

Chhattisgarh Swami Vivekanand Technical University Bhilai (C.G.)

SCHEME OF TEACHING & EXAMINATION

B.E. (V Semester) BIOTECHNOLOGY

S. No.	Board of Study	Subject Code	Subject	Period per week			Scheme of Exam			Total Marks	Credit L+(T+P)/2
				L	T	P	ESE	CT	TA		
1	Biotechnology	318551(18)	Enzyme Technology	3	1	-	80	20	20	120	4
2	Biotechnology	318552(18)	Biosafety & Bioethics	3	1	-	80	20	20	120	4
3	Chemical Engineering	318553(19)	Process Economics and Management	4	-	-	80	20	20	120	4
4	Chemical Engineering	318554(19)	Heat & Mass Transfer Operations	4	1	-	80	20	20	120	5
5	Biotechnology	318555(18)	Tissue Culture	4	-	-	80	20	20	120	4
6	Biotechnology	318556 (18)	Computational Biology	3	1	-	80	20	20	120	5
7	Biotechnology	318561(18)	Enzyme Technology Lab	-	-	3	40	-	20	60	2
8	Biotechnology	318562(18)	Tissue Culture Lab	-	-	3	40	-	20	60	2
9	Biotechnology	318563(18)	Heat and Mass Transfer Lab	-	-	3	40	-	20	60	2
10	Biotechnology	318564 (18)	Computational Biology Lab	-	-	3	40	-	20	60	2
11	Humanities	300565(46)	Personality Development	-	-	2	-	-	40	40	1
12	Biotechnology	318566 (18)	Practical training Evaluation/ Library	-	-	1	-	-	20	20	1
Total				21	4	15	640	120	240	1000	36

L: Lecture

T: Tutorial **P:** Practical

ESE: End Semester Examination **CT:** Class Test **TA:** Teacher's Assessment

** Industrial Training of ten weeks is mandatory for B.E. student. It is to be completed in two parts. The first part will be in summer after IV sem. after which students have to submit a training report which will be evaluated by the college teachers during B.E. V sem.*

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Biotechnology**

Semester: **V**

Subject: **Enzyme Technology**

Code: **318551 (18)**

Total Theory Periods: **36**

Total Tutorial Periods: **12**

No. of class Tests to be conducted: **2 (Minimum)**

No. of assignments to be submitted: **2 (Minimum)**

ESE Duration: **Three Hours**

Maximum Marks in ESE: **80** Minimum Marks in ESE: **28**

Course Objectives:

1. To develop skills of students in the area of Enzyme engineering and technology.
2. To make the students understand the application of enzymes in different areas of biotechnology as well as towards human welfare.

Course Outcome:

1. At the end of the course the student would have learnt about enzymes, their mode of action, Kinetics of enzyme action and techniques like enzyme immobilization, purification of enzymes & Biosensors.
2. The knowledge gained will serve as a pre-requisite for courses in Bioprocess technology, downstream processing etc to be offered in the subsequent semesters.

UNIT I INTRODUCTION TO ENZYMES : Classification of enzymes; Mechanisms of enzyme action; Concept of active site and energetics of enzyme substrate complex formation; Specificity of enzyme action; Principles of catalysis – collision theory, transition state theory.

UNIT II KINETICS OF ENZYME REACTIONS: Kinetics of single substrate reactions; Estimation of Michelis – Menten parameters, multi substrate reactions- mechanisms and kinetics; Allosteric regulation of enzymes, pH and temperature effect on enzymes & deactivation kinetics.

UNIT III ENZYME IMMOBILIZATION: Physical and chemical techniques for enzyme immobilization – adsorption, matrix entrapment, encapsulation, cross-linking, covalent binding etc., examples, advantages and disadvantages.

UNIT IV PURIFICATION AND CHARACTERIZATION OF ENZYMES FROM NATURAL SOURCES: Production and purification of crude enzyme extracts from plant and microbial sources; methods of characterization of enzymes; development of enzymatic assays.

UNIT V ENZYME BIOSENSORS: Application of enzymes in analysis; design of enzyme electrodes and their application as biosensors in industry, healthcare and environment.

