

extremophiles. Cultivation and control of microbes: Types of growth media (natural, synthetic, complex, enriched, selective- definition with example), pure culture methods (streak plate, spread plate, pour plate, stab culture, slant culture). Anaerobic (thioglycolate, anaerobic chamber, Robertson's media, microaerophilic), liquid shake culture of aerobic bacteria Control of microbes- Sterilization, disinfection, antiseptic, tyndallisation, pasteurization: Physical- dry heat, moist heat, UV light, ionizing radiation, filtration, HEPA filter, Chemical methods. Biofilms & Quorum Signaling.

Course outcome:

- Student would learn the existence of microorganisms around us. This would facilitate each student to have awareness about havoc caused by pathogenic microbes present in the surrounding atmosphere.
- Student would be able to differentiate between the useful and harmful microorganisms.
- Students would learn the structure and functions of microscopic organisms.

References:

1. Pelczar Jr, M.J. Chan, E.C.S. and Kreig, N.R. (1993). Microbiology, Mc. Graw Hill, Inc. New York.
2. Ginsberg (1990). Microbiology (4th edition). J.B. Lippincott company, New York.
3. Heritage, J. Evans E.G.V. and Killington, R.A. (1996). Introductory Microbiology. Cambridge University Press.
4. Prescott LM Harley JP and Klein DA (2006). Microbiology (7th edition) McGraw Hill, New York.
5. Schaechter M and Leaderberg J (2004). The Desk encyclopedia of Microbiology. Elsevier Academic Press, California
6. Elizabeth Moore-Landecker. (1996). Fundamentals of the fungi (4th edition). Prentice Hall International, Inc, London.
7. Madigan MT Martinko JM and Parker J Brock TD (1997). Biology of Microorganisms (8th edition). Prentice Hall International Inc, London.

BCP: 406: PRACTICAL BIOCHEMICAL METHODS: SOFT CORE

Practical: 8 hours/week

Total credits: 03

Course objectives:

- To establish broad knowledge of general biochemistry.
- To impart the basic analytical and technical skills to work effectively in biochemistry laboratories.
- To perform accurate quantitative measurements with an understanding of the theory and use of instrumentation, interpret experimental results perform calculations on these results and draw reasonable accurate conclusion.

EXPERIMENTS

1. Extraction of carotenes from natural source and their estimation by UV-Vis spectroscopy
2. Extraction of Lycopenes from natural source and their estimation by UV-Vis spectroscopy

3. Extraction of Chlorophylls from natural source and their estimation by UV-Vis spectroscopy
4. Separation of protein by Ion exchange chromatography
5. Separation of protein by Gel filtration chromatography
6. Purification of immunoglobulin by Affinity chromatography
7. Estimation of Phospholipids
8. Extraction and estimation of Phosphatidylcholine from egg yolk
9. Determination of pKa of an acid
10. Estimation of calcium from natural source (Ragi)

Course outcome:

- Students will have the ability to think critically and analyze biochemical problems.
- They can present scientific and technical information resulting from laboratory experimentation in both written and oral formats.
- They are in a position to explain the principle, instrumentation and applications of colorimetric analysis of various biochemical compounds.

REFERENCES:

1. Introduction to practical Biochemistry. David T. Plummer
2. Lab Manual of Biochemistry. By Nigam. 2007. Tata McGraw-Hill Education, USA.
3. Biochemical Methods. S. Sadasivam and A. Manickam. 3rd ed, New Age International P.

BCP 407: PRACTICAL GENERAL BIOCHEMISTRY: SOFT CORE

Practical: 8 hours/week

Total credits: 03

Course objectives:

- To establish broad knowledge of general biochemistry.
- To impart the basic analytical and technical skills to work effectively in biochemistry laboratories.
- To perform accurate quantitative measurements with an understanding of the theory and use of instrumentation, interpret experimental results perform calculations on these results and draw reasonable accurate conclusion.

EXPERIMENTS

1. Buffers: a) Introduction b) Preparation of acetate, citrate and phosphate buffers
2. Quantitative determination of protein concentration by Biuret method.
3. Estimation of protein by Lowry's method.
4. Estimation of protein by Bradford method.
5. Bicinchonnic acid protein assay.
6. Measurement of protein concentration by UV spectroscopy.
7. Estimation of glucose from natural or synthetic source by Dinitrosalicylic acid method.
8. Estimation of total carbohydrates from natural source by Phenol sulphuric acid method.
9. Estimation of starch by Anthrone method
10. Estimation of ascorbic acid from natural source (guava, green chilli, orange etc.) by DNPH method.
11. Estimation of inorganic phosphate by Fiske- Subba Rao's method.
12. Estimation of DNA by Diphenylamine method
13. Estimation of RNA by Orcinol acid method