C. U. SHAH UNIVERSITY

FACULTY OF LIFE SCIENCES

BACHELOR OF SCIENCE (MICROBIOLOGY)

DEPARTMENT OF ENGLISH

SEMESTER: II CODE: LSHM201

NAME: Communicative English II

Teaching & Evaluation Scheme:-

Subject Code	Subject name	Teaching scheme				Evaluation scheme								
		T	Tu	Pr	Total	Univ	Hrs	Sessional	Hrs	CEC	Pr Ext	Pr Int	CEC	Total
LSHM201	Communicative English II	2	0	0	2	70	3	20	1	10	----	----	---	100

Objectives: -

- The primary objective of this course is to provide sound knowledge of grammar and vocabulary to the students.

Prerequisites:-

- Basic knowledge of English for this course would be preferable.

Course content:

Sr. No.	Course contents	Teaching Hours
1	**Part A Conversation Practice**	
	Describing Things around you, Describing places: saying what there is	2
	Introduction - as an Art, Talking about people, Saying what they do	1
	Talking about routine, saying what people do or don't do, information through graphs, tables, maps	2
	Talking about past events, talking about things, happening 'now', saying when things /events, happened, describing scenes, events, meeting people, exchanging greetings, spoken skills	2
	talking about past intentions & future plans	1
	Expressing time , talking about Public Transport	1
	Asking about information regarding travelling, using dictionary, Talking about what you can do/ can't do, saying what you would do, giving advise, talking about obligations, sharing views	2
2	**Part B Literary Text**	

	Text 1 (The old Man & the Sea by Ernest Hemingway - A Nobel & Pullitzer Prize Winner	7
	Text 2 Wing Word (Selected Poems)	5
	Part: C Grammar	4
	a) Direct - Indirect Speech b)Phrases & Clauses c) Causal Verbs d) Degree of Comparison	
	Translation Studies	
	a)Selected paragraphs for translation	3
	Total Hours	**30**

Learning Outcomes:-

At the end of the course the student would have gained sufficient primary knowledge of English grammar.

Teaching & Learning Methodology:-

- Use of audiovisual aids.

Books Recommended:

7. **Jones**, Working in English, Cambridge.
8. **Smoke**, A Writer's Workbook Fourth edition, Cambridge**.**
9. **Nilanjana Gupta**, English for All. Edited by (Macmillan India Limited.)
10. **Grant Taylor**, English Conversation Practice. Taylor Mn Publisher: Tata McGraw Hill Education.

E-Resources:

1. www.eslgold.com/speaking/phrases.html
2. www.focusenglish.com/dialogues/
3. www.englishdaily626.com/**conversation**.php

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FACULTY OF LIFE SCIENCES

BACHELOR OF SCIENCE (MICROBIOLOGY)

SEMESTER: II CODE: LSCS201

NAME: Computational Skills (THEORY)

Teaching & Evaluation Scheme:-

Subject Code	Subject name	Teaching scheme				Evaluation scheme								
		T	Tu	Pr	Total	Univ	Hrs	Sessional	Hrs	CEC	Pr Ext	Pr Int	CEC	Total
LSCS201	Computational skills	3	0	2	5	70	3	20	1	10	70	20	10	200

Objectives: -

Computer knowledge is very essential in each and every department. The course aims to provide ample computer knowledge to students in such a manner that it is useful in their future studies.

Prerequisites: - Student should have basic knowledge of computers, which would enable them to learn the course in a more effective manner.

Course outline:-

Sr. No.	Course Contents	No. of hours
1	**Basic fundamentals of computer.** Definition, characteristics, history, computer terminology, computer organization, input & output devices, storage devices (including latest devices), classifications of computers (including current computer systems), application of computers in lifescience, introduction to computer virus, problems associated with virus infection and its remedies	04
2	**Windows Basic introduction.** **Operating Systems** Definition, functions of an operating system, types of operating systems and their characteristics, difference between operating system and application Software. Basic Dos commands both internal and external.	04
3	**MS Word:**	09

