

St. FRANCIS COLLEGE FOR WOMEN, BEGUMPET, HYDERABAD-500016

(An Autonomous College Affiliated To Osmania University)

FACULTY OF SCIENCE- DEPARTMENT OF CHEMISTRY

PRACTICAL SYLLABUS CBCS-2024

SEMESTER -IV

**SYNTHESIS OF ORGANIC COMPOUNDS AND FUNCTIONAL GROUP ANALYSIS**

Program: B.Sc.

Course Code: U24/CHE/DSC/401/P

Course: DSC-4

No. of Credits: 1

Max. Hours: 20 Hrs

Max. Marks: 50

Hours per week: 2

**Course Objective**

- To prepare simple organic compounds and systematically analyse functional groups based on their nature and chemical reactivity.

**Course Outcomes**

CO1: Utilise the knowledge of organic reaction mechanisms in their preparations.

CO2: Categorise functional groups present in organic compounds using systematic quantitative analysis.

**Systematic Qualitative Organic Analysis of Organic Compounds** possessing mono functional groups (-COOH, phenolic, aldehydic, ketonic, carbohydrate, amide, nitro, amines) and preparation of one derivative.

**Synthesis of organic compounds:**

- Acetylation – Preparation of Acetanilide.
- Halogenation – Preparation of p-Bromo acetanilide.
- Oxidation – Preparation of Benzoic acid.
- Esterification - Preparation of n-butyl acetate.
- Methylation – Preparation  $\beta$ -Naphthyl methyl ether.
- Nitration – Preparation of Nitrobenzene
- Reduction – Preparation of m-Nitroaniline

**Reference Books:**

- Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., *Textbook of Practical Organic Chemistry*, Prentice-Hall, 5th edition, 1996.
- Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry* Orient-Longman, 1960.
- Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry*, Universities Press.

## 6. Syllabus Focus

## a. Relevance to Local, Regional, National and Global Development Needs

Local /Regional/ National /Global Development Needs	Relevance
Local	Knowledge of the basic principles of Chemistry to help in day-to-day life.
Regional	Learn about the concepts and significance of carbohydrates and bioinorganic chemistry.
National	Understand the basics of organometallic compounds, non-aqueous solvents and dipole moments.
Global	Application of basic principles of rotational, IR, UV-Vis Spectroscopy techniques, concepts of chemical kinetics, heterocyclic compounds and pericyclic reactions.

## b. Components on Skill Development/Entrepreneurship Development/Employability

SD/ED/EMP	Syllabus Content	Description of Activity
SD	Practical syllabus which includes Organic preparations and Qualitative analysis in Organic Chemistry Problem solving in Physical Chemistry	Students perform the experiments based on the procedure and also analyse the unknown compounds. Students solve the problems
ED	Organic preparations and analysis. Structural investigation of organic compounds based on spectroscopy	Students prepare organic compounds, analyse the functional groups and carry out the structural analysis based on spectral data
EMP	Inorganic, Organic, Physical Chemistry and Spectroscopy	Tutorials and assignments

  
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## 7. Pedagogy

S. No.	Student Centric Methods Adopted	Type / Description of Activity
1	Experiential	Experiments, attending seminars/workshops and field visits
2	Participative	Group discussion, quiz, presentations etc.
3	Problem solving	Solving problems in Physical Chemistry and structural elucidation based on spectral data.

## 8. Course Assessment Plan

## a. Weightage of Marks in Continuous Internal Assessments &amp; End Semester Examination

CO	Continuous Internal Assessments CIA - 40%	End Semester Examination-60%
CO1	CIA1-Written Exam	Written Exam
CO2	CIA 2- Skill based test like poster/powerpoint presentation, collage, 3D model making, problem solving and quiz.	
CO3	CIA1-Written Exam	
CO4	CIA 2- Skill based test like poster/powerpoint presentation, collage, 3D model making, problem solving and quiz.	

  
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## b. Model Question Paper - End Semester Exam

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(An Autonomous College Affiliated to Osmania University)

Faculty of Science – Department of Chemistry

MODEL PAPER

B.Sc. II YEAR SEMESTER -IV

CHEMISTRY - PAPER IV

TIME: 2 hrs

Max. Marks: 60

Course Code: U24/CHE/DSC/401

## SECTION –A (Essay Questions)

.Answer the following

4X10=40 Marks

1. a) Explain the classification of organometallic compounds based on metal-carbon bonds. (CO1) L1 5M  
b) Discuss the reactions in liquid ammonia with suitable examples. (CO1) L2 5M
- OR
2. a) Describe the preparation, properties and applications of Grignard reagent. (CO1) L3 6M  
b) How does fixation of carbon dioxide occur in photosynthesis? (CO1) L2 4M
3. a) Derive an expression for the rate constant of first order reaction. (CO2) L3 5M  
b) A first order reaction is 50% complete in 100 minutes. How long will it take for 90% completion? (CO2) L5 5M
- OR
4. Explain different methods of experimental determination of order of a reaction. (CO2) L2 10M
5. a) Discuss the open chain structure of Glucose. (CO3) L2 5M  
b) Write the equations involved in Killiani-Fischer synthesis. (CO3) L2 5M
- OR
6. a) Explain the synthesis of Furan, Pyrrole and Thiophene from 1,4-dicarbonyl compounds. (CO3) L2 5M  
b) What are pericyclic reactions? Give their classification with an example each. (CO3) L4 5M
7. a) What is a dipole moment? Predict the structure of CO<sub>2</sub> and SO<sub>2</sub> based on dipole moment. (CO4) L4 5M  
b) Explain the various molecular vibrations seen in IR spectroscopy. (CO4) L2 5M
- OR
8. a) Describe in detail about the electronic transitions observed in UV-VIS spectroscopy. (CO4) L2 5M  
b) Explain the basic principles of Raman spectroscopy. (CO4) L2 5M

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## SECTION -B

## II. Answer any four.

4x5=20 Marks

9. Write a note on the biological significance of calcium and chloride ions. (CO1) L1
10. Give two methods of preparation of ferrocene. (CO1) L1
11. Discuss briefly about collision theory. (CO2) L2
12. Explain the factors affecting the rate of a reaction. (CO2) L2
13. Explain mutarotation taking glucose as an example. (CO3) L2
14. Explain the concept of chromophore and auxochrome. (CO4) L2

  
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**b. Model Question Paper - End Semester Exam**

