

COURSE OBJECTIVES**To enable students to**

- help the students of engineering and technology to enhance their ability to listen, read, write and speak English.
- comprehend and write essays and prepare short project reports related to their branches of specialization.
- enhance their ability to read and comprehend technical texts.
- make effective presentations on topics in engineering and technology.
- participate successfully in Group Discussions.

UNIT I VOCABULARY & GRAMMAR 9

General Vocabulary- use of articles- different forms of a word (noun, verb) - Collocations - Fixed Expressions (adhere to, on the part of etc.)- **Phrasal verbs** - Compound nouns - Numerical Expressions - Direct and Indirect Speech - use of discourse markers - if conditionals- Cause and Effect expressions - Editing - **Wh questions** - One word substitution.

UNIT II LISTENING 9

Listening to news and announcements, listening to telephone conversation- Listening to model interviews / **TED Talks**- Interview Techniques.

UNIT III READING 9

Reading - Developing analytical skills, Deductive and inductive reasoning - **Extensive reading**- Reading articles in newspapers, journals, manuals- critical reading.

UNIT IV WRITING 9

Writing- Extended Definitions - Checklist, Recommendations -Formal letters- complaint letters, invitation letters- requisition letters - Writing a job application - **Resume** (Letter and Email format) - Technical Report Writing - (Industrial Visit, Accident, Feasibility & Project Reports) - Paragraph writing, Essay writing.

UNIT V SPEAKING 9

Syllable - Stress- Intonation- Silent Letters - Presentations on a given topic - Mini presentation in small groups- **group discussions**- mock interviews.

COURSE OUTCOMES

Upon the completion of the course, students will be able to

- Speak with clarity and confidence.
- Read, interpret and analyse a given text.
- Write comprehensive reports, job applications and draft effective e-mails.
- Make effective presentations using power point.
- Participate successfully in Group Discussions.

TEXT BOOKS

1. Mahalakshmi.S.N. English Workbook for Engineers, V.K. Publications, Sivakasi.2017.
2. Dhanavel, S.P. English and Communication Skills for Students of Science and Engineering. Orient Blackswan, Chennai.2011.

REFERENCES

1. Raman, Meenakshi & Sangeetha Sharma, Technical Communication: Principles and Practice. Oxford University Press, New Delhi. 2011.
2. Rizvi, Ashraf. M. Effective Technical Communication. Tata McGraw-Hill, New Delhi. 2005.
3. Rutherford, Andrea. J Basic Communication Skills for Technology. Pearson, New Delhi. 2001.

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



COURSE OBJECTIVES

To enable the students to

- develop knowledge about the Bio Chemicals.
- enable students learn the fundamentals of Biochemical Processes and Biomolecules.
- recognize the importance of proteins for building block elements.
- describe the functions of fats and amino acids against germ fighting.
- understand the enzymatic action against bacteria.

UNIT I INTRODUCTION TO BIOMOLECULES 5

Basic principles of organic chemistry, role of carbon, types of functional groups, biomolecules, chemical nature of water, pH and biological buffers.

UNIT II CARBOHYDRATES 8

Carbohydrates (mono, di, oligo & polysaccharides) **mutarotation**, glycosidic bond, reactions of monosaccharides and reducing sugars Starch, glycogen, cellulose and chitin. Proteoglycans, glycosaminoglycans. hyaluronic acid, chondroitin sulfate.

UNIT III LIPIDS, FATS AND AMINO ACIDS 14

Lipids: **Fatty acids**, glycerol, triacylglycerol, **saponification**, iodination, hydrogenation, phospholipids, glycolipids, sphingolipids. Inherited metabolic disorders of Lipid-metabolism -Tay-Saach's disease, Niemann-Pick's disease and Gaucher's disease. Cholesterol, steroids, Bile acids and salts, Gluco and Mineralo - corticosteroids. Aldosterone, cortisone and synthetic derivative-prednisolone. Androgens- testosterone, Estrogens- estrone, estradiol and progesterone. **Prostaglandins and their functions**. LDL, HDL and VLDL. Amino Acids and Proteins: Classification based on side - chain properties. Structures, hierarchy of organization primary, secondary, tertiary and quaternary structures, glycoproteins, lipoproteins.

UNIT IV NUCLEIC ACIDS AND METABOLIC PATHWAYS 10

Nucleic Acids: Purines, pyrimidines, nucleosides, nucleotides, Chargaff's Rules. Base pairing, A-T and G-C, mRNA, rRNA and tRNA., **Watson-Crick structure of DNA**, reactions, properties. Functions of Proteins, Enzymes, introduction to biocatalysts, primary and secondary metabolites. Glycolysis, TCA cycle, gluconeogenesis, pentose phosphate shunt, glyoxalate shunt, fatty acid synthesis and oxidation, reactions of amino acids, deamination, transamination and decarboxylation, urea cycle, Bioenergetics - High energy compounds, **electronegative potential of compounds**, respiratory chain, ATP cycle.