	Word Essentials, the word workplace, Parts of MS Word screen, Typing and Editing, Finding and Replacing, Autocorrect and Auto text, Reusing Text and Graphics, use of spell-check & grammar, thesaurus and scientific symbols, viewing of document by various ways Editing Tools, Formatting Text Formatting Text Character, Formatting Paragraphs, Formatting and Sorting Lists, Page Design and Layout, Page Setup : Margins, Page Numbers, and Other Items, Newspaper -style Columns, Working with Tables Creating and formatting of tables and sorting, merging etc. of data in tables. Inserting, deleting and sizing of rows and columns in tables, Opening, Saving and Protecting Documents, locating and Managing Documents Printing, Assembling Documents with Mail Merge, references.	
4	**Ms Excel:** Introduction to EXCEL worksheet, calculations in EXCEL. Hierarchy of operation, library functions such as logarithm, square root, standard deviation, sum, average, t-test, ANOVA etc. Drawing graphs in EXCEL line graph, histogram, pie-chart. –Editing chart features such as annotation, labeling of axis, changing legends etc.	09
5	**MS PowerPoint** Creating and viewing a presentation, adding animations and managing slides etc	04
6	**Networking & Internet:** Computer networks, networking technology, components of network. Internet – Basic terms, software and hardware requirement for internet, process of internetworking, internet tools, Email- components and working, study of biotechnological/microbiological/biochemistry web sites and search engines, searching through data bases, study of patent websites.	05
7	**Introduction to the following software** MS Paint, MS Access, Outlook, Adobe acrobat reader, Adobe Professional, Chemdraw, ISIS Draw, Nero Burning ROM.	04
8	**Basic Biostatistics** Introduction, Mean, Median; Standard error, Standard deviation, Variance.	06
	Total Hours	**45**

Learning Outcomes:-

The course aims at providing the students ample knowledge of computational skills which shall be of use in their academic as well as professional life.

Teaching & Learning Methodology:-

- Lectures will be conducted with the aid of multimedia projector.
- A combination of theory & practicals shall be conducted wherever possible to enable the students to understand the course in a more effective manner.

Books Recommended:

1. **Taxali R.K., P.C**. Software for Windows 98 made simple – 8th Edition – 2002 – Tata Mc, New Delhi.
2. **Guy Hart Davis,** WORD 2000, BPB Publications, New Delhi, 1999
3. **Joyce Cox,** MS Office: Step by Step, Prentice Hall of India, New Delhi, 2007
4. **Cornell,** Accessing and Analysing Data with MS EXCEL, Prentice Hall of India, New Delhi, 2007.
5. Manuals available with the software.

E-Resources:

1. http://www.gcflearnfree.org
2. http://www.gcflearnfree.org
3. http://www.electricteacher.com/tutorials.htm
4. http://publiclibrary.cc/computerinternettutorial.htm
5. http://www.comptechdoc.org/basic/basictut/

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BACHELOR OF SCIENCE (MICROBIOLOGY)

SEMESTER: I CODE: LSCS201

NAME: Computational Skills (PRACTICALS)

Sr.No	Experiment
1	Exercises on word processing to execute various commands in preparing and editing documents.
2	Preparation of documents and implementing various formatting parameters in MS Word.
3	Working with footnotes and endnotes, referencing documents.
4	Working with auto-indexing, table and figure numbering.
5	Preparing and editing worksheets in MS EXCEL, Inserting formulas for different functions in MS EXCEL like sum, average, standard deviation, logarithm, square root etc.
6	Drawing various charts using experimental data.
7	Preparation of power point presentation with animation.
8	Working with internet browsing and using search engines.
9	E-mailing using address book and applying mail merge.
10	Surfing various educational web sites, online journals and patent search.
11	Use of Chemdraw to draw chemical structures.