Text Books:

1. “Biochemical Engineering”, Harvey W. Blanch, Douglas S. Clark, Marcel Dekker, Inc.
2. “Biochemical Engineering”, James M. Lee, PHI, USA.

Reference Books:

1. “Biochemical Engineering Fundamentals”, James. E. Bailey & David F. Ollis, McGraw-Hill.
2. “Enzyme Biotechnology”, Wiseman, Ellis Horwood Pub.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Biotechnology**

Semester: **V**

Subject: **Biosafety & Bioethics**

Code: **318552 (18)**

Total Theory Periods: **36**

Total Tutorial Periods: **12**

No. of class Tests to be conducted: **2 (Minimum)**

No. of assignments to be submitted: **2 (Minimum)**

ESE Duration: **Three Hours**

Maximum Marks in ESE: **80** Minimum Marks in ESE: **28**

Course Objectives:

1. To make the students understand the regulations in biosafety in different committees.
2. To make them learn about the biosafety procedures and protocols and to learn about the ethics and its socioeconomic impacts of biotechnology.

Course Outcome:

1. Students would have had acquired knowledge and skills on biopolicy, ethics and safety issues.
2. Students will have the knowledge of overviews of intellectual property and ethical considerations for research and developments of products.

UNIT I Introduction to ethics and bioethics: The legal and socioeconomic impacts of Biotechnology; the responsible conducts of biotechnological research; societal obligation of a biotechnologist; Biotechnology application: ethical consideration; ethics and the natural world: environmental ethics (protecting public health and environment; genetically modified foods: the ethical and social issue. Ethical issues in genetic engineering, genetic enhancement, eugenic genetic engineering, genetic information: use and abuse; patenting human genes: ethical and policy issue, ethics in cloning, genetic testing and screening, human gene therapy and genetic modification.

UNIT II Definition and concept of property rights: History and evaluation of IPR: duties and their correlations like: patent design and copy right; Distinction among the various forms of IPR, requirements of a patentable invention like novelty, inventive step and prior art and state of art. Special procedures for r-DNA based product production, TRIPS, international convention, patents and methods for patent application.

UNIT III Rules and regulations: Regulations on ethical principles in biotechnological practice: The Nuremberg code, the Belmont report, co-operational guidelines: WHO, guidelines of DBT (India), Guidelines of an informed consent. Public acceptance issues in biotechnology: issue of access, ownership, monopoly, traditional knowledge, biodiversity, benefit sharing, environmental sustainability and public versus private funding.

UNIT IV Biosafety in laboratory: Laboratory associated infections and other hazards, assessment of biological hazards and level of biosafety practices in the laboratory; Biosafety regulations and national and inter-national guideline regarding r-DNA; Experimental protocol approval, environmental aspects of biotechnological application; Biosafety: classification and description of biosafety levels; Design of clean rooms and biosafety labs; Biosafety regulations to protect nature; Growers and consumers interest and nation interest; Potential risk from genetically modified organisms; Ethical issues in research and case studies.

UNIT V International dimensions in biosafety, Cartagena Protocol in biosafety, bioterrorism and inventions of biological weapons

Text Books:

1. Biotechnology & Safety Assessment, 3rded (2002), Thomas, J. A, Fuch, R. L, Academic Press.
2. Biological safety Principles & practices, 3rded (2000) Fleming, D. A. Hunt, D.L. ASM ton.

Reference Books:

1. Biotechnology –A comprehensive treatise (Vol 12) Legal economic & dimensions VCH.
2. Encyclopedia of Bioethics.

Name of the Programme: **Bachelor of Engineering** :::: Duration of the Programme: **Four Years**

3. Intellectual property rights on Biotechnology, K.Singh, BCIL, New Delhi.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Biotechnology**

Semester: **V**

Subject: **Process Economics & Management**

Code: **318553 (19)**

Total Theory Periods: **36**

Total Tutorial Periods: **12**

No. of class Tests to be conducted: **2 (Minimum)**

No. of assignments to be submitted: **2 (Minimum)**

ESE Duration: **Three Hours**

Maximum Marks in ESE: **80** Minimum Marks in ESE: **28**

Course Objective:

1. To make the students understand the economy of processing and regulation.
2. To make them learn to manage criticism and to execute rectification.