**St. FRANCIS COLLEGE FOR WOMEN, BEGUMPET, HYDERABAD-500016**

**(An Autonomous College Affiliated to Osmania University)**

**Faculty of Science – Department of Chemistry**

**B.SC. II YEAR SEMESTER -IV**

**TIME: 2 hrs**

**Max. Marks: 60**

**Course Code: U24/CHE/DSC/401**


**Credits: 4**

**SECTION –A (Essay Questions)**

**SECTION –A**

SECTION A - INTERNAL CHOICE			4 X 10 M = 40M	
Question Number	Question		CO	BTL
1	Module 1	a) Explain the classification of organometallic compounds based on metal-carbon bonds. 5M b) Discuss the reactions in liquid ammonia with suitable examples. 5M OR	CO 1	(Level I,II)
2	Module 1	a) Describe the preparation, properties and applications of Grignard reagent. 6M b) How does fixation of carbon dioxide occur in photosynthesis? 4M	CO 1	(Level III,II)
3	Module 2	a) Derive an expression for the rate constant of first order reaction. 5M b) A first order reaction is 50% complete in 100 minutes. How long will it take for 90% completion? 5M OR	CO 2	(Level III, V)
4	Module 2	Explain different methods of experimental determination of order of a reaction. 10M	CO 2	(Level II)
5	Module 3	a) Discuss the open chain structure of Glucose. 5M b) Write the equations involved in Killiani-Fischer synthesis. 5M OR	CO 3	(Level II)

6	Module 3	a) Explain the synthesis of Furan, Pyrrole and Thiophene from 1,4-dicarbonyl compounds. (CO3) L2 5M b) What are pericyclic reactions? Give their classification with an example each. (CO3) 5M	CO 3	(Level II, IV)
7	Module 4	a) What is a dipole moment? Predict the structure of CO <sub>2</sub> and SO <sub>2</sub> based on dipole moment. 5M b) Explain the various molecular vibrations seen in IR spectroscopy. 5M OR	CO 4	(Level II, IV)
8	Module 4	a) Describe in detail about the electronic transitions observed in UV-VIS spectroscopy. 5M b) Explain the basic principles of Raman spectroscopy. 5M	CO 4	(Level II)
SECTION B - ANSWER ANY 4 OUT OF 6				4 X 5M = 20 M
9	Module 2	Write a note on the biological significance of calcium and chloride ions.	CO 1	(Level I)
10	Module 1	Give two methods of preparation of ferrocene.	CO 1	(Level I)
11	Module 2	Discuss briefly about collision theory.	CO 2	(Level II)
12	Module 2	Explain the factors affecting the rate of a reaction.	CO 2	(Level II)
13	Module 3	Explain mutarotation taking glucose as an example.	CO 3	(Level II)
14	Module 4	Explain the concept of chromophore and auxochrome.	CO 4	(Level II)

  
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**DEPARTMENT OF NUTRITION**

<b>DSC- 1V</b>	<b>COMMUNITY NUTRITION SEMESTER- IV</b>	<b>60 HRS</b>
<b>Module 1 - Assessment of Nutritional Status</b> <b>Module 2 - Nutritional Problems</b> <b>Module 3 - Nutrition and Health Education</b> <b>Module 4 - Mother and Child Care and Health Organizations</b>		

- The syllabus contains four Modules. Paper should give equal weightage to all Modules. Four long questions- One question per module with internal choice

## SEMESTER- IV

## COMMUNITY NUTRITION

**1. Course Description**

Programme : B.Sc.

Course Code : U20/NUT/DSC/401

Course Type : DSC – 4

No. of credits : 4

Max. Hours : 60

Hours per week : 4

Max. Marks : 100

**2. Course Objectives:**

- Students will be able to interpret and apply nutrition concepts to evaluate and improve the nutritional health of the community.
- It inculcates leadership qualities in conducting various extension and community outreach programs.

**3. Course Outcomes:**

After the successful completion of the course, the student will be able to

CO1: Create skills to conduct simple nutrition assessments

CO2: Evaluate and prevent common nutritional problems in India

CO3: Understand different nutritional tools in educating the community

CO4: Analyze the role of various government and non government agencies in combating malnutrition.

## 4. Course Content

**MODULE 1 : ASSESSMENT OF NUTRITIONAL STATUS**

(15 hrs)

**1.1. Introduction:** Factors affecting Nutritional status, Methods of assessment, Anthropometry measurements

**1.2 Biochemical Analysis, Clinical examination and Vital Statistics:** Laboratory and Biochemical tests, Parameters for vital statistics, Mortality and morbidity.

**1.3. Diet Survey:** Individual, Institutional and national , uses and limitations.

**MODULE 2: NUTRITIONAL PROBLEMS:**

(15 hrs)

**2.1. Common nutritional problems in India:** Protein Energy Malnutrition and Vitamin A deficiency- Etiology, Diagnosis, Treatment and Prophylaxis programme.

**2.2. Anemia:** Iron deficiency, folic acid deficiency and Vitamin-B12 deficiency- Etiology, Diagnosis ,Treatment and Prophylaxis programme

**2.3. Iodine deficiency disorders:** Etiology, Diagnosis, Treatment and Prophylaxis programme.

**MODULE 3: NUTRITION AND HEALTH EDUCATION**

(15 hrs)

**3.1. Importance of Nutrition and health education:** Definition, Principles of health education components.

**3.2. Tool and techniques of Health Education:** Audio Aids, Visual aids Audio- Visual aids, Advantages and Disadvantages.

**3.3. Types of approaches:** Individual, Group and Mass, advantages and disadvantages.

**MODULE 4: MOTHER AND CHILD CARE AND HEALTH ORGANIZATIONS** (15 hrs)

**4.1. Mother and child health:** Primary Health care systems with special reference to maternal and child health, infant mortality, morbidity, primary health center functioning in rural areas (Anganwadi).

**4.2. Inborn errors of metabolism:** Types, causes, maintenance – Lactose intolerance, Glycogen storage disorder, Phenylketonuria, Maple syrup urine disorder.

**4.3. International Agencies and National agencies:** WHO, FAO, UNICEF, CARE, NIN, ICMR, CFTRI, NNMB, NSI



**5. References**

1. Chalkey M.A, 2014, A Textbook For The Health Worker, volume I, New Age International Publishers.
2. Park K, 2011, Preventive and Social Medicine, 21<sup>st</sup> edition, Banarsidas Bhanot Publishers.
3. Swaminathan M, 2014, Handbook of Food and Nutrition, BAPPCO Publishers, Bangalore.
4. Srilakshmi B, 2014, Nutrition Science, New Age International Publishers, New Delhi.
5. Begum R. M, 2014, A Textbook of Foods, Nutrition and Dietetics, 3rd revised edition, Sterling Publishers Pvt. Ltd New Delhi.
6. Bamji M.S, Krishnaswamy K and Brahman GNV, 2009, TextBook of Human Nutrition, 3rd edition, Oxford and IBH publishing Co Pvt Ltd, New Delhi.
7. ICMR, 2011, Dietary Guidelines For Indians, a manual, NIN.
8. WHO child growth standards, 2006, Methods and Development Height, University Press Oxford
9. Public Health Nutrition – Michale J. Gibney, Barrie M. Margetts, John M. Kearney and Lenore Arab (Eds.) – Nutrition Society Textbook Series, Blackwell Publishing.
10. The Management of Nutrition in Major Emergencies, WHO in collaboration with UNHCR, International Federation of Red Cross and Red Crescent societies and WFP.

