RANI CHANNAMMA UNIVERSITY, BELAGAVI

WEL-COME

TO THE COURSE STRUCTRE AND SYLLABUS OF UNDERGRADUATE PROGRAMMES – B.Sc

VI Semester

w.e.f.

Academic Year 2016-17 and onwards

11. ZOOLOGY (OPTIONAL)

BSc – Zoology (Optional) Sixth Semester

Paper 6.1 and 6.2 Outline

STRUCTURE

Semester	Syllabus	Hour's
Paper I	APPLIED ZOOLOGY, Sericulture Apiculture, Insect pest management. Vermiculture, Aquaculture, Poultry breeds, Animal Husbandry and Lac culture	50
VI Paper-II	Microbiology, Nanotechnology, Bioinformatics and Methods in Biology	50

Rani Channamma University, Belagavi
B.Sc VI Semester _ 6.1

Paper I

Total hours – 50
Marks _ 80
Theory 4 hrs/week

APPLIED ZOOLOGY (optional)

Sericulture : Mulbery Silkworm and Life History of Bombyx mori
07 hrs
Rearing of Silkworm: Grainage management, Emergence of moth and fertilization, egg laying, hatching and moulting of-silkworm, spinning of cocoons, Cocoon processing, stiffling and spinning silk. Filature. Non mulberry silkwarm, types. in brief & Silkworm diseases- Muscardine, Grasserie, Flacherie & Pebrine.

Apiculture: Species of Honey Bees, their Social organization, Life History 05 hrs
Methods of Bee Keeping, products of Bees, & their Economic importance

Insect Pest Management : Natural control and Applied control of pests
05 hrs
Applied Control __ Mechanical, Physical, Cultural, Legal, Chemical control

Vermiculture: Eerthworm species used in vermiculture,vermiculture technique,and
Importance of vermiculture.
04 hrs

Aquaculture :
10 hrs
Prawn Fisheries, Species of Prawns, Culture of freshwater and marine Prawns, Preservation and processing of Prawns.

Pearl Culture : Pearl producing molluscans, Pearl formation, Pearl producing
Sites in India. Quality and composition of Pearl.
Pearl Industry:Artificial Insertion of nucleus
Brief technique of Fish culture, Preservation of fishes and their Byproducts

Poultry : Breeds of fowl, Diseases of poultry, Poultry maintenance and By-products, and CoMposition and Nutritive value of Egg.

06 hrs

Animal Husbandary: Maintenance, Breeds Diseases, Products and By Products of the following

10 hrs

Sheep and Goats, Cow and Buffalos, Composition and Nutritive value of Milk

Lac culture: Classification of Lac insect (Techardia lacca, Life history of Lac
Insect. Host plants, Cultivation of Lac. Compostion and properties & Economic importance

3 hrs.

Practicals – 6.1 **Total -11**

Practicals

1. Project on any of the applied branch studied in theory 1
2. Study of mulberry silkworm and Life cycle 1
3. Types of non mulberry silkworms in brief and Silkworm diseases (Pebrine, Muscardine and Grasserie & Flaturie) 1
4. Species and castes of honeybees 1
5. Agricultural pests and domestic pests (total 8 varieties) 1
6. Study of fisheries __ Molluscs (three), Crustaceans (three) And Pisces (six)
7. Study of Varieties of sheep and goat (from chart/photographs) 1
8. Study of varieties of Cow & Buffalos(from chart/photographs) 1
9. Vermiculture__ Study of types of Earthworm species 1
10. Study of poultry breeds 1
11. Study of Lac insect (Life cycle) 1

Scheme for practicals 6.1 APPLIED ZOOLOGY

Q No. I	Sericulture	03 marks
Q No. II	Apiculture	03 marks
Q No. III	Pest management	03 marks
Q No. IV	Pisciculture	03 marks
Q No. V	Vermiculture	03 marks
Q No. VI	Animal Husbandry	06 marks
Q No. VII	Prawn & Pearl culture	04 marks
Q No. VIII	Project report & Viva	10 marks
Q No. IX	Journal	05 marks

Total 40 marks

Note 1 :Examiners can alter the Scheme of marks for practical in consultation With the staff of the host college.

Note 2 : Theory		Internal	20 marks
		Final	80 marks
	Pracatical	Internal	10 marks
		Final	40 marks

Note 3 : Question paper pattern for THEORY examination

Q No. I	02 marks	10* 02	= 20 marks
Q No. II	05 marks	06* 05	= 30 marks
Q No. III	10 marks	01* 10	= 10 marks
Q No. IV	10 marks	01* 10	= 10 marks
Q No. V	10 marks	01* 10	= 10 marks

Note 4 : Q Nos IIIrd IV & V each should have one internal option

B.Sc VI Semester _ 6.2

Paper II
(Microbiology, Nanotechnology, Bioinformatics and Methods in Biology)

Total hours – 50
Marks _ 80
Theory 4 hrs/week

Microbiology

1. **Microscopy** : Compound Microscope and its functions 03 hrs
   Dark field microscope. Fluorescent Microscope
   Phase Contrast Microscope and Electron Microscope and their uses
2. **Sterilization and other Techniques** _ Physical and Chemical methods 01 hr
   Bacteria:Classifiction based on shapes, structure (anatomy) Bacterial 02 hrs
   reproduction and growth.

3. **Virus** _Morphology, chemical properties, classification and nomenclature 02 hrs
   DNA and RNA viruses.