Course Outcome:

1. The Student will be able to execute the processing in an economic way to minimize loss
2. With the clear understanding of know the Act & Laws of business organization the Student will be able to set up a business The Student will be able to understand the cost control.

UNIT I Organization: Introduction, System Approach Applied To Organization, Necessity of Organization, and Process of Organization, Formal and Informal Organization, Organization Structure and Types.

UNIT II Forms of Business Organization: Concept and Types of Ownership, Industrial Ownership, Partnership Organization, Joint Stock Company, Co-Operative Organization, Public Sector Organization, and State Ownership.

UNIT III Management: Concept Of Management, Function Of Management, Financial Management. Industrial Acts And Legislations: Factories Act, Workmen's Compensation Act, Wages Act Employee's Provident Fund and Family Pension Act

UNIT IV Finance: Breakeven Analysis, Breakeven Point, Breakeven Calculation and Applications. Depreciation: Introduction, Types, Methods for Calculating Depreciation Fund.

UNIT V Cost Accounting and Control: Cost Estimation, Elements Of Cost, Computation Of Actual Cost, Nature And Types of Cost, Cost Control, Replacement Studies: Methods (Rate Of Return, Payback Period, And Discounted Cash Flow)

Text Books:

1. "Industrial Engineering and Management Science" 10thed(2007) Banga T.R., Sharma S.C., Agarwal N.K. Khanna Publication,
2. Industrial Engineering & Production Management" 1sted (2000-01) Mahajan M.S., Dhanpat Rai Publication,

Reference Books:

1. "Industrial Engineering & Management"(2007), Khanna O.P, Dhanpat Rai Publication,
2. "Plant Design & Economics for Chemical Engineers", 5thed(2004) Peter S. Max, Timmerhaus D. Klaus, West E. Ronald, Tata McgrawHill.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Biotechnology**

Semester: **V**

Subject: **Heat & Mass Transfer Operation**

Code: **318554 (19)**

Total Theory Periods: **36**

Total Tutorial Periods: **12**

No. of class Tests to be conducted: **2 (Minimum)**

No. of assignments to be submitted: **2 (Minimum)**

ESE Duration: **Three Hours**

Maximum Marks in ESE: **80** Minimum Marks in ESE: **28**

Course Objective:

1. To introduce the students to fundamentals and basic concepts of various modes of Heat and Mass Transfer.
2. To make them learn various theories and applications in solving relevant problems of Heat Transfer.

Course Outcome:

1. At the end of the course the students will be able to apply the principles in various fields like biomechanics and other related fields.
2. The students can apply the above knowledge in designing the path or route for delivering drugs and nanoparticles.

UNIT I Modes of Heat Transfer, Concept of driving force and resistance, Conduction- Fourier's Law, One Dimensional Steady state Conduction- Plane Wall, Cylinder and Sphere with and without heat generation, Critical Radius, Numerical Problems based on conduction.

UNIT II Principles of Heat Flow in Fluids, Natural and Forced Convection, Concepts of films and Two Film Theory, Individual and Over All Heat Transfer Coefficient (O.A.H.T.), Dirt Factor, Controlling Resistance, Logarithmic Mean Temperature Difference (L.M.T.D.), Dittus Bolter Equations, Numerical Problems based on Convections.

UNIT III Radiation Heat transfer, Fundamental Facts Concerning Radiation, Black Body Radiation- Emissivity, Law of Black Body Radiation- Stefan-Boltzmann Law, Kirchoff's Law, Radiation between surfaces, Numerical Problems based on Radiation.

UNIT IV Principles of Diffusion, Theory of Diffusion, Fick's First Law, Measurement of Diffusion- One Component Equimolar Diffusion for Gas and Liquid Phase, Multi-component Diffusion, Prediction of Diffusivity in Gases, Numerical Problems Based on Diffusion. Mass Transfer Coefficient, Vapor and Partial pressure.

UNIT V Distillation: Batch and Differential, Roul't's Law, Henry's Law, Boiling Point diagram, Azeotropes and Steam distillation.