**6. Syllabus Focus**

a) Relevance to Local, Regional, National and Global Development Needs

Local /Regional/National /Global Development Needs	Relevance
Local	Learning how to assess personal nutritional status as well as of the community they are living in
National	Awareness about the major Nutritional problems of India
Global	Gaining knowledge about the usage of different tools and techniques to educate the masses about health and nutrition globally

**SECTION A - INTERNAL CHOICE**  
**5 Q X 10 M = 50 M**

Question Number	Question	Question	CO	BTL (Blooms Taxonomy Level)
1	Module 1	Describe the Anthropometric methods of assessing Nutritional status in a community.	CO 1	I
2	Module 1	What are Diet surveys? Discuss the uses and limitations of Diet surveys.	CO 1	I
3	Module 2	Explain Vitamin A deficiency as Nutritional problem? What measures can be taken to control it?	CO 2	II
4	Module 2	What is Anaemia? What measures are being taken by the Indian Govt. to prevent it?	CO 2	I
5	Module 3	What is the most accepted definition of Health Education? What are the Tools and techniques used for Health Education?	CO 3	I
6	Module 3	What are the various types of approaches to communication in Health education?	CO 3	I
7	Module 4	Elaborate about any three types of Inborn errors of metabolism.	CO 4	VI
8	Module 4	What are the roles and objectives of WHO and UNICEF in maintaining community?	CO 4	I

**SECTION B - ANSWER ANY 5 OUT OF 7**
**5 Q X 2 M = 10 M**

 (To compulsorily have **ONE** question from **each** module)

9	Module 1	Explain BMI- uses and limitation.	CO 1	II
10	Module 2	What is IDD?	CO 2	I
11	Module 3	Describe Audio Visual aids.	CO 3	I
12	Module 4	Explain about FAO.	CO 4	II
13	Module 1	What are Vital Statistics?	CO 1	I
14	Module 2	Describe Marasmus.	CO 2	I



## b) Components on Skill Development/Entrepreneurship Development/ Employability

SD/ED/EMP	Syllabus Content	Description of Activity
SD	1	Hands on training of assessing the Nutritional status of an individual
EMP	3	Teaching the tools and techniques to be used for promotion of health education

## 7. Pedagogy:

S. No	Student Centric Methods Adopted	Type / Description of Activity
1.	Presentation , Assignments	Participative Learning
2.	Quiz	Experiential Learning
3.	Group Discussion, Seminar	Participative Learning

## 8. Course Assessment Plan

## a) Weightage of Marks in Continuous Internal Assessments and End Semester Examination

CO	Continuous Internal Assessments CIA -50%	End Semester Examination-50%
CO1	CIA-1	Written examination
CO2	CIA-1	
CO3	CIA-2 Poster	
CO4	CIA-2 Quiz/ crossword/MCQ	



**COMMUNITY NUTRITION  
PRACTICAL**

**Programme: B.Sc.**  
**Course Code: U24/NUT/DSC/401/P**  
**Course Type: DSC 4**  
**No. of credits: 1**

**Max.Hours : 30**  
**Hours per week: 3**  
**Max.Marks: 50**

**Course Objectives:**

1. Create awareness among students by assessing the nutritional status using Anthropometry, Biochemical tests, clinical examination and Diet survey.
2. Evaluation of students on the basis of visual aids prepared by them which will enable them to educate the community at large.

**Course Outcomes :**

After the successful completion of the practical course, the student will be able to

- Apply their skills to assess the health status of individuals by using ABCD methods of nutritional assessment .
- Create awareness about nutrition by educating the community using the different audio visual aids prepared by them.

**Practical Course Content:**

Identifying at risk and vulnerable groups.

**1. Assessment of Nutritional status —****a) Anthropometric measurements :**

i) Height, weight, waist circumference, waist to hip ratio, skin fold thickness, MUAC

ii) Body Composition Analysis

**b) Biochemical tests and Clinical Examination :**

i) BP Monitoring, Estimation of Glucose and Haemoglobin.

ii) Observing Clinical symptoms of Nutrition deficiency.

**c) Dietary Evaluation :**

i) Planning Questionnaire

ii) Nutrition and Diet Survey using software

**2. Methods Of Extension Used In The Community**

a) Preparation of visual aids, charts, poster, 3D models

**3. Planning and preparation of a low cost recipe.****4. Visit to any National Organization/ICDS.**

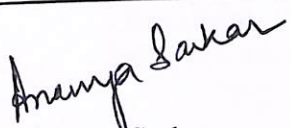


**COMMUNITY NUTRITION  
MODEL QUESTION PAPER  
PRACTICAL**

**Course Code: U24 /NUT/DSC/401/P**  
**No. of credits: 1**

**Marks : 50M**  
**Time : 2 Hrs**

**Answer the following**

- |   |      |
|---|------|
| 1. Write a report on the prepared Poster        | 05 M |
| 2. Write briefly about the following programmes | 15 M |
| a. ICDS   |      |
| b. UNICEF                                       |      |
| c. NIN  |      |
| 3. Visual Aid (Internal)                        | 20 M |
| 4. Viva   | 05 M |
| 5. Record                                       | 05 M |

Prepared by	Checked & Verified by	Approved by
 Ms Ananya Sarkar Signature of the teaching faculty	 Ms. Tabitha Ramona Name and Signature of HoD	 Dr. Uma Joseph Name and Signature of Principal



## SEMESTER-IV

## CYTOLOGY, GENETICS &amp; DEVELOPMENTAL BIOLOGY

## 1. Course Description

Programme: B.Sc.

Max. Hours: 60

Course Code: U24/ZOO/DSC/401

Hours per week: 4

Course Type: DSC - IV

Max. Marks: 100

No. of credits: 4

## 2. Course Objectives

- To understand the Ultrastructure of an Animal cell and its organelles
- To analyse the two aspects of nature: Heredity & Variation.
- To understand the developmental processes that lead to the establishment of the body plan of vertebrates and the corresponding cellular and genetic mechanisms.