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BACHELOR OF SCIENCE (MICROBIOLOGY)

DEPARTMENT OF CHEMISTRY

SEMESTER: II CODE: LSCH201

NAME: Stereochemistry in organic synthesis (THEORY)

Teaching & Evaluation Scheme:-

Subject Code	Subject name	Teaching scheme				Evaluation scheme								
		T	Tu	Pr	Total	Univ	Hrs	Sessional	Hrs	CEC	Pr Ext	Pr Int	CEC	Total
LSCH201	Stereochemistry in organic synthesis	2	0	2	4	70	3	20	1	10	70	20	10	200

Objectives:

- The course will help the student to understand the basic mechanism behind various organic reactions.
- To assist students with basic knowledge of stereochemistry and explain how stereochemistry of a compound can affect reaction mechanism.
- To understand characteristic and application of chemical Kinetics.

Prerequisite: Students should have basic knowledge of organic chemistry.

Sr. No.	Course contents	Teaching Hours
1	General treatment of reaction mechanisms Ionic and radical reactions; heterolytic and, homolytic bond cleavage Reactive intermediates: carbocations (carbenium and carbonium ions), carbanions, carbon radicals, carbenes – structure using orbital picture, electrophilic/nucleophilic behaviour, stability, generation and fate. Reaction kinetics: transition state theory, rate constant and free energy of activation, free energy profiles for one step and two step reactions, Nucleophilic substitution reactions- SN1, SN2, SNi mechanisms. Effect of substrate structure, nucleophiles and medium on reactivity and mechanism;	10

	neighboring group participations. Elimination Reactions- E1, E2, and E1cB mechanisms. Saytzeff and Hofmann rules. Elimination vs substitution reaction. Electrophilic and Activated Nucleophilic substitution reactions of Benzene (Nitration, sulphonation, Halogenation and Friedel Craft reactions)	
2	Bonding and Stereochemistry of Carbon Compounds Concept of hybridisation, resonance (including hyperconjugation), inductive effect Huckel's rules for aromaticity & antiaromaticity. bond distance, bond angles Tautomerism: keto-enol tautomerism, Ionization of acids and bases: effect of structure, substituent and solvent on acidity and basicity.(Simple Aliphatic and aromatic Acids, Phenols and amines)	10
3	Stereochemistry Optical activity of chiral compounds: specific rotation, racemisation (general principle), resolution of simple acids and bases, Representation of molecules in saw horse, Fischer, flying-wedge and Newman formulae and their inter translations, Configuration: stereocentres: systems involving 1, 2, 3 centres, stereogenicity, chirotopicity. pseudoasymmetric (D/L and R/S descriptor threo/erythro and syn/anti nomenclatures ii) stereoaxis in C=C & C=N systems, cis/trans, syn/anti, E/Z descriptors. stereoselective and stereospecific reactions, chiral reagents, stereochemistry of biphenyls, allenes, and spirans – specification of their configuration.	10
	Total Hours	**30**

Learning outcomes:
This course is designed to

- Deliver a detailed understanding of different types of bonding which are responsible for formation of compounds.
- Apply stereochemistry**.** It also makes them understand the impacts of stereochemistry in reaction**.**

Teaching & Learning Methodology:-

- Faculty member/s shall explain in a class room using black board and multimedia projector, charts, model, Student interaction, group discussion, seminar, quizzes, assignment, brain storming session, expert talks. etc.

Books Recommended:

1. **P. Sykes**. A Guide to Organic Reaction Mechanism.
2. **Arun Bahl and B. S. Bahl,**Advanced Organic Chemistry- S. Chand.
3. **S. Sengupta**, Basic Stereochemistry of Organic Compounds.
4. **I.L.Finar**. Organic Chemistry (vol.1&2).
5. **R. T. Morrison & R. N. Boyd:** Organic Chemistry, Prentice Hall.
6. **D. Nasipuri.** Stereochemistry of Carbon Compounds.
7. **E. L. Eliel**, Stereochemistry of Carbon Compounds- Tata McGraw Hill.
8. **T. W. Graham Solomons**: Organic Chemistry, John Wiley and Sons.

