

2. Medical Microbiology ,Vol 1 ; Microbial infection : Mackie and MaCarthy, Churchill Livingstone, 1996
3. Bailey and Scott's Diagnostic Microbiology : Baron EJ, Peterson LR and Finegold SM Mosby, 1990.
4. Broude A.I. (1981) : Medical " Microbiology" ; and Infectious Diseases, W.B. Saunders & Co. Philadelphia.
- 5.J.T. Bushberg, J.A. Scibert, E.M. Leidholdt (JR), J.M. Boone : The Essential Physics of medical Imaging, Lippincott Williams and Wilkins, USA, 2002.
- 6R.B. Buxton : Introduction to Functional Magnetic Resonance Imaging :Principle & Techniques, Cambridge Univ. Press, UK, 2002.
7. J.Enderle, S. Blancechard& J. Bronzino (Eds) : Introduction to Biomedical Engineering, Academic Press, 2000.
- 8.John G. webster(Ed): Medical Instrumentation - Application and Design, 3rd Ed, John Wiley & Sons, 1989.
9. J.B. West. (Ed) Best and Taylor's Physiological basis of Medical Practice, 11th Ed., Williams and Wilkins, Baltimore 1985
10. Y.C. Fung: Biomechanics, Spring and Verlag, New York, 1981.
11. S. Oka: Cardiovascular Hemorheology, Cambridge University Press, 1981.

BT - 802 : Fundamentals of Bio information and Nanotechnology

Section A

1. **Introduction to Bioinformatics:** Nature of Biological data, Bioinformatics and its multidisciplinary approach, Definition of Bioinformatics, History of Bioinformatics, Search engines.
2. **Biological databases:** Primary, secondary and composite databases. Nucleotide sequence and Protein sequence databases, Structural Databases.

Section B

- 3 **Aspects of Bioinformatics:** Types of Alignment- Pairwise, Multiple, Global, Local, Heuristic Methods for sequence alignment- FASTA and BLAST, Multiple Sequence alignment
- 4 **Applications of Bioinformatics,** Bioinformatics in India (BTIS net).

Section C

Dr. Registrar
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 University of Rajasthan
 Jaipur

5 Introduction to Nanotechnology: Nano scale and Richard Feynman's idea of Nanotechnology, Definition and Historical perspective

6 Characterization and properties of nano-material: Structural characterization, Chemical characterization and Properties: Mechanical, optical, electrical and magnetic

Section D

7 Nano materials and applications: Definition, properties and uses of Carbon nanomaterials, Bucky ball, CNT, Dendrimers, quantum Dots, Nanocomposites, Nanocones, Nanotubes, Nanohorns and Nanowires.

8 Applications of Nanotechnology: Nanotechnology in Environment and energy, Medical nanotechnology and Drug Development, Recent advancements in nanotechnology

9 Impact of nanotechnology: Associated Risks and regulations for Society, Health, Environment and Industry.

List of Books:

1. Text book for Bioinformatics by Shankar and Munjal
2. Bioinformatics by Prakash S lohar
3. Fundamentals and applications of Nanotechnology by Mansi Karkare
4. Nanotechnology by Er. Rakesh Rathi

BT - 803: Bioethics and IPR

Section A

Regulatory Aspects: Direct Non Target effects on beneficial and native organisms, indirect effects, Regulating Recombinant DNA technology, Biohazards

Environmental and Regulatory aspects of using genetically modified plants.

Section B Microorganisms; monitoring of introduced microorganisms, Ecological impacts of GMM released

Biological Weapons, Risk Assessment, Ethics, Biosafety Regulations in INDIA and international activities.

Section C

Intellectual property rights and protection (IPR & IPP): Forms of IPR (copy Right, Patent, Trade Secrets, Trademark, Other rights), Choice of IPP.

Section D

Patents in Biotechnology: Genes and DNA sequences, Life forms, General Agreement on Tariffs and trade (GATT) Trade related intellectual property rights (TRIPRS); Plant Breeders rights, International conventions, bio piracy, World intellectual property organization:

Text & References:

The Law & Strategy of Biotechnology Patents, Sibley Kenneth,

Safety Considerations for Biotechnology, Paris, OECD, 1992 and latest publications.

Biological Warfare in the 21st century, by M.R. Dano, Brassies London, 1994.

Biosafety Management by P.L. Traynor, Virginia polytechnic Institute Publication, 2000.

Cartagena Protocol on Biosafety, January 2000.

BT - 805: Critical Reasoning, Scientific Writing and Presentation

Section A

Introduction to Critical Reasoning- Critical Thinking and its benefits, understand the Barriers to critical thinking, learn the feature of arguments, Get acquainted with social influences on critical thinking.

