silkworm seed production in a grainage
- CO 5:** Distinguish technologies involved in the rearing of non-mulberry silkworms



**SBE- EMPLOYABILITY SKILLS**

Subject Code: U1PS51

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

**ORNAMENTAL FISH CULTURE**

Subject Code: U3ZYN51

- CO1:** Study the types and general morphology of ornamental fishes.  
**CO2:** Provide knowledge about the construction and maintenance of aquarium.  
**CO3:** Understand the importance of feeds and culture of live feeds  
**CO4:** Familiarize the knowledge of ornamental fish breeding  
**CO5:** Acquire ideas about the fish diseases and treatment methods.

**SEMESTER VI  
ECOLOGY AND EVOLUTION**

Subject Code: U3ZYC61

- CO1:** Realize the importance of interrelationship between organisms and environment.  
**CO2:** Study the adaptations of organisms to their immediate environment.  
**CO3:** Understand the need of biodiversity for the welfare of living organism.  
**CO4:** Understand the theories of evolution postulated by various evolutionists.  
**CO5:** Understand knowledge about the formation of new species.

**BIOCHEMISTRY**

Subject Code: U3ZYC62

- CO1:** Students acquire the concept of atomic and biological chemical bonds  
**CO2:** To learn the diversity of biological molecules in a systematic manner.  
**CO3:** Understand the knowledge of buffer system in the body  
**CO4:** To understand the form and functions of macromolecules.  
**CO5:** To familiarize the various biochemical techniques.

**BIOTECHNOLOGY**

Subject Code: U3ZYC63

- CO1:** Understand the basic concepts of genetic engineering  
**CO2:** Demonstrate the methods of production and identification of recombinants  
**CO3:** Outline the steps involved in animal cell culture and its clinical significance  
**CO4:** Distinguish the methods of transgenic animal production and gene therapy  
**CO5:** Identify the avenues of biotechnological applications for human welfare



**LAB: ANIMAL PHYSIOLOGY, GENETICS AND BIostatISTICS**

Subject Code: U3ZYC6P1

- CO 1:** Understand the physiology of fish respiration and human blood cells
- CO 2:** Student demonstrate the blood pressure measurement in the human being
- CO 3:** Acquires the knowledge of Mendelian hybrid cross and Mendelian human traits
- CO 4:** Interprets the statistical knowledge of the experimental results
- CO 5:** Critically analyse the genetic principles of human blood group

**LAB: ECOLOGY, EVOLUTION AND BIOCHEMISTRY**

Subject Code:U3ZYC6P2

- CO 1:** Understand the ecosystem of a pond
- CO 2:** Identifies the planktons in the water medium
- CO 3:** Relates the association of animals in the ecosystem
- CO 4:** Acquires the knowledge of evolutionary importance of animals
- CO 5:** Knows the various adaptations in the animals
- CO 6:** Handles the biochemical instruments
- CO 7:** Analyses the quality of the biomolecules.

**LAB: MICROBIOLOGY, IMMUNOLOGY AND BIOTECHNOLOGY**

**Subject Code: U3ZYC6P3**

- CO 1:** Acquires the knowledge of culturing the microbes
- CO 2:** Analyses the microflora by plating techniques
- CO 3:** Knows how to prepare the Antigen and Antiserum
- CO 4:** Understand the knowledge of immunology and immunological products
- CO 5:** Students were able to estimate the Nucleic acids
- CO 6:** Able to isolate the DNA





**ALLIED: SERICULTURE IV**

Subject Code:U2ZYA61

- CO1:** introduce the concept of cocoon, quality of cocoon and marketing of cocoon
- CO2:** know the pre-cocoon operation for reeling and its significance in reeling technology
- CO3:** acquaint with the technologies of silk reeling and importance in reeling devices
- CO4:** understand the properties and uses of silk, significance of processing and testing of raw silk
- CO5:** know the economics of silkworm rearing and Entrepreneurship development programme

**LAB: SERICULTURE III & IV**

Subject Code: U3ZYA6P

- CO1:** Understands the knowledge of rearing tools and Disinfection
- CO2:** Knows how to rear the different ages of Silkworm
- CO3:** Able to differentiate the good and defective cocoon
- CO4:** Acquires the knowledge of different types of silk wastes
- CO5:** Quantitatively estimate the Sericin and Fibroin content of the Silk

**PROJECT**

Subject Code: U1ZY6PR

- CO 1:** Students understand the significance of the problem and data collection.
- CO 2:** Acquire the scientific knowledge and its transfer to the common people.
- CO 3:** Able to interpret and compare the results obtained after the data analysis
- CO 4:** Apply the laboratory techniques in the field.

**NME - HUMAN BIOLOGY**

Subject Code: U3ZYN61

- CO1:** Understand the balanced diet and their importance
- CO2:** Learn the functions of various organs of the human body.
- CO3:** Learn an idea about the determination of sex in human.
- CO4:** Understand the role sex hormones
- CO5:** Study the socio-cultural aspects of human evolution.