Text Books:

1. "Unit Operations of Chemical Engineering", 5thed., (1993) McCabe, W.L., Smith, J.C., Harriot, P., McGraw-Hill International Editions.
2. "Introduction to Chemical Engineering", 3rded., (1997) Badger, W.L., Bancharo, J.T. Tata McGraw Hills Publishing Company Limited ,

Reference Books:

1. "Mass Transfer Operations", 3rded., (1998) Treybal, R.E., McGraw –Hill International Edition
2. "Transport Process and Unit Operations" 3rded., (1993) Geankoplis, C.J., Prentice Hall,

Name of the Programme: **Bachelor of Engineering** ::: Duration of the Programme: **Four Years**

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: Biotechnology	Semester: V
Subject: Biotechnology Tissue Culture	Code: 318555 (18)
Total Theory Periods: 36	Total Tutorial Periods: 12
No. of class Tests to be conducted: 2 (Minimum)	No. of assignments to be submitted: 2 (Minimum)
ESE Duration: Three Hours	Maximum Marks in ESE: 80 Minimum Marks in ESE: 28

Course Objectives:

1. To impart knowledge of basics techniques of tissue culture.
2. To make them understand importance of tissue culture in agriculture, medicine etc.

Course Outcome:

1. Proficient knowledge of tissue culture can benefit the students in areas of cloning, strain development as well as new plant and animal breed development.
2. With good theoretical knowledge and hands on experience students will have better employment prospects and many industries.

UNIT I History, introduction, laboratory organization, medias used, plant growth hormone and aseptic manipulation, totipotency.

UNIT II Cell culture, somatic embryogenesis, artificial seeds, somaclonal variations and haploid production, in vitro pollination, zygotic embryo culture, somatic hybridization and cybridization; Transformation Technique: physical methods, chemical methods; Vector mediated Gene transfer: *Agrobacterium* mediated transformation and plant virus vectors, binary vectors.

UNIT III History, introduction, laboratory facilities for tissue culture; growth of animal cell in culture media; Culture Media for cell and tissue culture: Natural Media (Coagula, serum, tissue extracts), Defined Media (Media with serum, without serum media), Substrates on which cell grows (Glass, Disposables plastics, palladium and metallic surface), Gas phase for tissue (O₂, CO₂) culture, preparation of animal materials.

UNIT IV Primary Culture, disaggregation of tissue- enzymatic and mechanical disaggregation, separation of viable and non-viable cells, types of cell lines, maintenance of cell lines in suspension and in layered culture, cloning of cell lines, Somatic cell fusion, tissue culture, slide culture, flask culture and test tube culture, Organ culture, whole embryo culture; *In vitro* fertilization in human, embryo transfer in human and cattle.

UNIT V Application of tissue culture in horticulture and forestry: production of disease free plants; Industrial application of tissue culture; Germplasm conservation; modification of seed protein quality, suppression of endogenous gene, plant derived vaccines; Transgenic animals; Development of recombinant vaccines, Monoclonal antibody their applications; Introduction to transgenics, gene therapy; Production of secondary metabolites/products: Insulin, growth hormones, interferons etc.

Text Books:

1. Introduction to plant tissue culture, K.K Day.
2. Animal Cell Culture, John R.W. Masters, Oxford University Press.

Reference Books:

1. Plant tissue Culture– Application 7 limitations (1990), S.S. Bhojwane Elsevier, Amsterdam.
2. Micro propagation (1990) P.C. Degergh& R. H. Zommeronom Kluwer Academic Publ. Dordrecht.
3. Plants, genes & crop improvement, (2002), Crispeels ASPB.
4. Molecular Biotechnology, Primrose
5. Animal Cell Biotechnology (1998), R.E. Spier& J.B. Griffiths, Academic Press
6. Biotechnology, B. D. Singh, Kalyani Publication.

Name of the Programme: **Bachelor of Engineering** ::: Duration of the Programme: **Four Years**

7. Transgenic Plants– Lindsey & Jones.
8. Introduction to plant tissue culture, M.K.Rajdhan Introduction to Cell and Tissue Culture by Jennie P. Mather and Penelope E. Robert, Plenum Press, New York & London.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: Biotechnology	Semester: V
Subject: Computational Biology	Code: 318556 (18)
Total Theory Periods: 36	Total Tutorial Periods: 12
No. of class Tests to be conducted: 2 (Minimum)	No. of assignments to be submitted: 2 (Minimum)
ESE Duration: Three Hours	Maximum Marks in ESE: 80 Minimum Marks in ESE: 28

Course Objectives:

1. To impart knowledge on the fundamental concepts of Computational biology.
2. To make student conversant with Computational biology tools using algorithm in prediction of different sequence and structure designing in developing systematic approach.