E-Resources:

1. http://organicchemstudysite.tripod.com/alkanes.html
2. https://www.google.co.in/url?sa=t&rct=j&q=&esrc=s&source=web&cd=12&cad=rja&ved=0CHEQFjAL&url=http%3A%2F%2Fww2.chemistry.gatech.edu%2Fclass%2F1315%2Fweck%2FChapter2.pdf&ei=H3hiUd_SDMWHrAfH5YDwCw&usg=AFQjCNFsNITqdT8gutjM8io_I8tG8Hg6Mg&bvm=bv.44770516,d.bmk
3. https://en.wikipedia.org/wiki/Alkyne
4. http://www.learnersplanet.com/aminesphenolsbenzeneorganic-compounds#.UWJ4rBdHKxA
5. http://en.wikipedia.org/wiki/Stereochemistry
6. http://www.colby.edu/chemistry/OChem/STEREOCHEM/
7. http://research.cm.utexas.edu/nbauld/teach/stereo.html
8. http://en.wikipedia.org/wiki/Chemical_kinetics
9. http://www.chem.arizona.edu/~salzmanr/480a/480ants/chemkine.html
10. http://www.science.uwaterloo.ca/~cchieh/cact/c123/chmkntcs.html

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DEPARTMENT OF CHEMISTRY

SEMESTER: II CODE: LSCH201

NAME: Stereochemistry in organic synthesis (PRACTICALS)

1. Experiments on surface tension and viscosity, partition coefficient, adsorption, order of reaction (First and Second), refractive index, optical activity (polarimetry) should be covered.

2. Organic synthesis of few common compounds

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BACHELOR OF SCIENCE (MICROBIOLOGY)

DEPARTMENT OF BOTANY

SEMESTER: II CODE: LSBO201

NAME: Plant physiology (THEORY)

Teaching & Evaluation Scheme:-

Subject Code	Subject name	Teaching scheme				Evaluation scheme								
		T	Tu	Pr	Total	Univ	Hrs	Sessional	Hrs	CEC	Pr Ext	Pr Int	CEC	Total
LSBO201	Plant Physiology	2	0	2	4	70	3	20	1	10	70	20	10	200

Objectives: -

The objective of this course is to familiarize the students with the fundamental concept of tissue system and anatomical structure of higher plants.

Prerequisites:-

- Ability to understand the concepts of biology.

Course outline:

Sr. No.	Course Content	No. of hours
1	Water in relation to plants – Physical properties of water, Absorption of water – Physico-chemical processes, plant cell as Osmotic system – plasmolysis – significance and practical application. Soil water – Mechanism of water absorption & factors affecting absorption of water. Macro and microelements: roles and deficiency symptoms of N, P, K, Mg, Ca, Fe, Zn, Bo, Mo. Mineral uptake – passive (ion exchange theory) and active (carrier concept) **Ascent of Sap** Path of movement of Sap – Evidences – mechanism – theories. Transpiration – Types – structure of stomatal complex – Mechanism of stomatal movement. Factors affecting Transpiration, Significance of guttation, Hydathodes.	10
2	**Plant Metabolism -** A- Photosynthesis- Introduction, photosynthetic apparatus, photosynthetic pigments, ultrastructure of chloroplast, concept of two pigment systems, Role of light, Photo-phosphorylation, Light reaction, Calvin's cycle, C3-plants, C4 plants, C4-pathway, CAM pathway, CAM-plants, photorespiration and its significance. B - Translocation of organic solutes. Mechanism of phloem transport, Mass flow	10

	hypothesis, protoplasmic streaming theory.	
3	**Respiration -** Introduction, mitochondrion as a respiratory centre. Types of respiration - Aerobic and anaerobic respiration, Mechanism of aerobic respiration. Electron Transport mechanism (chemiosmotic theory) Respiratory quotient. Pentose Phosphate pathway. Alcoholic and lactic acid fermentation	10
	Total Hours	**30**

Learning Outcomes:-

The course provides knowledge of the most fundamental concept in life, i.e: "the cell", which helps in understanding the concept of life on earth.

Teaching & Learning Methodology:-

- Use of multimedia, charts and models.
- Student interaction, group discussion, seminar, quizzes, assignment, brain storming session, expert talks.