## 3. Course Outcomes

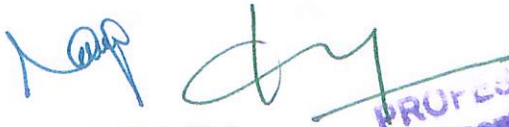
On completion of the course the student will be able to:

**CO1:** To remember animal cell structure, organelles and its functions.

**CO2:** To understand the fundamental principles of molecular biology.

**CO3:** To analyze that genes are the units of inheritance for individual characteristics and the chemical basis of heredity and the role of the X and Y chromosomes in determining sex and how they are inherited.

**CO4:** To create an understanding of fundamentals of developmental biology such as gametogenesis, formation of primary germ layers, extra embryonic membranes and placentation in mammals. Develops knowledge concerning the beginnings of life and the changes occurring during prenatal development

  
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**4. Course Content****MODULE I: CELL BIOLOGY****15 HRS**

- 1.1 Ultra structure of animal cell
- 1.2 Structure and functions of plasma membrane proteins.
- 1.3 Structure and functions of cell organelles -Endoplasmic reticulum, Golgi body, Ribosomes, Lysosomes, centrosomes, Mitochondria and Nucleus
- 1.4 Chromosomes - Structure, types, giant chromosomes
- 1.5 Cell Division - Mitosis, Meiosis; Cell cycle and its regulation.

**MODULE II: MOLECULAR BIOLOGY****15 HRS**

- 2.1 DNA - Structure and RNA - Structure, types
- 2.2 DNA Replication
- 2.3 Protein Synthesis - Transcription and Translation
- 2.4 Gene Expression - Genetic Code; operon concept
- 2.5 Molecular Biology Techniques- Polymerase Chain Reaction, Electrophoresis

**MODULE III: GENETICS****15 HRS**

- 3.1 Mendel's laws of Inheritance and Non- Mendelian Inheritance :Codominance ,Incomplete Dominance , Epistasis, lethal alleles
- 3.2 Linkage and Crossing over
- 3.3 Sex determination and Sex-linked inheritance
- 3.4 Chromosomal Mutations- Deletion, Duplication, Inversion, Translocation, Aneuploidy and Polyploidy; Gene mutations- Induced versus Spontaneous mutations.
- 3.5 Inborn errors of metabolism.

**MODULE IV: DEVELOPMENTAL BIOLOGY****15 HRS**

- 4.1 Gametogenesis (Spermatogenesis and Oogenesis) Fertilization; Types of eggs; Types of cleavages
- 4.2 Development of Frog up to formation of primary germ layers
- 4.3 Formation of Foetal membrane in chick embryo and their functions
- 4.4 Types and functions of Placenta in mammals
- 4.5 Regeneration in Turbellaria and Lizards.

## 5. References

1. Lodish, Berk, Zipursky, Matsudaria, Baltimore, Darnell 'Molecular Cell Biology' W.H. Free man and company New York..
2. Gardner, E.J., Simmons, M.J., Snustad, D.P. (2008). Principles of Genetics. VIII Edition. Wiley India.
3. Snustad, D.P., Simmons, M.J. (2009). Principles of Genetics. V Edition. John Wiley and Sons Inc.
4. Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). Concepts of Genetics. X Edition. Benjamin Cummings.
5. Russell, P. J. (2009). Genetics- A Molecular Approach. III Edition. Benjamin Cummings.
6. Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B. Introduction to Genetic Analysis. IX Edition. W. H. Freeman and Co.
7. Gilbert, S. F. (2010). Developmental Biology, IX Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA
8. Balinsky B. I. and Fabian B. C. (1981). An Introduction to Embryology, V Edition, International Thompson Computer Press
9. Carlson, R. F. Patten's Foundations of Embryology
10. Kalthoff (2008). Analysis of Biological Development, II Edition, McGraw-Hill Publishers
11. Lewis Wolpert (2002). Principles of Development. II Edition, Oxford University Press



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## 6.Syllabus Focus

## a)Relevance to Local , Regional , National and Global Development Needs

Local /Regional/National /Global Development Need	Relevance
Local needs	The course will help the students to identify basic cell structural and functional concepts, which motivate them to a diverse career options.
National needs	The course gives an opportunity to go for training in Genetic counselling , Lab technicians which in turn can help them serve in the field of national medical bodies.
Global needs	To comprehend the inheritance of characters and diseases, mutations and influence of environmental factors at genetic level.

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SD/ED/EMP	Syllabus Content	Description of Activity
Skill Development	Module I & II	To enhance the identification and preparation of various histological slides.
Employability	Module I,II,III & IV	Field visits  Projects  Internships in institutes such as CCMB, IICT, IOG etc.


### 7. Pedagogy


S. No	Student Centric Methods Adopted	Type / Description of Activity
1.	Experiential Learning	Field Trips Science Experiments Internship Opportunities
2.	Participative learning	Presentations Seminars Workshops

## 8. Course Assessment Plan

## a) Weightage of Marks in Continuous Internal Assessments and End Semester Examination

CO	Continuous Internal Assessments CIA -40%	End Semester Examination-60%
CO1	CIA I- Written Test	Written Exam
CO2	CIA I- Written Test	
CO3	CIA II Assignment	
CO4	CIA II Objective Test	

  
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## CYTOLOGY, GENETICS &amp; DEVELOPMENTAL BIOLOGY

## MODEL QUESTION PAPER

Course Code: U24/ZOO/DSC/401

Max Marks: 60

Credits : 4

Time : 2Hrs

ILLUSTRATE WITH DIAGRAMS WHEREVER NECESSARY

SECTION-A

I. Answer the following: -

10x4=40 M

1. Identify the powerhouse of the cell and elaborate on its structure and functions.

OR

2. Define cell division. Explain the meiotic division in detail.

3. Distinguish between the DNA and RNA.

OR

4. Explain the mechanism of Proteins Synthesis.

5. Analyse the three laws of Mendelian inheritance.

OR

6. Classify mutations and illustrate gene mutations.

7. What is Gametogenesis? Explain Spermatogenesis.

OR

8. How would you prove that animals show regeneration ability, give justification to your explanation?

SECTION- BII. Answer any FOUR

5x4=20 M

9. Describe the structures that are characteristic of an animal cell.

10. Compare the eukaryotic and prokaryotic ribosomes.

11. How can you separate the mixture of compounds using gel electrophoresis technique?


12. The genes of a chromosome inherited to the next generation in the same combination. Prove this statement has limitations and explain why?