Language of Critical Thinking- to understand the language of critical thinking,

Characteristics of Critical Discourses- Clarity, Accuracy, Precision, Relevance, Depth, Breadth,

Section B

Scientific Writing: Introduction to writing skills, effective Writing Skills, Avoiding Common Error, Paragraph Writing, Note taking, Writing assignments,

Letter Writing- Letter writing, Types of Letter, Types of Letter format

Memo, Agenda and Minutes, Notice and Circulars

Section C

Report Writing- Purpose and Scope of a Report, Fundamental Principles of Report Writing, **Project Report Writing, Summer Internship Reports Writing, Writing E-Mails, Brochure, leaflets,**

Section D

Presentation and Professional Skills- Presentation, Meetings, Planning and Getting started, **Design and Layout of Presentation, Information Packaging, Making the presentation**

Text & References:

Michael Steven: How to be a better problem solver, Kogan Page, New Delhi. 1999

Geoff Petty: How to be better at creativity; Kogan Page, New Delhi, 1999
Phil Lowe Koge Page: Creativity and Problem Solving, New Delhi, 1996
Bensley, Alan D.: Critical Thinking in Psychology A Unified Skills Approach, (1998),
Brooks/Cole
Publishing Company.
Business Communication, Raman -Prakash, Oxford
Creative English for Communication, Krishnaswamy N, Macmillan
Textbook of Business Communication, Ramaswami S, Macmillan
Effective Writing, Withrow, Cambridge
Writing Skills, Coe/Rycroft/Ernest, Cambridge

BT - 806: INDUSTRIALIZATION AND ENTREPRENEURSHIP

Section -A

Principle of Management - The topic mentioned below are to be covered with respect to Bio industries and Bio products.

Management - meaning and importance, evolution of management thoughts.

Function of management:

- i. Planning - meaning and importance, steps in the process of planning, Decision making.
- ii. Organizing - process of organizing, types of organizational structures, informal organizations

Section -B

iii. Directing - Communication process barriers to effective Communication, Mediation - theories of Motivation, Leadership style.

iv. Controlling - Control techniques.

Personnel Management: Manpower planning, source of recruitment, selection and training of staff, job evaluation, merit rating, performance appraisal, wage administration and system of wage payment, incentive, trade unions and industrial relation.

Section -C

Purchases and Stores Management : Concepts of quotations, tenders and comparative statement, inspection and quality control, inventory - Carrying cost and fixed cost of inventories, BEP analysis stores management, functions of storekeeper, methods of inventory - LIFO, FIFO.

Marketing, Management : Concept of selling, marketing, market research, Pricing-methods, penetration and Skimming pricing, Physical distribution methods, advertising and Sales promotion.

Section -D

Export and Import Management: Concept of international trade, duties and antidumping duty, cost involved in exporting a product, pricing of export product. Government assistance for export promotion, export house, export promotion counsel, MODVAT, patent and patent rights.

Management Laws: Concept of Contract act, offer and acceptance, type of Contract, Void Contract, Concept of Guarantee and warranty, introduction of MRTP and FERA.

Work Study: Work Measurement time and motion study, flow process chart, flow diagram, Sio chart, string Chart therbligs.

Quality Management: TQM, quality management, ISO Systems.

Reference Books:


1. Management for Business and Industry - C.S. George Jr.
2. Principles of Management - Koontz and O' Donnell.
3. Business Organization and Management _ M.C. Shukla.
4. Basic Biotechnology, Colin and Bjorn Kristiansen, Cambridge University press.

The above syllabus is to be taught keeping in mind the aspect of Commercialization.

Marketing and Management of Biotechnological product. Term work - Minimum five case studies based on the above Syllabus.

BT - 807 : Dissertation Based on Lab and Field Work


Dissertation will have 200 marks distributed a below: (1) 50 marks viva voce (2) 150marks
Dissertation


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B.Sc. Biotechnology Part III

List of Practical

1. Electrophoretic separation of plasmid DNA.
2. Gene finding tools and genome annotation- Gen Scan, Net Gene, Hmm gene.
3. Comparison of two given genomes- Mummer.
4. Preparation of stock solutions and Murashige & Skoog media
5. Micro-propagation by adventitious buds
6. Culture of anthers to raise haploids
7. Development of virus free plants from meristematic tips
8. Cell culture in bioreactor suspension
9. Basic set up of Animal tissue culture laboratory
10. Preparation of media, sterilization and practices in tissue culture laboratory
11. To Isolate Cells from whole Blood and its primary culture
12. To Study Cryopreservation
13. WIDAL test
14. Acid Fast Bacilli (AFB) staining
15. To perform BLAST
16. To perform FASTA
17. To study Protein Sequence Database
18. Primer Designing


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