Books Recommended:

1. **Gerall Karp**, Cell and Molecular Biology.
2. **P.K Gupta**, Cell and molecular biology, Rastogi publication.
3. **Prof. H. Srivastava**, Plant Physiology and Biochemistry, Rastogi Publications.
4. **R. M. Devlin and F. H. Witham**, Plant Physiology, CBS Publishers.
5. **C. P. Malik & A. K. Srivastava**, Text Book of Plant Physiology, Kalyani Publishers.
6. **Bruce Alberts**. The Cell.
7. **Cooper**, The cell (A Molecular Approach)

E-Resources:

1. biology.uco.edu/bidlack/botany/notes.htm
2. www.liqwidmindz.com/LifeSciences/Botany.htm
3. www.bscnotes.gurukpo.com/
4. www.quizlet.com/subject/botany-notes/
5. www.cellbionotes.net/
6. www.sparknotes.com › SparkNotes

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BACHELOR OF SCIENCE (MICROBIOLOGY)

DEPARTMENT OF BOTANY

SEMESTER: II CODE: LSBO201

NAME: Plant physiology (PRACTICALS)

Sr.No	Experiment
1	Osmosis by egg membrane and potato osmoscope.
2	Study of Plasmolysis
3	Effect of different conc. of organic solvents on membrane permeability
4	Determination of water potential of any tuber
5	Study of stomatal types.
6	Determination of stomatal number.
7	Determination of stomatal index.
8	Separation of chloroplast pigments by paper chromatography
9	Demonstration of Hill reaction
10	Effect of different intensities of light on photosynthesis
11	Effect of different colors of light on photosynthesis
12	To compare the rate of transpiration from two surfaces of a leaf by Bell Jar method.
13	To determine the path of water (ascent of sap)
14	To determine R.Q. using different substrates.

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DEPARTMENT OF MICROBIOLOGY

SEMESTER: II CODE: LSMB201

NAME: Microbial Physiology & Biochemistry (Theory)

Teaching & Evaluation Scheme:-

Subject Code	Subject name	Teaching scheme				Evaluation scheme								
		T	Tu	Pr	Total	Univ	Hrs	Sessional	Hrs	CEC	Pr Ext	Pr Int	CEC	Total
LSMB201	Microbial physiology & Biochemistry	6	0	6	12	70	3	20	1	10	70	20	10	200

Objectives:

- The course will help the student to have a good understanding of the microbial nutrition, reproduction and culture characteristics.
- To understand the detailed description as well as role of macromolecules in the human body.

Prerequisite: Students should have knowledge about basic concepts of nutrition and proteins.

Course contents:

S.No.	Course contents	Teaching Hours
1	**Pure Culture and Cultural Characteristics:** Mixed culture, Pure culture, Methods of isolation of pure culture - serial dilution, streak plate, spread plate, pour plate, enrichment culture method, single cell isolation and special isolation. Pure Culture Maintenance: Stock culture collection centres, Methods of preservation of cultures. Systematic study of pure cultures (outline)	15
2	**Reproduction and Growth of Bacteria.** Reproduction: Binary fission in detail, other methods-Budding, fragmentation, sporulation. Growth - Definition Growth rate and Generation time: Definition and mathematical expression of growth.	15