13. How would you disagree with Mendel's laws of inheritance?

14. Assess the importance of placentation in mammals and list out different types of placentation

## MODEL QUESTION PAPER

SECTION A - INTERNAL CHOICE			4 Q X 10 M = 40 M	
Question Number	Question	Question	CO	BTL (Bloom's Taxonomy Level)
1	Module 1	Identify the powerhouse of the cell and elaborate on its structure and functions.	CO 1	Level II
2	Module 1	Define cell division. Explain the meiotic division in detail.	CO 1	Level I & Level II
3	Module 2	Distinguish between the DNA and RNA.	CO 2	Level IV
4	Module 2	Explain the mechanism of Proteins Synthesis.	CO 2	Level V
5	Module 3	Analyze the three laws of Mendelian inheritance.	CO 3	Level IV
6	Module 3	Classify mutations and illustrate gene mutations.	CO 3	Level IV
7	Module 4	What is Gametogenesis? Explain Spermatogenesis.	CO 4	Level I & Level II
8	Module 4	How would you prove that animals show regeneration ability, give justification to your explanation?	CO 4	Level VI

  
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## SECTION B - ANSWER ANY 4 OUT OF 6

5 Q X 4M = 20 M

9	Module 1	Describe the structures that are characteristic of an animal cell.	CO 1	Level II
10	Module 2	Compare the eukaryotic and prokaryotic ribosomes.	CO 2	Level IV
11	Module 3	How can you separate the mixture of compounds using gel electrophoresis technique?	CO 3	Level VI
12	Module 4	The genes of a chromosome inherited to the next generation in the same combination. Prove this statement has limitations and explain why?	CO 4	Level IV
13	Module 3	How would you disagree with Mendel's laws of inheritance?	CO 3	Level V
14	Module 4	Assess the importance of placentation in mammals and list out different types of placentation.	CO 4	Level V

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## PRACTICALS

Programme: B.Sc.

Max. Hours: 30

Course Code: U24/ZOO/DSC/401/P

Hours per week:2

Course Type: DSC-IV

Max. Marks: 50

No. of credits: 1

**Course Objectives:**

- To study the structure and types of chromosomes and different stages of cell division.
- To study the Mendelian laws, Linkage and Pedigree Analysis.
- To understand the developmental processes that lead to the establishment of the body plan of vertebrates and the corresponding cellular and genetic mechanisms.

**Course Outcomes:**

CO1: To remember the different stages of cell cycle.

CO2: To apply the skills to solve genetic problems and demonstrate how genetic analysis can be used to investigate aspects of genetics.

CO3: To remember the various developmental stages in Chick and Frog

**CYTOLOGY:**

1. Preparation and Identification of slides of Mitotic divisions with onion root tips
2. Preparation and Identification of different stages of Meiosis in Grasshopper Testis
3. Identification and study of the following slides


- i) Different stages of Mitosis and Meiosis
- ii) Lampbrush and Polytene chromosomes


**GENETICS:**

4. Problems on Genetics - Mendelian inheritance, Linkage and crossing over, Sex linked inheritance

**EMBRYOLOGY:**

5. Study of T.S. of Testis and Ovary of a mammal
6. Study of different stages of cleavages (2, 4, 8, 16 cell stages); Morula, Blastula
7. Study of chick embryos of 18 hours, 24 hours, 33 hours, 48 hours & 96 hours of incubation.

  
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Course Code: U24/ZOO/DSC/401/P

Max Time: 2 Hrs

Credits: 1

Max. Marks: 50

**I. PERFORM THE EXPERIMENT; WRITE THE PRINCIPLE, PROCEDURES, RESULTS.** 15M

(Principle 1M; Procedure 2 M; Experiment 8M; Slide 4 M)

1. Preparation and Identification of slides of Mitotic divisions with onion root tips
2. Preparation and Identification of different stages of Meiosis in Grasshopper Testes

**II. PROBLEMS BASED ON GENETICS**

3 X 5=15 M

1. Problems on Mendelian inheritance
2. Problems Linkage and crossing over
3. Problems Sex linked inheritance

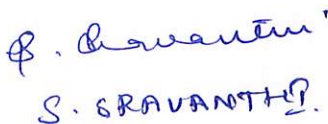


**III. IDENTIFY THE GIVEN SPOTS**

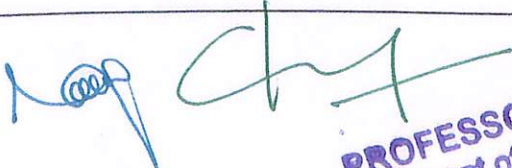
5X 3=15 M


1. Identification and study of the following slides Different stages of Mitosis and Meiosis Lamp brush and Polytene chromosomes
2. Study of T.S. of Testis and Ovary of mammal
3. Study of different stages of cleavages (2, 4, 8, 16 cell stages); Morula, Blastula
4. Study of Chick Embryos of 18 Hours, 24 hours, 33 hours, 48 hours & 96 hours of incubation

**IV. RECORD**

5 M

Prepared by	Checked & Verified by	Approved by
 S. SRAVANTHI Name and Signature of the teaching faculty	 DR. SYOTHI RANI Name and Signature of HoD	 Name and Signature of Principal

  
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**SEMESTER- IV**  
**INTELLECTUAL PROPERTY RIGHTS**

**1. Course Description**

Programme: B. Sc.  
Course Code: U24/CHE/SEC/401  
Course Type: SEC  
No. of credits: 2

Max. Hours: 30 hrs  
Hours per week: 2  
Max. Marks: 50

**2. Course Objectives**

- To create awareness on the concept of Intellectual Property Rights that has assumed a great importance in recent times because of the recognition that "knowledge is property".
- To understand the importance of international treaties and organizations involved in the protection of Intellectual property.
- To enable students to comprehend the various aspects of Patent.

**3. Course Outcomes**

CO 1: Recall the various types of Intellectual properties and their importance.

CO 2: Recognise the importance of international treaties and organisations in promoting and protecting intellectual property rights.

  
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#### 4. Course Content

### **MODULE I: INTRODUCTION TO I.P.R & INTERNATIONAL TREATIES** **15 Hrs**


Concept of Property, Kinds of Property, General concept and Significance of Intellectual Property (IP), Introduction to Intellectual Property Rights (IPR) and their protection, Recent Developments, Introduction to Patents, Trademarks, Copyrights, Trade secrets, Industrial designs and Geographical indications. Paris Convention for the Protection of Industrial Property, Trade Related Aspects of Intellectual Property TRIPS, TRIMS, WIPO, Budapest treaty on the international recognition of the deposit of microorganisms for the purpose of patent procedure.

### **MODULE 2: PATENTS** **15 Hrs**

Introduction, The Patent's act 1970, Protectable Subject Matter- patentable invention, Procedure for Obtaining patent, Provisional And Complete Specifications, Rights conferred on a Patentee, Transfer of Patent, Revocation and surrender of Patents, Infringement of patents, Action for Infringement, Patent Agents, Patent Cooperation Treaty (PCT) Brief Discussion on Case Law on Patents.

