CS16101   **COMPUTER PROGRAMMING**   **3 0 0 3**

(COMMON TO CSE/ECE /EEE/CHEMICAL/IT)

COURSE OBJECTIVES

- To learn the organization of a digital computer.
- To be exposed to the number systems.
- To think logically and write pseudo code or draw flow charts for problems.
- To be familiar with programming in C.
- To use arrays, strings, functions, pointers, structures and unions in C.

UNIT I   INTRODUCTION TO COMPUTERS   9

Introduction – Characteristics of Computers – Evolution of Computers – Computer Generations – Classification of Computers – Basic Computer organization – Number Systems. Computer Software –Types ofSoftware – Software Development Steps – Internet Evolution - Basic Internet Terminology – Getting connected to Internet Applications. Problem Solving Techniques- Planning the Computer Program – Purpose –Algorithm – Flow Charts – Pseudo code. Application Software Packages- Introduction to Office Packages (notdetailed commands for examination).

UNIT II   BASICS OF 'C' LANGUAGE   9

Overview of C – Constants, Variables and Data Types – Operators and Expressions – Managing Input and Output operators – Decision Making - Branching and Looping.

UNIT III   ARRAYS AND STRINGS   9

Array Concepts- Two Dimensional Array - Passing Arrays to Functions - Multi Dimensional Array. String Operations - Sorting and Searching

UNIT IV   FUNCTIONS AND POINTERS   9

Functions – Function Prototypes – Parameter Passing Methods – Recursion – Library Functions. Pointers – Pointers and Functions – Pointers and Strings – Operations on Pointers – Dynamic Memory Allocation

UNIT V   STRUCTURE, UNIONS AND FILE HANDLING   9

Structures and Union – Declaring, Accessing, Initialization, Structure assignment, Nested Structure, Array of Structure. File Handling Functions

                                                                TOTAL: 45 PERIODS

COURSE OUTCOMES

At the end of this course, the students will be able to

- gain knowledge about number systems.
- work in office package.
- understand basic concepts of C programs.
- obtain knowledge about user defined function and scope of variables in C.
- acquire knowledge for handling arrays, strings, functions, pointers, structures and unions in C.

TEXT BOOKS

1. Anita Goel and Ajay Mittal, "Computer Fundamentals and Programming in C", Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.

2. Pradip Dey, Manas Ghosh, "Fundamentals of Computing and Programming in C", First Edition, Oxford University Press, 2009.

3. Yashavant P. Kanetkar. "Let Us C", BPB Publications, 2011.

REFERENCES

1. Byron Gottfried, "Programming with C", 3rd Edition, (Indian Adapted Edition), TMH publications, 2010.

2. Stephen G.Kochan, "Programming in C",5th Edition, Pearson Education India, (2011).

3. BrianW.Kernighan and Dennis M.Ritchie,"The C Programming Language",PearsonEducationInc., (2009).

4. E.Balagurusamy, "Computing fundamentals and C Programming", TataMcGRaw-Hill Publishing Company Limited, (2011).

5. Dromey R.G., "How to Solve it by Computer", Pearson Education, Fiveth Reprint, 2009.

COs	Mapping of Course Outcomes with Programming Outcomes (1/2/3 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak													
	Programme Outcomes(POs)												Programme Specific Outcomes (PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	1	3	-	-	-	-	-	-	-	3	3	3
CO2	3	2	3	3	-	-	-	-	-	-	-	2	3	3
CO3	1	2	1	-	-	-	1	-	-	-	-	2	3	3
CO4	3	3	3	3	-	-	-	-	-	-	-	1	1	3
CO5	3	1	3	-	-	2	-	-	-	-	-	3	3	2

| FT16201 | MICROBIOLOGY | 3 | 0 | 0 | 3 |

COURSE OBJECTIVES

To enable the students to,

- introduce the principles of microbiology to emphasize structure and biochemical aspects of various microbes.
- learn various staining techniques used for microbes identification.
- get to know the nutritional and environmental aspects for growth of microorganisms.
- gain knowledge about appropriate methods for control of the growth of microorganisms.
- identify the beneficial and harmful microbes for industrial purpose.

UNIT I   MICROBES- STRUCTURE AND MULTIPLICATION   9

Introduction - Basics of microbial existence, History of microbiology, Classification and nomenclature of microorganisms; Microscopic examination of microorganisms - Light and electron microscopy; Structural organization and multiplication of bacteria, viruses, algae and fungi.

UNIT II   STAINING TECHNIQUES   9

Principles of staining , Simple staining, Negative staining, Differential staining, Gram and acid fast staining, Flagella staining, Capsule and endospore staining.