	Growth Curve, Diauxic phenomenon. Synchronous Culture: Definition, methods and applications. Continuous culture: Definition, methods (Chemostat, turbidostat and dialysis technique) and applications. Measurement of Growth: (i) Cell number measurement: Breed method, coulter counter method, colony count. (ii) Cell mass measurement: Dry weight measurement, nitrogen and turbidity measurement. (iii) Cell activity measurement: Biochemical activity. (h) Physical conditions required for growth: Temperature, pH, gaseous and Miscellaneous.	
3	**Carbohydrates:** Definition, classification, asymmetric carbon, optical isomerism, D and L-isomerism, ring structure of pentoses and hexoses, α, β anomers, mutarotation, Reactions of aldehyde, ketone groups and hydroxyl groups, important derivatives of monosaccharides, disaccharides (structure, occurrence functions). Types of glycosidic bonds, Structure, occurrence and biological importance of polysaccharides like starch, glycogen, cellulose, chitin, pectin, agar. Mucopolysaccharides like heparin hyaluronic acids, chondroitin sulphates, sialic acids, proteoglycans, bacterial cell wall polysaccharides.	15
4	**Lipids :** Definition and classification. Fatty acids: Introduction, classification, Nomenclature, structure and properties of saturated and unsaturated fatty acids. Essential fatty acids prostaglandins cis- and trans-isomerism, positional isomerism. Triacyl glycerols: Nomenclature, properties and characterization of fats: Hydrolysis, saponification value, acid value, rancidity of fats, Iodine number, Reichert - Meissel number & reaction of glycerol. Biological significance of fats. Properties and functions of Glycerophospholipids, sphingomyelins, glycolipids- cerebrosides, gangliosides.	15
5	**Proteins :** Introduction, classification based on solubility, shape, composition and functions. Amino acids: Classification, structure and isomers of standard amino acids, zwitterionic structure, physicochemical properties, titration curve, separation of amino acids. Glycogenic and ketogenic amino acids, Essential amino acids, Non proteinous amino acids. Peptides: Structure of peptide bonds. Protein Structure: Levels of structure, forces stabilizing the tertiary and quaternary structure of proteins, Denaturation and Renaturation of proteins. Salting in and salting out of proteins, structure and biological functions of fibrous proteins (keratins, collagen and elastin), globular proteins (Hemoglobin and myoglobin). **Nucleic acids:**	15

	Nucleic Acid:- Structure of nitrogenous bases, nucleosides, nucleotides, structure of DNA and RNA, Denaturation and annealing of DNA.	
6	**Enzymes:** Definition, Characteristics of enzymes, Chemical & physical properties of enzymes, mechanism of enzyme action, conditions affecting enzyme activity, regulation of enzyme activity.	15
	Total Hours	**90**

Learning outcomes:

- The students would have gained knowledge of the microbial physiology.
- Knowledge of the role of Biomolecules in microbiology would have been gained.

Teaching and learning methodology: Faculty member/s shall explain in a class room using black board and multimedia projector, charts, student interaction, group discussion, seminar, quizes, assignment, brain storming session, expert talks.

Books recommended:

1. **Dr. Amit Krishna De**, Biochemistry- S. Chand & Co., Ltd.
2. **C. Kannan**, Biomolecules- MJP Publishers,Chennai-5.
3. **J.L. Jain, Sunjay Jain, Nitin Jain**, Fundamentals of Biochemistry- S. Chand & Company.
4. **Rober K. Murray, Daryl K. Grammer**, Harper's Biochemistry- McGraw Hill, and Lange Medical Books. 25th edition.
5. **David L. Nelson, Michael M. Cox**, Lehninger Principles of Biochemistry- Macmillan worth Publishers.
6. **Pelczar MJ, Chan ECS, Krieg NR**, Microbiology, 5th Edition, Tata McGraw Hill Publication Co. Ltd., New Delhi.
7. **Purohit SS**, Microbiology – Fundamentals and Applications, 6th Edition, Agrobios Publications, New Delhi.
8. **Stanier RY, Lingraham JL, Wheelis ML, Painter RK**, General Microbiology, 5th Edition, McMilan Press Ltd., London.
9. **Tortora, Funke & Case**, Microbiology – An Introduction, 8th Edition, Pearson Education, New Delhi.

E-Resources:

10. http://www.cliffsnotes.com/study_guide/Microbial-Reproduction-and-Growth.topicArticleId-8524,articleId-8425.html
11. http://www.ncbi.nlm.nih.gov/books/NBK21170/
12. http://www.shmoop.com/biomolecules/
13. http://www.enotes.com/bacteria-growth-reproduction-reference/bacteria-growth-reproduction
14. http://facstaff.gpc.edu/~cmcallis/1913/1913Fall'09WebPages/Web%20Chapter%20Notes/Ch6BacterialGrowth1-11-02revisions.htm
15. http://www.academia.edu/1114817/Biomolecules_Introduction_Structure_and_Functions_-_Carbohydrates
16. http://en.wikipedia.org/wiki/Bacterial_growth
17. http://blog.science-matters.org/2012/01/23/the-four-major-classes-of-biomolecules/

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BACHELOR OF SCIENCE (MICROBIOLOGY)