#### 5. References

1. Dhyani, *Fundamentals of Jurisprudence*: Allahabad Publication, Central Law.
2. Dwivedi S.P. *Jurisprudence of Legal Theory*. Allahabad Central Law Agency.
3. *Treaties on Intellectual Property Rights* Blackstone.
4. Myneni. T.O. Asia Law House.
5. Wadhera B.L., *Intellectual property rights* Universal Law Publications.
6. Narayana P, *Patent Law* Eastern Book Company.
7. Acharya, N.K.: *Textbook on intellectual property rights*, (2001) Asia Law House.
8. Guru M., Rao M.B. (2003). *Understanding Trips: Managing Knowledge in Developing Countries*, Sage Publications.
9. Ganguli P. (2001)., *Intellectual Property Rights: Unleashing the Knowledge Economy*, Tata McGraw-Hill.
10. Miller A.R., Davis M. (2000): *Intellectual Property: Patents, Trademarks and Copyright in a Nutshell*, West Group Publishers.
11. Watal J., *Intellectual property rights in the WTO and developing countries*, Oxford University Press.

  
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## 6. Syllabus Focus

### a. Relevance to Local, Regional, National and Global Development Needs

Local /Regional/National /Global Development Needs	Relevance
Local, Regional	Allow students to own their innovations in the same way that physical property can be owned.
National, Global	Enables students to develop innovative and valuable work with a strong IP system.

### b. Components on Skill Development/Entrepreneurship Development/Employability

SD/ED/EMP	Syllabus Content	Description of Activity
SD	All	Establish guidelines for creating intellectual property and analyse third party interactions.
ED	All	IPR can be used to protect the technology, brand name, design and creativity behind the concept.
EMP	All	Multifacet involves a variety of responsibilities like research and development, experimentation, data analysis, documentation, collaboration and innovation.

## 7. Course Assessment Plan

### a. Weightage of Marks in Continuous Internal Assessments and End Semester Examination

CO	Continuous Internal Assessments CIA - 40%	End Semester Examination- 60%
CO1	CIA1-Mock courts	Written Exam



CO2	CIA1-Case Studies	
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## b). Question Paper Pattern

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CHEMISTRY

Model Paper

B.Sc. II - Semester IV

SKILL ENHANCEMENT COURSE

INTELLECTUAL PROPERTY RIGHTS (IPR)

Time: 1 Hr

Max. Marks: 30

Course Code: U24/CHE/SEC/401

SECTION A - Answer any six questions			6 x 5 = 30 Marks	
Question Number	Question		CO	BTL
1	Module 1	1. Illustrate the importance of Trademarks and Geographical indications.	CO 1	(Level II)
2	Module 1	2. Explain the significance of intellectual property rights.	CO 1	(Level I)
3	Module 2	3. Outline the importance of TRIPS in promoting IPR. (CO 2) L2	CO 2	(Level I)
4	Module 1	4. What is the Budapest treaty on the international recognition of microorganisms?	CO 1	(Level I)
5	Module 1	5. Describe in brief the role of WTO in promoting IP.	CO 1	(Level I)
6	Module 2	6. Summarize a note on rights conferred on a patentee.	CO 2	(Level II)



7	Module 2	7. Give a description on patentable subject matter.	CO 2	(Level I)
8	Module 2	8. Explain briefly the action for infringement of patents.	CO 2	(Level I)

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CHEMISTRY

Model Paper

B.Sc. II - Semester IV

SKILL ENHANCEMENT COURSE

INTELLECTUAL PROPERTY RIGHTS (IPR)

Time: 1 Hr

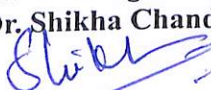

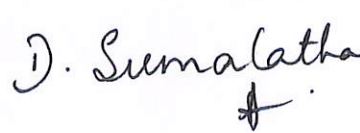
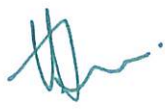
Course Code: U24/CHE/SEC/401

Max. Marks: 30

SECTION A - Answer any six questions

6 x 5 = 30 Marks

1. Illustrate the importance of Trademarks and Geographical indications. (CO 1)L2
2. Explain the significance of intellectual property rights. (CO 1)L1
3. Outline the importance of TRIPS in promoting IPR. (CO 2)L2
4. What is the Budapest treaty on the international recognition of microorganisms? (CO 1)L1
5. Describe in brief the role of WTO in promoting IP. (CO 1)L1
6. Summarize a note on rights conferred on a patentee. (CO 2)L2
7. Give a description on patentable subject matter. (CO 2) L1
8. Explain briefly the action for infringement of patents. (CO 2)L1

Prepared by	Checked & verified by	Approved by
Name and Signature of the teaching faculty Dr. Shikha Chander  Ms. Deepthi 	Name and Signature of the HoD Dr. D. Sumalatha 	Name and Signature of the Principal Dr. Uma Joseph 

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**DEPARTMENT OF NUTRITION**

<b>SEC-2</b>	<b>QUANTITY FOOD PRODUCTION SEMESTER- IV</b>	<b>30 HRS</b>
<b>Module 1 - Quantity Food Production and Food Management</b> <b>Module 2 - Standardization of Recipes</b>		

- The syllabus contains four Modules. Paper should give equal weightage to all Modules.  
Four long questions- One question per module with internal choice

## SEMESTER - IV

## QUANTITY FOOD PRODUCTION

**1. Course Description**

Programme: B.Sc

Course Code: U24/NUT/SEC/401

Course Type: SEC -2

No. of credits: 2

Max. Hours: 30

Hours per week: 2

Max. Marks: 50

**2. Course Objectives**

- To gain knowledge on different types of food service layouts.
- To plan and prepare different types of menus for food production.

**3. Course Outcomes**

After the successful completion of the SEC course, the student will be able to

- Acquire knowledge of the different types of food service styles and to apply the skills in menu planning for the food service Modules.
- Acquire skill in cost concepts in the food industries.



## 4. Course Content

**MODULE I: QUANTITY FOOD PRODUCTION AND FOOD MANAGEMENT** (15 Hrs)

**1.1 Principles of food production**-menu, ingredient control etc. Production control -use of standardized recipes.

**1.2 Safeguarding food Production**-Quality control in food preparation, control of the microbial quality of food.

**1.3 Purchasing** - market and the buyer, mode of purchasing, methods of purchase.Storage. Cooking Equipment. Records necessary for catering.

**MODULE II: STANDARDIZATION OF RECIPES** (15 Hrs)

1. Standardization of rice items
2. Standardization of dals and sambar
3. Standardization of vegetable fry
4. Standardization of Vegetable curries
5. Standardization of deep fried foods
6. Standardization of commercially available products

## 5. References

1. Catering Management - An Integrated Approach — Mohini Sethi, Surjeet Malhan, 3rd edition, New Age International Publishers.
2. Institutional Food Management - Mohini Sethi. New Age International Publishers.
3. Foodservice management, principles and practices, 13" edition- June Pyne Palacio, Monica thiece. Pearson publishers

## 6. Syllabus Focus

a) Relevance to Local, Regional, National and Global Development Needs

Local /Regional/National /Global Development Needs	Relevance
Local	Planning standardized recipes for the food service unit.