Enzymes: Introduction, Nature, Classification and nomenclature of enzymes. Specificity. **Enzyme Kinetics** - Michelis-Menten equation. Factors affecting enzyme action, mechanism of enzyme action. Active site. **Immobilization methods.**

TOTAL PERIODS 45

COURSE OUTCOMES

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

- ensure students have a strong foundation in the structure and reactions of Biomolecules.
- introduce them to metabolic pathways of the major biomolecules and relevance to clinical conditions.
- correlate Biochemical processes with Biotechnology applications.
- elaborate the mechanism of hormones.
- apply the kinetics of enzyme actions and formation.

TEXT BOOKS

1. Lehninger, "Principles of Biochemistry", 6th Edition by David L. Nelson, Michael M. Cox
2. Satyanarayana, U. and U. Chakerapani, "Biochemistry" 3rd Rev. Edition, Books & Allied (P) Ltd., 2006.
3. Rastogi, S.C. "Biochemistry" 2nd Edition, Tata McGraw-Hill, 2003.
4. Conn, E.E., et al., "Outlines of Biochemistry" 5th Edition, John Wiley & Sons, 1987.
5. "Outlines of biochemistry", 5th Edition: By E E Conn, P K Stumpf, G Bruening and R Y Doi. pp 693. John Wiley and Sons, New York. 1987.

REFERENCES

1. Berg, Jeremy M. et al. "Biochemistry", 6th Edition, W.H. Freeman & Co., 2006.
2. Murray, R.K., et al "Harper's Illustrated Biochemistry", 27th Edition, McGraw-Hill, 2006.
3. Voet, D. and Voet, J.G., "Biochemistry Principles", 3rd Edition, John Wiley & Sons Inc., 2004.

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CO2	3	1	-	2	2	1	1	3	1	3	1	-	-	-
CO3	3	1	-	1	2	2	-	1	2	-	-	2	-	-
CO4	2	3	2	-	-	1	2	3	1	2	-	3	-	-
CO5	2	1	3	-	3	2	3	1	1	1	1	2	-	-

COURSE OBJECTIVES

To enable the students to,

- identify all the organelles of an animal cell and their function.
- explain physiological mechanism of various organ systems and to explain the pathophysiology of underlying common diseases.
- understand the structure and functions of the various types of systems of human body.
- provide the knowledge of structure and functioning of cardiovascular system, respiratory system, endocrine system and reproductive system
- provide the knowledge of physiological parameters of normal health and factors affecting various physiological processes in the body.

UNIT I HEAMATOLOGY 9

Composition and functions of blood, functions of plasma proteins, reaction of blood, coagulation of blood, coagulation factors, **functions of bone marrow**, erythropoiesis, functions of haemoglobin, blood groups.

UNIT II PHYSIOLOGY OF MUSCLES 9

Physiology and **properties of skeletal muscle**, smooth muscle, cardiac muscle, Physiology of muscular contraction, excitability and contractibility, **isotonic and isometric contractions**, refractory period, tonicity, electromyography.

UNIT III RESPIRATORY SYSTEM 9

Functions of respiratory system, role of ciliated epithelium, pleural cavity and intra pleural pressure, mechanism of breathing, resistance to breathing, **pulmonary volumes**, mechanism of gaseous exchange, control of respiration.

UNIT IV CARDIOVASCULAR SYSTEM 9

Introduction to circulation, functions of circulation, anatomical considerations of heart, cardiac impulse, cardiac cycle, heart sounds, **electrocardiogram**, heart rate, cardiac output, blood pressure, factors influencing blood pressure, blood velocity, functions of pulmonary circulation, coronary circulation, nervous control and **reflex control of blood flow**.

UNIT V ENDOCRINE AND REPRODUCTIVE SYSTEM 9

Physiology of Pituitary, thyroid, parathyroid, adrenal and pancreatic hormones and disorders of these glands, **endocrine control of growth and metabolism**; pineal, thymus, testes, ovaries, physiology of reproductive systems, sex hormones, physiology of fertilization, menstruation, menopause, spermatogenesis and oogenesis, **pregnancy and parturition** and clinical disorders.

TOTAL PERIODS: 45

COURSE OUTCOMES

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

- explain basic structure and functions of human cell
- learn about the physiology of various systems of human body
- locate and have idea while dealing with images
- analyze and interpret physiological data to design of medical instruments used for diagnosis
- explain interconnect of various systems

TEXTBOOKS

1. Guyton, A.C. and Hall, J.E., "Textbook of Medical Physiology", 11th Edition, Saunders, 2006.
2. CC Chatterjee. Human Physiology Volume I and II. Medical Allied Agency, Kolkata, Special Edition, 2011.
3. Stuart Ira Fox. Human physiology. 12th ed. Mac Graw Hill. 2011.
4. Dee Unglaub Silverthorn. Human physiology - An integrated approach. Fifth edition. Pearson Education, Inc., 2012.