DEPARTMENT OF ZOOLOGY

COURSE OUTCOMES

I M.Sc Zoology

Subject Name: CELL AND MOLECULAR BIOLOGY Subject Code: P22ZYC11

CO1:	Explain the ultrastructure and functions of subcellular organelles at molecular level in an animal cell
CO2:	Illustrate that fundamental structural units define the function of all living things
CO3:	Apply concepts from other sciences to interpret the cellular processes
CO4:	Understand the nature of cancer and the processes underlying cancer formation and progression
CO5:	Identify and explain the important checkpoints that a cell passes through during the cell cycle

Subject Name: BIOCHEMISTRY

Subject Code: P22ZYC12

CO1:	Define structure and types of chemical bonds in biomolecules
CO2:	Identify the structural significance and metabolic process of biomolecules
CO3:	List various biomolecules classification and their mechanism which enhance their bioactive reaction
CO4:	Analyze biomolecule in biological system and relate deficiency disorders
CO5:	Interpret lipid metabolism and their importance

Subject Name: TECHNIQUES IN BIOLOGY

Subject Code: P22ZYC13

Cos	COs Statements
CO1	Understanding the multiplication of desired genes using PCR techniques, DNA and protein sequencing, C – value paradox and various blotting techniques with their applications.
CO2	Describing the principle and applications of various microscopic techniques.
CO3	Understanding the separation techniques such as chromatography and centrifugation.
CO4	Explaining various Spectroscopic Techniques.
CO5	Applying radioisotope techniques in biology.

Subject Name: AQUACULTURE

Subject Code: P22ZYE11

CO1:	To gain knowledge on site selection and construction of fish pond and various types of fish ponds.
CO2:	To learn induced breeding technique of commercially important cultivable fishes
CO3:	To understand the nutritional requirements of live and artificial fish feed.
CO4:	To know the common fish diseases, treatment and control measures.
CO5:	To study the types of fishing Crafts and gears and methods of fish preservation



**Subject Name: LAB: CELL AND MOLECULAR BIOLOGY**

**Subject Code: P22ZYP11**

<b>CO1:</b>	: Know how to work with Microscope
<b>CO2:</b>	Acquires the knowledge of size of the cells
<b>CO3:</b>	Expertise in preparing chromosomes in a slide
<b>CO4:</b>	Performs the Isolation the cell organelles

**Subject Name: LAB: BIOCHEMISTRY**

**Subject Code: P22ZYP12**

**In this course, the students will**

<b>CO1:</b>	Student knows how to prepare Buffer
<b>CO2:</b>	Can estimate the Enzyme activity
<b>CO3:</b>	Expertise in handling the Colorimeter instrument
<b>CO4:</b>	Acquires the knowledge of separating pigments and proteins

## **II SEMESTER**

**Subject Name: MOLECULAR GENETICS**

**SUBJECT CODE: P22ZYC21**

**In this course, the students will**

<b>CO1:</b>	Predict the genotypic and phenotypic ratios in the meiotic products
<b>CO2:</b>	Perform a quantitative analysis of the progeny of a dihybrid testcross to assess whether the two genes are linked on the same chromosome
<b>CO3:</b>	Illustrate the features of DNA replication and the machineries that contribute to its speed and accuracy
<b>CO4:</b>	Compare and contrast the critical roles played by different kinds of RNA in protein synthesis
<b>CO5:</b>	Differentiate the molecular mechanisms of gene regulation in eukaryotes and bacteria
<b>CO6:</b>	Describe human genetic diseases that are caused by genetic changes

**Subject Name: ECOLOGY**

**SUBJECT CODE: P22ZYC22**

**In this course, the students will**

<b>CO1:</b>	To study the concept and components of ecosystem
<b>CO2:</b>	To understand the characteristics of population and to learn its interaction with environment
<b>CO3:</b>	To sensitize the students on the careful utilization of environmental resources



<b>CO4:</b>	To analyse the problems associated with mismanagement of resources
<b>CO5:</b>	To create environment awareness among students

**Subject Name: BIOSTATISTICS AND BIOINFORMATICS**

**SUBJECT CODE: P22ZYC23**

**In this course, the students will**

<b>CO1:</b>	Learners can recognize the definition of statistics, its subject and its relationship with the biological sciences.
<b>CO2:</b>	Learners can identify distribution form relating to the variable/variables. recognize normal distribution and interpret data via normal distribution.
<b>CO3:</b>	Learners can calculate and interpret measures of central tendency and variability in statistical data and compare different population sample using ANOVA
<b>CO4:</b>	Learners can familiarise the basics of bioinformatic databases and the types of Bioinformatic data.
<b>CO5:</b>	Learners can understand the nucleotide and protein sequence databases.