## b) Components on Skill Development/Entrepreneurship Development/ Employability

SD/ED/EMP	Syllabus Content	Description of Activity
ED	I	Preparation of Standardized recipes in the food service unit.

## 7. Course Assessment Plan

## a) Weightage of Marks in Continuous Internal Assessments and End Semester Examination

Formative Assessment - FA ( 40)	Summative Assessment - SA (60)
<p>CIA-20 marks</p> <p>Fill in the blanks/ MCQ/ Crossword</p>	<p>End Semester exam-30 Marks</p>

b) Model Question Paper- End Semester Exam

QUANTITY FOOD PRODUCTION  
MODEL QUESTION PAPER  
THEORY

Course Code: U24/NUT/SEC/401

Max Marks: 30




Credits: 3

Time: 1 Hrs

I. Answer any five of the following

5x6 = 30M

1. Ingredient control
2. Production control
3. Process of standardization
4. Quality control in food preparation
5. Modes of purchasing
6. Records necessary in catering
7. Storage of cooking equipments
8. Microbial identification in food

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 Ms Indu Bhargavi Signature of the teaching faculty	 Ms. Tabitha Ramona Name and Signature of HoD	 Dr. Uma Joseph Name and Signature of Principal



St. FRANCIS COLLEGE FOR WOMEN, BEGUMPET, HYDERABAD-500016

(An Autonomous College Affiliated To Osmania University)

FACULTY OF SCIENCE- DEPARTMENT OF CHEMISTRY

PRACTICAL SYLLABUS CBCS-2024

SEMESTER -IV

**SYNTHESIS OF ORGANIC COMPOUNDS AND FUNCTIONAL GROUP ANALYSIS**

Program: B.Sc.

Course Code: U24/CHE/DSC/401/P

Course: DSC-4

No. of Credits: 1

Max. Hours: 20 Hrs

Max. Marks: 50

Hours per week: 2

**Course Objective**

- To prepare simple organic compounds and systematically analyse functional groups based on their nature and chemical reactivity.

**Course Outcomes**

CO1: Utilise the knowledge of organic reaction mechanisms in their preparations.

CO2: Categorise functional groups present in organic compounds using systematic quantitative analysis.

**Systematic Qualitative Organic Analysis of Organic Compounds** possessing mono functional groups (-COOH, phenolic, aldehydic, ketonic, carbohydrate, amide, nitro, amines) and preparation of one derivative.

**Synthesis of organic compounds:**

- Acetylation – Preparation of Acetanilide.
- Halogenation – Preparation of p-Bromo acetanilide.
- Oxidation – Preparation of Benzoic acid.
- Esterification - Preparation of n-butyl acetate.
- Methylation – Preparation  $\beta$ -Naphthyl methyl ether.
- Nitration – Preparation of Nitrobenzene
- Reduction – Preparation of m-Nitroaniline

**Reference Books:**

- Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., *Textbook of Practical Organic Chemistry*, Prentice-Hall, 5th edition, 1996.
- Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry* Orient-Longman, 1960.
- Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry*, Universities Press.


## 6. Syllabus Focus

## a. Relevance to Local, Regional, National and Global Development Needs

Local /Regional/ National /Global Development Needs	Relevance
Local	Knowledge of the basic principles of Chemistry to help in day-to-day life.
Regional	Learn about the concepts and significance of carbohydrates and bioinorganic chemistry.
National	Understand the basics of organometallic compounds, non-aqueous solvents and dipole moments.
Global	Application of basic principles of rotational, IR, UV-Vis Spectroscopy techniques, concepts of chemical kinetics, heterocyclic compounds and pericyclic reactions.

## b. Components on Skill Development/Entrepreneurship Development/Employability

SD/ED/EMP	Syllabus Content	Description of Activity
SD	Practical syllabus which includes Organic preparations and Qualitative analysis in Organic Chemistry Problem solving in Physical Chemistry	Students perform the experiments based on the procedure and also analyse the unknown compounds. Students solve the problems
ED	Organic preparations and analysis. Structural investigation of organic compounds based on spectroscopy	Students prepare organic compounds, analyse the functional groups and carry out the structural analysis based on spectral data
EMP	Inorganic, Organic, Physical Chemistry and Spectroscopy	Tutorials and assignments

  
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## 7. Pedagogy

S. No.	Student Centric Methods Adopted	Type / Description of Activity
1	Experiential	Experiments, attending seminars/workshops and field visits
2	Participative	Group discussion, quiz, presentations etc.
3	Problem solving	Solving problems in Physical Chemistry and structural elucidation based on spectral data.

## 8. Course Assessment Plan

## a. Weightage of Marks in Continuous Internal Assessments &amp; End Semester Examination

CO	Continuous Internal Assessments CIA - 40%	End Semester Examination-60%
CO1	CIA1-Written Exam	Written Exam
CO2	CIA 2- Skill based test like poster/powerpoint presentation, collage, 3D model making, problem solving and quiz.	
CO3	CIA1-Written Exam	
CO4	CIA 2- Skill based test like poster/powerpoint presentation, collage, 3D model making, problem solving and quiz.	

  
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## b. Model Question Paper - End Semester Exam

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Faculty of Science – Department of Chemistry

MODEL PAPER

B.Sc. II YEAR SEMESTER -IV

CHEMISTRY - PAPER IV

TIME: 2 hrs

Course Code: U24/CHE/DSC/401

Max. Marks: 60

## SECTION –A (Essay Questions)

.Answer the following

4X10=40 Marks

1. a) Explain the classification of organometallic compounds based on metal-carbon bonds. (CO1) L1 5M  
b) Discuss the reactions in liquid ammonia with suitable examples. (CO1) L2 5M  
OR
2. a) Describe the preparation, properties and applications of Grignard reagent. (CO1) L3 6M  
b) How does fixation of carbon dioxide occur in photosynthesis? (CO1) L2 4M
3. a) Derive an expression for the rate constant of first order reaction. (CO2) L3 5M  
b) A first order reaction is 50% complete in 100 minutes. How long will it take for 90% completion? (CO2) L5 5M  
OR
4. Explain different methods of experimental determination of order of a reaction. (CO2) L2 10M
5. a) Discuss the open chain structure of Glucose. (CO3) L2 5M  
b) Write the equations involved in Killiani-Fischer synthesis. (CO3) L2 5M  
OR
6. a) Explain the synthesis of Furan, Pyrrole and Thiophene from 1,4-dicarbonyl compounds. (CO3) L2 5M  
b) What are pericyclic reactions? Give their classification with an example each. (CO3) L4 5M
7. a) What is a dipole moment? Predict the structure of CO<sub>2</sub> and SO<sub>2</sub> based on dipole moment. (CO4) L4 5M  
b) Explain the various molecular vibrations seen in IR spectroscopy. (CO4) L2 5M  
OR
8. a) Describe in detail about the electronic transitions observed in UV-VIS spectroscopy. (CO4) L2 5M  
b) Explain the basic principles of Raman spectroscopy. (CO4) L2 5M