REFERENCE BOOKS

1. Carola, R., Harley J.P. and Noback C.R., "Human Anatomy & Physiology", 2nd Edition, McGraw-Hill, 1992.
2. Vander, A.J., Sherman, J.H., and Luciano, D.S., "Human Physiology: The Mechanisms of Body Function", 5th Edition, McGraw-Hill, 1990
3. Waugh, Anne and Allison Grant, "Ross and Wilson Anatomy and Physiology in Health and Illness", 10th Edition, Churchill - Livingstone / Elsevier, 2006

CO/PO MAPPING:

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CO1	1	1	-	1	-	-	-	1	-	-	-	-	1	1
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CO3	2	-	2	-	-	2	-	-	-	-	-	-	1	-
CO4	2	-	2	-	-	2	1	-	-	-	-	-	1	-
CO5	2	-	2	-	-	-	-	-	-	-	-	-	1	1



(COMMON TO ALL BRANCHES)

COURSE OBJECTIVES

To enable the students to

- develop their knowledge in basic civil engineering practices such as plumbing, carpentry and its tool usages.
- practice some of mechanical basics such as welding, basic machining, sheet metal work, fitting.
- experience with basic electrical wiring circuits
- know about the electronic components, color coding signal generation, soldering practice..

GROUP A (CIVIL AND MECHANICAL)

I CIVIL ENGINEERING PRACTICE

BUILDINGS

- Study of plumbing and carpentry components of residential and industrial buildings. Safety aspects.

PLUMBING WORKS

- Study of pipeline joints, its location and functions: valves, taps, couplings, unions, reducers, elbows inhousehold fittings.
- Study of pipe connections requirements for pumps and turbines.
- Preparation of plumbing line sketches for water supply and sewage works.
- Hands-on-exercise:
- Basic pipe connections – Mixed pipe material connection – Pipe connections with different joiningcomponents. (e) Demonstration of plumbing requirements of high-rise buildings.

CARPENTRY USING POWER TOOLS ONLY

- a) Study of the joints in roofs, doors, windows and furniture.
- b) Hands-on-exercise:
Wood work, joints by sawing, planing and cutting.

II MECHANICAL ENGINEERING PRACTICE

WELDING

- Preparation of arc welding of butt joints, lap joints and tee joints.
- Gas welding practice

BASIC MACHINING

- Simple Turning, Facing, Thread cutting and Taper turning
- Drilling Practice

SHEET METAL WORK

- **Model making – Trays, funnels, etc.**
- Different type of joints.

FITTING

- **Square fitting**
- **Vee – fitting models**

DEMONSTRATION ON

- (a) Smithy operations, upsetting, swaging, setting down and bending. Example –
Exercise –Production of hexagonal headed bolt.
- (b) Foundry operations like mould preparation for gear and step cone pulley.

TOTAL: 30 PERIODS

GROUP B (ELECTRICAL AND ELECTRONICS)

III ELECTRICAL ENGINEERING PRACTICE

1. Study of electrical tools and safety measures
2. **Basic wiring practices - Stair-case wiring, Fluorescent lamp wiring and Residential house wiring**
3. Measurement of electrical parameters such as voltage, current, power & power factor in RLC circuit.
4. **Measurement of energy using single phase energy meter.**
5. Earthing Practices & Measurement of earth resistance using megger.
6. **Study of electrical equipments such as iron box, induction heater.**

IV ELECTRONICS ENGINEERING PRACTICE

1. Study of Electronic components and equipments – Resistor, color coding measurement of AC signal parameter (Peak-Peak, RMS, Period, and Frequency) using CRO.
2. Study of logic gates AND, OR, Ex-OR and NOT.
3. **Generation of Clock Signal.**
4. Soldering practice – Components Devices and Circuits – Using general purpose PCB.
5. Measurement of ripple factor of HWR.
6. Construction and verification of half adder circuit.
7. Construction and verification of half subtractor circuit.
8. **Study of Telephone, F.M Radio and Cell Phone.**

TOTAL: 30 PERIODS

COURSE OUTCOMES

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

- use the tools for plumbing and carpentry works
- prepare models by -welding, machining, sheet metal and fitting
- construct electrical wiring circuit and demonstrate practically
- analyse the signal generation, solder the electronic components based on the circuits

CO - PO Mapping

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CO3	2	2	2	2	2	-	-	-	1	-	-	1	2	3
CO4	2	2	2	2	2	-	-	-	1	-	-	1	2	3