DEPARTMENT OF MICROBIOLOGY

SEMESTER: II CODE: LSMB201

NAME: Microbial Physiology & Biochemistry (Practicals)

S.No	Experiment
1	Physiological characteristics: a) IMVic test, b) MRVP test, c) H_2S, d) Oxidase, e) Catalase, f) Urease test, g) Gelatin liquefaction, h) Casein, i) Starch degradation.
2	Cell count using haemocytometer.
3	Study of bacterial motility.
4	Determination of growth phase of *E.coli* by spectrophotometric method.
5	Effect of chemicals on the growth of bacteria.
6	Enumeration of bacterial number by serial dilution and plating technique.
7	Qualitative analysis of carbohydrates.
8	Qualitative analysis of amino acids and proteins.
9	Quantitative estimation of blood glucose (GODPOD method).
10	Quantitative estimation of blood glucose (FOLIN WU method).
11	Quantitative estimation of PROTEIN (FOLIN & LOWRY method).
12	Quantitative estimation of serum cholesterol.
13	Estimation of Bilirubin.
14	Liver Function test.

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BACHELOR OF SCIENCE (MICROBIOLOGY)

DEPARTMENT OF MICROBIOLOGY

SEMESTER: II CODE: LSMB202

NAME: Microbial agents of disease

Teaching & Evaluation Scheme:-

Subject Code	Subject name	Teaching scheme				Evaluation scheme								
		T	Tu	Pr	Total	Univ	Hrs	Sessional	Hrs	CEC	Pr Ext	Pr Int	CEC	Total
LSMB202	Microbial agents of disease	03	0	0	03	70	3	20	1	10	-----	------	---	100

Objectives:

- To study about the various microbial agents of disease.
- To study the effect of Parasites on our life.

Prerequisite:

- Knowledge of basic microbiology is essential.

Course contents:

Sr. No.	Course contents	Teaching Hours
1	**Infection:** Definition, sources of infection, methods of transmission of infection, Factors predisposing to microbial pathogenicity.	04
2	**Bacterial agents of disease:** Description, Pathogenesis, Epidemiology & Laboratory diagnosis of the following: Staphylococcus, Streptococcus, Mycobacterium, Clostridium, Bacillus, Neisseria, Salmonella, Escherichia & Bordetella.	12
3	**Viral agents of disease:** Description, Pathogenesis, replication & Laboratory diagnosis of the following: Adenovirus, Herpesvirus, Poxvirus, Picornavirus, Paramyxovirus & Retrovirus.	12

4	**Fungal agents of disease:** Study of superficial, subcutaneous & systemic mycosis: **Superficial:** Ringworm, Superficial candidosis, Pityriasis versicolor & Tinea. **Subcutaneous:** Mycetoma, Chromoblastomycosis & Sporotrichosis **Systemic:** Histoplasmosis, Blastomycosis.	12
5	**Protozoal agents of disease:** **Sporozoa:** Malarial parasite, Toxoplasma. **Amoeba:** *Entamoeba histolytica*. **Flagellates:** *Giardia lamblia*, Trypanosoma	05
	Total Hours	**45**

Learning outcomes:

At the end of the course one would have gained knowledge of the world of microbes and their impact on our life.

Teaching and learning methodology:

Faculty member/s shall explain in a class room using black board and multimedia projector, charts.

Books recommended:

1. **Bailey and Scott's** Diagnostic Microbiology
2. **Mackie, McCartney**, Practical Medical Microbiology.
3. **David Greenwood, Richard C.B.Slack & John Peutherer,** Medical Microbiology.
4. **R.Ananthanarayan & C.K J Paniker**, Textbook of Microbiology.

E-Resources:

1. en.wikipedia.org/wiki/Category:Bacterial_diseases.
2. www.britannica.com/EBchecked/topic/720667/bacterial-diseases
3. en.wikipedia.org/wiki/Category:Protozoal_diseases
4. www.britannica.com/EBchecked/topic/1384533/protozoal-disease
5. www.news-medical.net/.../Human-Diseases-Caused-by-Viruses
6. www.virology.net/big_virology/bvdiseaselist.html