Course Outcome:

1. At the end of the course, student will have sufficient systematic and comprehensive knowledge about systematic biology concepts which will help them to enhance their practical related skills in advance bioinformatics.
2. It also helps in understanding the theoretical principles in a more explicit and concentrated manner.

UNIT I Introduction: Introduction to computational biology; History; Sequence and nomenclature; Different file formats; Operating system: concept, types and function; Bioperl; Biopython.

UNIT II Biological databases: NCBI; Various types of biological databases: nucleic acid databases, protein databases, structural databases and others; various databanks: microbial and cellular databank, Hybridoma databank, cDNA bank.

UNIT III Sequence alignment: Pairwise and multiple sequence alignment: global and local; Analysis tools: FASTA, BLAST; Sequence alignment algorithm: Needleman & Wunsch, Smith Waterman; Substitution matrices predictions: PAM and BLOSUM.

UNIT IV Biological algorithms: Concept of algorithms: biological algorithm vs computer algorithm, Iterative vs recursive algorithms; Dynamic programming algorithms: sequence comparison, scoring alignment, alignment with gap penalties.

UNIT V Modern application of Computational Biology: Recent approach in research and development in computational Biology; Cheminformatics; Environmental applications: degradation and remediation system; Pharmacoinformatics.

Text Books:

1. Bioinformatics: The Machine Learning approach, (2001), Søren Brunak, Pierre F Baldi, MIT Press.
2. An Introduction to Bioinformatics Algorithms, (2005), Neil C. Jones and Pavel A. Pevzner, MIT Press, First Indian Reprint.

Reference Books:

1. Bioinformatics Technologies, (2005), Yi-Ping Phoebe. Chen, Springer.
2. Algorithms on strings, trees and sequences- Computer Science and Computational Biology, (1997), Gusfields G, Cambridge University Press.

Name of the Programme: Bachelor of Engineering :::: Duration of the Programme: Four Years

3. Bioinformatics Biocomputing and Perl, (2004), Michael Moorhouse, Paul Barry, Wiley
4. Evaluation Methods in Medical Informatics, (1997), Charles P. Friedman, Jeremy C. ed, Wyatt, Springer Verlag.
5. Immunoinformatics- Bioinformatics Strategies for Better Understanding of Immune Function, (2003), Rammensee, Wiley.
6. Perl Programming for Bioinformatics & Biologists, D. Curtis Jamison, John Wiley & Sons INC.
7. Python: How to Program, (2002), Harvey M. Deitel, Prentice Hall.
8. Developing Bioinformatics Computer Skills, (2001) Cynthia Gibas, Per Jambeck, O'Reilly.
9. Medical Informatics: The Essentials, (1996), F. T. De Dombal, Butterworth-Heinemann.
10. Data Mining: Multimedia, Soft Computing, and Bioinformatics, SushmitaMitra, TinkuAcharya, John Wiley & Sons INC.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: Biotechnology	Semester: V
Subject: Enzyme Technology Laboratory	Code: 318561 (18)
Total Lab Periods: 36	Batch Size: 15
Maximum Marks: 40	Minimum Marks: 20

List of Experiments:

1. Production of Amylase by *A. niger*.
2. Effect of temperature/pH/concentration on salivary amylase activity.
3. Production of catalase enzyme by microorganisms.
4. Production of lactase by yeast cell.
5. Various Techniques of enzyme immobilization.
6. Study of various enzyme reactors.
7. Preparation of poly/bifunctional enzymes.
8. Test for urease activity.
9. Test for oxidase activity.
10. Estimation of MM parameters
11. Determination of Ammonium Sulphate precipitation in given sample.