**Subject Name: ECONOMIC ZOOLOGY**

**SUBJECT CODE: P22ZYN21**

**In this course, the students will**

<b>CO1:</b>	Applying studied information to have knowledge on common cattle breeds and their management, milk and milk products.
<b>CO2:</b>	Understanding the knowledge of fowl breeds and their management, nutritive and economic value of chick and egg
<b>CO3:</b>	To inculcate knowledge on common ornamental fishes, aquarium setup, breeding, diseases and their treatment.
<b>CO4:</b>	To satisfy the learners with modern techniques of silkworm and honeybee rearing with economic values
<b>CO5:</b>	To study the morphology of earthworm, production method of vermicompost with applications

**Subject Name: LAB: MOLECULAR GENETICS**

**SUBJECT CODE: P22ZYP21**

**In this course, the students will**

<b>CO1:</b>	Understand the practical implications of Mendel's Laws
<b>CO2:</b>	Can estimate the Enzyme activity
<b>CO3:</b>	Chart out the Pedigree analysis of any family
<b>CO4:</b>	Acquires the knowledge of statistical applications of genetics experiments

**Subject Name: LAB: ECOLOGY**

**SUBJECT CODE: P22ZYP22**

<b>CO1:</b>	Student able to estimate the Primary productivity
<b>CO2:</b>	Critically analyze the Industrial effluents
<b>CO3:</b>	Expertise in estimating the soil organic matter
<b>CO4:</b>	Transforms the practical laboratory experience to the field through study tour



## **COURSE OUTCOME**

### **SEMESTER III IMMUNOLOGY**

Subject Code: P19ZYC31

- CO 1:** To acquire an overall knowledge of immune system.
- CO 2:** To familiarize the mechanism involved in humoral immune system.
- CO 3:** To comprehend the mechanism of cell mediated immunity.
- CO 4:** To understand basics of replacement therapies and cancer immunotherapy.
- CO 5:** To study the impact of immune cells in human diseases and importance of vaccines.

### **DEVELOPMENTAL BIOLOGY**

Subject Code: P19ZYC32

- CO 1:** Recognize the formation and maturation of germ cells in human
- CO 2:** Paraphrase the molecular changes that occur in an egg following the fusion of gametes
- CO 3:** Demonstrate the development of organs from germinal layers
- CO 4:** Distinguish between the causes of normal and abnormal development at genetic level
- CO 5:** Associate the role of hormones in ontogenetic development of insects and amphibians

### **EVOLUTION**

Subject Code: P19ZYC33

- CO 1:** To learn the origin of earth and process of evolution.
- CO 2:** Learn about all types of evolutionary processes with the background of genetics and Mimicry types and their role in evolution.
- CO 3:** To understand the mechanism of formation of new species.
- CO 4:** To understand the concept of micro, macro and Megaevolution.
- CO 5:** To study the socio-cultural aspects of human evolution.

### **RESEARCH METHODOLOGY**

Subject Code: P19ZYE31

- CO 1:** It makes the understanding of finding a problem, related data collection from sources and designing and executing the experiment.
- CO 2:** Identify various sources of information for literature review and data collection
- CO 3:** Critically analyze research methodologies identified in existing literature
- CO 4:** Emphasis knowledge to write a research report and thesis
- CO 5:** Analyze the data using statistical tools to interpret the result significantly



**SEMESTER IV  
MICROBIOLOGY**

Subject Code: P19ZYC41

**CO 1:** To gain the knowledge about the classification, Structure, Nutritional requirements and growth of Bacteria.

**CO 2:** To acquire an overall knowledge about Bacterial metabolism and diversity.

**CO 3:** End of the course can understand the role of bacteria in Environmental and Industry.

**CO 4:** To understand the role of bacteria in Foods and Agriculture.

**CO 5:** To Understand the impact of microorganisms in the health of human beings

**ANIMAL PHYSIOLOGY**

Subject Code: P19ZYC42

**CO 1:** To learn the importance of nutrients, digestion of food and its metabolism.

**CO 2:** To understand the structure and physiology of various organ systems in animals.

**CO 3:** To gain knowledge about nervous system in humans and sense organs of animals.

**CO 4:** To study types, ultrastructure and role of muscles in animal movement.

**CO 5:** To reveal the role of hormones in physiological processes.

**BIOTECHNOLOGY**

Subject Code: P19ZYC43

**CO 1:** To gain the knowledge and familiarize the tools and techniques of genetic engineering.

**CO 2:** End of the course can understand the gene transfer and gene cloning methods.

**CO 3:** To gain the knowledge about animal cell culture and tissue culture.

**CO 4:** To understand the applications and advantages of biotechnology in Industries.

**CO 5:** To gain the idea about role of biotechnology in bioremediation, healthcare, safety and legal issues.



**COURSE OUTCOMES**

**UNDERGRADUATE**

**III - Year**

**V - Semester**

**Employability Skills**

**Subject Code: U1PS51**

**In this course, the students will**

<b>CO1:</b>	Enrich them with the employability skills like reasoning skills and aptitude skills.
<b>CO2:</b>	Get adequate exposure to various types of competitive examinations.
<b>CO3:</b>	Get enough training in OMR based answer sheet.



**COURSE OUTCOMES**

**UNDERGRADUATE**

**I - Semester**

**Value Education**

**Subject Code: U1VE11**

**In this course, the students will**

<b>CO1:</b>	Learn to choose their own personal moral and spiritual values.
<b>CO2:</b>	Learn to become responsible citizens.
<b>CO3:</b>	Get sensitized to value formation.