UNIT III   MICROBIAL NUTRITION, GROWTH AND METABOLISM   9

Nutritional requirements of bacteria; Different media used for bacterial culture; Growth curve, Different methods to quantify bacterial growth; Aerobic and anaerobic bioenergetics and utilization of energy for biosynthesis for different molecules..

UNIT IV   CONTROL OF MICROORGANISMS   9

Physical and chemical control of microorganisms; Host-microbe interactions; Anti-bacterial, Antifungal and anti-viral agents; Mode of action and resistance to antibiotics; Clinically important microorganisms like Streptococcus, Staphylococcus, Shigella, Mycobacterium, Hepatitis viruses.

UNIT V   INDUSTRIAL MICROBIOLOGY   9

Primary metabolites; Secondary metabolites and their applications; Preservation of food; Production of penicillin, Alcohol, Vitamin B-12; Biofertilisers and Bio-pesticides; Study of Biosensors.

TOTAL PERIOD   45

COURSE OUTCOMES

At the end of the course the students will be able to,

- identify the important pathogens and spoilage microorganisms and its structure.
- understand the types of staining to isolate and enumerate the particular species of microorganism.
- know the spoilage and deterioration mechanisms in food and methods to control.
- apply the principles of food science to control and assure the quality of food products.
- the principles that make a food product safe for consumption.

TEXT BOOKS

- Talaron K, Talaron A, Casita, Pelczar and Reid," Foundations in Microbiology", W.C. Brown Publishers, 1993.
- Pelczar MJ, Chan ECS and Krein NR," Microbiology", Tata McGraw Hill Edition, New Delhi, India.

REFERENCES

- Ananthanarayanan and Paniker, "A textbook of Microbiology", University Press,9th edition,2015..
- John Wiley and sons, "Essential Microbiology ",2005.
- Schlegel, H.G. "General Microbiology", 7thEdition, Cambridge University Press,1993.
- Prescott L.M., Harley J.P., Klein DA, "Microbiology", 7thEdition, McGraw -Hill Inc.

CO/PO MAPPING:

CO's	Mapping of Course Outcome (CO's) with Programme Outcomes (PO's)														
	(1/2/3 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak														
	Programme Outcomes (PO's)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	3	2	2	2	-	-	-	-	-	1	3	3
CO2	3	-	-	-	3	-	-	2	-	-	1	3	3	3
CO3	1	2	3	2	2	2	-	-	-	-	-	-	3	2
CO4	2	3	1	2	1	-	-	-	-	-	-	2	2	2
CO5	1	2	2	3	2	1	-	-	-	-	1	2	2	2

CH16205   **BIOCHEMISTRY LABORATORY**   **0   0   4   2**

COURSE OBJECTIVES

To enable the students to

- understand the principles behind the qualitative and quantitative estimation of biomolecules

- gain knowledge on chromatographic analysis

- identify the analysis of body fluids.

- have a sound knowledge of separation technology of proteins and amino acids.

EXPERIMENTS

1. General guidelines for working in biochemistry lab (theory)

2. Units of volume, weight, density and concentration measurements and their range in biological measurements. Demonstration of proper use of volume and weight measurement devices.

3. Accuracy, precision, sensitivity and specificity (theory)

4. Preparation of buffer -titration of a weak acid and a weak base.

5. Qualitative tests for carbohydrates - distinguishing reducing from non-reducing sugars and keto from aldo sugars.

6. Quantitative method for amino acid estimation using ninhydrin - distinguishing amino from imino acid.

7. Protein estimation by Biuret and Lowry's methods.

8. Protein estimation by Bradford and spectroscopic methods.

9. Extraction of lipids and analysis by TLC.

10. Estimation of nucleic acids by absorbance at 260 nm and hyperchromic effect (demo).

11. Enzymatic assay: phosphatase from potato.

12. Enzymatic assay: estimation of glucose by GOD-POD method after hydrolysis of starch with acid and specificity of the enzymatic method.

TOTAL PERIODS   60

COURSE OUTCOMES:

At the end of this course, the students will be able to

- understand the Biochemistry laboratory functional components

- understand the basics principle of preparation of buffers.

- have a sound knowledge of qualitative test of different biomolecules.

- understand the basics knowledge of Biochemical parameter and their interpretation in Blood sample.

	Mapping of Course Outcomes with Programme Outcomes (1/2/3 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak													
COs	**Programmes Outcomes (POs)**													
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	2	1	2	1	2	1	3	1		2		1	-	-
CO2	1	2	1	-	2	1	1	1	2	-		1	-	-
CO3	3	1	-	1	-	-	2	1	1	2		2	-	-
CO4	1	2	1	2	1	-	3	1	2	1	1	1	-	-