   4. Fungi: Structure, classification and reproduction, Yeasts 02hrs
5. **Fermentation**: Types of Fermentor and basic functions 03hrs

   Methods of preservations and criteria for the selection of microorganisms

6. **Production of antibodies** Penicillin, Streptomycin, Enzyme protease, Riboflavin. 02hr
7. Ormal microbial flora of the human body 01hr

8.Role of microbes in environment 01hr

Nanotechnology 4hrs

Introduction : History, Name, Tools and Techniques in Nanotechnology.

Nanobiology; application of Nano in biology- Nano drug Administration Diagnostic & Therapeutic applications. Lotus effect, Gold & Silve Nanotechnology. Curcumin phytochemicals, Cinnamon in green nano technology.

Bioinformatics

1.**Introduction'** : Definition, Goal of Bioinformatics, Sequencing-Sequences analysis and Structure analysis 02hrs
Applications of Bioinformatics.

2. Classification of Biological Data Bases. Characteristics of FASTA (FastAlignment) BLAST (Basic Local Alignment Search Tool). 02hrs

3. **Aims and goals of Human Genome Project**: Main findings of huma genome Project., Prediction and tools for gene prediction.
Comparative genomics. 02hrs

4. **Proteomics**: Two dimensional Gel Electrophoresis
Mass spectrometry, SDS __ PAGE
Structure of protein __ Primary, Secondary, Tertiary and Quarternary. 02hrs

Protein structure prediction 01hr
Application of Proteome analysis
The future of Proteomics 01hr

<u>Methods in Biology</u>

Techniques of Cell fraction and Centrifugation.
Homogenization and cell tissue disruption
Centrifugation, Ultra centrifugation. 02hrs

DNA Sequencing, _ In situ Hybridization, DNA microchips 02hrs

Genetic Engineering in animals- Transgenic Mouse, Transgenic sheep, Genetically Altered Fish.Mosquito and Drosophila. 02hrs

Gene therapy in Humans 02hr

Histochemical and Immunization Techniques _ ELISA, RIA, Flow Cytometry 02hrs

Nucleic Acid Blotting and their applications _ Southern Blotting, Northern Blotting, Western Blotting 02hrs

Biophysical Methods _ Brief note of NMR, ESR, Spectroscope and their uses 02hrs

Radioisotopes Techniques in Biochemistry - Types of radioactive decay- Alpha, Beta emission & Gamma rays 01 hr

Geigar-Mullar counter, Liquid Scintillator 01hr

Biological applications of Radioisotopes 01hr

A brief note on the use of **ECG, PET, MRI, CAT**. Single Neuron recorder in Electro Physiological methods 02hrs

B.Sc VI SEMESTER 6.2

PRACTICAL DETAILS

ZOOLOGY Pract-II

TOTAL 11 PRACTICALS

Measurement of micro organisms (Micrometery)

Preparation of liquid medium (Broth)

Preparation of solid media (PDA medium and PDA plates)

Preparation of agar slants.

Bacterial cell counting using haemocytorneter.

Simple and Grams's staining differentiation of bacteria.

Isolation, Identification and enumeration of Bacteria/Protozoa
from moist soil or sewage water

Practical application of Bioinformatics: Tool BLAST
And FASTA to find out sequence of nucleotides in
Desired gene/Amino acid in desired protein

Study of Microbiological Lab Equipments—
Microscope, Centrifuge, Autoclave, Pressure cooker, Laminar air flow, Streak Plate, Inocculation needle etc.

Visit to Diagnostic center to study practical application of ECG, PET, MRI, CAT

Suggestions for Practical Examination

Microbiology, Nanotechnology, Bioinformatics & Methods in Biology

SEM – VI 6.2 ZOOLOGY (OPTIONAL)

Q No. I	Microbiology Spotting (05*2)	10 marks
Q No. II	Bioinformatics	07 marks
Q No. III	Methods in Biology	07 marks
Q No. IV	Viva	05 marks
Q No. V	Visit to diagnostic center – A Report	06 marks
Q No. VI	Journal	05 marks

Note 1 : Examiners can alter the Scheme of marks for practical in consultation with the staff of the host college.

Note 2 :	Internal	20 marks
	Final	80 marks
Practical	Internal	10 marks
	Final	40 marks

Note 3 : Question paper pattern for THEORY examination

Q No. I	02 marks	10* 02	= 20 marks
Q No. II	05 marks	06* 05	=30 marks
Q No. III	10 marks	01* 10	=10 marks
Q No. IV	10 marks	01* 10	=10 marks
Q No. V	10 marks	01* 10	=10 marks

Note 4 : Q Nos III, IV & V each should have one internal option.;

. Note : TWO INTERNAL THEORY TESTS SHOULD BE CONDUCTED FOR EVERY SEMESTER

First Internal Theory TEST should be set for maximum of 20 marks for duration of

one hour &Second Internal Theory TEST should be set for maximum of 80 marks

Duration of THREE HOURS.

Note 3 : Question paper pattern for Theory examination

02 marks	10x2	=20
05 marks	6x5	=30
10 marks	3x10	=30

Note 4 : Q Nos . III, IV & V--- SHOULD have ONE internal option OF 10 MARKS

Note : Paper setters should give due weightage to the TOPICS of the SYLLABUS

Note 5: Staff meet should be conducted to discuss the syllabus % before every semester.

All the staff members should attend the meeting compulsorily.