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## SECTION –B

## II. Answer any four.

4x5=20 Marks

9. Write a note on the biological significance of calcium and chloride ions. (CO1) L1
10. Give two methods of preparation of ferrocene. (CO1) L1
11. Discuss briefly about collision theory. (CO2) L2
12. Explain the factors affecting the rate of a reaction. (CO2) L2
13. Explain mutarotation taking glucose as an example. (CO3) L2
14. Explain the concept of chromophore and auxochrome. (CO4) L2

  
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SEMESTER - IV

VECTOR BIOLOGY

1. Course Description

Programme: B.Sc.  
Course Code:U24/ZOO/SEC/401  
Course Type: SEC - II  
No. of credits: 2

Max. Hours: 30  
Hours per week: 2  
Max. Marks: 50

2. Course Objectives

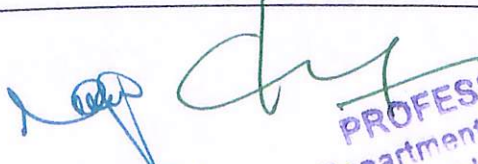
- To understand the key concepts of vector biology and its importance in public health management.
- To understand the vector, host and parasitic interactions.

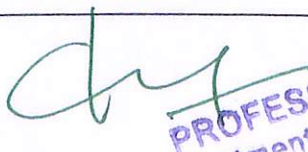
3. Course Outcomes

On completion of the course the student will be able to:

CO1: To analyse different types of vectors and their features.

CO2: To describe the major diseases caused by vector borne pathogens and their controlling measures.

  
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#### 4. Course Content

##### Module I: Vector Biology of Public Health Importance

**15 HRS**

- 1.1 Introduction to vectors and vectors of human diseases — Public health nuisance.
- 1.2 Salient features and Life cycle of important Mosquito vector species - Anopheles, Aedes Culex and Mansonia.
- 1.3 Salient features and life cycle of important other Dipteran vectors of public health Importance: Sandflies, Black flies, House flies and Myiasis causing flies.
- 1.4 Life cycle and public health importance of Fleas and lice
- 1.5 Life cycle and public health importance of Ticks and Mites.

##### Module II: Basic sanitation and Public Health

**15 HRS**

- 2.1 Basic sanitation — Hygiene and personal protection — Human wastes and Health - Solid waste and Waste water management.
- 2.2 Distinguishing characters of different species of human malarial parasites -Life cycle and host Parasite interactions.
- 2.3 Distinguishing characters of different species of human Filarial parasites- Life cycle and host parasite interactions.
- 14 Distinguishing characters of different arboviral diseases and their mode of transmission.
- 2.5 Control Measures - Source reduction.

## 5. References

1. Parasitology and Vector biology -William C.Marquardt ,Richard S.Demaree,Robert B.Grieve,2nd edition,Harcourt Academy 2000 Publisher.
2. Vector Biology ,Ecology and Control - Peter W. Atkinson -Springer Science & Business Media, 12 Dec 2009
3. Biology of Disease Vectors - 2nd Edition. E-Book. ISBN 9780080494067. by William H. Marquardt.



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6.Syllabus Focus

a)Relevance to Local , Regional , National and Global Development Needs

Local /Regional/National /Global Development Needs	Relevance
Local	Understanding vector life cycle helps in controlling vector borne diseases in our surroundings by following appropriate measures.
National	There is a need to return to vector control approaches based on a thorough knowledge of the determinants of pathogen transmission, which utilise a range of insecticide and non–insecticide-based approaches in a tailored manner for more effective and sustainable vector control in the country.
Global Development	Vector-borne diseases exert a huge burden of morbidity and mortality worldwide, particularly affecting the poorest of the poor.



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SD/ED/EMP	Syllabus Content	Description of Activity
Skill Development	Module I & Module II	Field studies and case studies
Entrepreneurship Development	Module I & Module II	Encouraging students to devise sustainable measures to control vector life cycle and disease spread.
Employability	Module I & Module II	Workshops and training in vector controlling measures.


7. Pedagogy


S. No	Student Centric Methods Adopted	Type / Description of Activity
1.	Experiential Learning	Field Trips
2.	Participative Learning	Group discussion
3.	Problem solving	Research Projects

8. Course Assessment Plan

a)Weightage of Marks in Continuous Internal Assessments and End Semester Examination

CO	Continuous Internal Assessments CIA -40%	End Semester Examination-60%
CO1	CIA - I Assignment	Written Exam
CO2	CIA - II Objective test	

  
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## b) Model Question Paper- End Semester Exam

## VECTOR BIOLOGY - MODEL QUESTION PAPER

Course Code: U24/ZOO/SEC/401

Max Marks: 30

Credits: 2

Time: 1 Hr


ILLUSTRATE WITH DIAGRAMS WHEREVER NECESSARY


## SECTION-A

I. Answer any five out of seven given questions.

5 x 6 = 30 M

1. Define Vector. Write a note on its characteristics.
2. Classify the common mosquito diseases and elaborate on preventive measures. .
3. What are Dipteran vectors and analyse their vector nature.
4. Describe the life cycle and public health importance of Fleas .
5. Distinguish between malarial and filarial interactions.
6. Suggest the best practices for Waste management.
7. Explain the scope of Vector biology.?

  
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## VECTOR BIOLOGY - MODEL QUESTION PAPER

SECTION A				5 Q X 6 M = 30 M
Question Number	Question	Question	CO	BTL(Bloom's Taxonomy Level)
1	Module 1	Define Vector. Write a note on its characteristics.	CO 1	I
2	Module 1	Classify the common mosquito diseases and elaborate on preventive measures.	CO 1	III
3	Module 1	What are Dipteran vectors and analyse their vector nature.	CO 1	II
4	Module 1	Describe the life cycle and public health importance of Fleas .	CO 1	IV
5	Module 2	Distinguish between malarial and filarial interactions.	CO 2	IV
6	Module 2	Suggest the best practices for Waste management.	CO 2	III
7	Module 2	Explain the arboreal diseases and their transmission ?	CO 2	II



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