Requirements:

1. Same equipment as mentioned in microbiology lab

Recommended Books:

1. Experiments in Microbiology, Plant Pathology and Biotechnology by K R Aneja
2. An introduction to practical biotechnology 1sted, (2006), S.Harisha, Laxmi Publications (P) Ltd.
3. Refer Text books mentioned in theory syllabus

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Biotechnology**
Subject: **Tissue Culture Laboratory**
Total Lab Periods: **36**
Maximum Marks: **40**

Semester: **V**
Code: **318562 (18)**
Batch Size: **15**
Minimum Marks: **20**

List of Experiments:

1. Preparation of sterile media.
2. Callus formation from explants.
3. Shoot initiation from dicot and monocot plant.
4. Root induction in shoot initiated explants in artificial medium.
5. Dicot seed germination in artificial medium.
6. Shoot induction from monocot seed in artificial medium.
7. Pollen culture in artificial medium.
8. Study of different types of animal cell culture media.
9. Study of animal cell culture techniques.
10. Study of uses of animal cell culture.
11. Study of cell fusion techniques from whole plant regeneration.

Requirements:

1. Autoclave
2. Centrifuge
3. Distillation Unit
4. Gyrotory Shaker (that moves in a circular/spiral path)
5. Microscopes

Recommended Books:

1. Experiments in Microbiology, Plant Pathology and Biotechnology by K R Aneja
2. An introduction to practical biotechnology 1sted, (2006), S.Harisha, Laxmi Publications (P) Ltd.
3. Refer books mentioned in theory syllabus

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Biotechnology**
Subject: **Heat & Mass Transfer Operations Laboratory**
Total Lab Periods: **36**
Maximum Marks: **40**

Semester: **V**
Code: **318563 (18)**
Batch Size: **15**
Minimum Marks: **20**

List of Experiments:

1. To determine the total Thermal Conductivity and the Thermal Resistance of given compound resistance in series by Slab System
2. To Determine the Thermal Conductivity of insulating powder by Spherical Dome
3. To determine the Heat Transfer Coefficient of Double Pipe Heat Exchanger for Counter-current Flow
4. To determine the Heat Transfer Coefficient of Double Pipe Heat Exchanger for Co-current Flow
5. To determine the Heat Transfer Coefficient of Shell & Tube Heat Exchanger for Co-current Flow
6. To determine the Heat Transfer Coefficient of Shell & Tube Heat Exchanger for Counter-current Flow
7. To study the temperature distribution along the length of Pin Fin in Natural Convection
8. To study the temperature distribution along the length of Pin Fin in Forced Convection
9. To determine the Diffusivity Coefficient of Acetone in Air by Natural Diffusion
10. To determine the Diffusivity Coefficient of Acetone in Air by Forced Diffusion
11. Study of operation of Laboratory Scale Wetted Wall Column

Requirements:

1. Thermal Conductivity Apparatus
2. Pin Fin Apparatus
3. Double Pipe Heat Exchanger
4. Shell- Tube Heat Exchanger
5. Laboratory Scale Wetted Wall Column

Recommended Books:

1. "Unit Operations of Chemical Engineering" 5thed(1993) McCabe, W.L., Smith, J.C., Harriot, P. McGraw-Hill International Editions.
2. "Mass Transfer Operations" 3rded(1998) Treybal, R.E., McGraw –Hill International Edition.
3. "Introduction to Chemical Engineering", 3rded(1997) Badger, W.L., Banchero, J.T. Tata McGraw Hills Publishing Company Limited.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Branch: **Biotechnology**
Subject: **Computational Biology Laboratory**
Total Lab Periods: **36**
Maximum Marks: **40**

Semester: **V**
Code: **318564 (18)**
Batch Size: **15**
Minimum Marks: **20**

List of Experiments:

1. Biological Databases with Reference to Expasy and NCBI
2. Queries based on Biological databases
3. Sequence similarity searching using BLAST .
4. Pairwise alignment of protein sequence using BLAST.
5. Pairwise alignment of nucleotide sequence using BLAST.
6. Pairwise alignment of protein sequence using FASTA.
7. Pairwise alignment of nucleotide sequence using FASTA
8. Multiple sequence alignment of protein sequence.
9. Multiple sequence alignment of nucleotide sequence.
10. Identification of functional domains.

Requirements:

Updated software will be used as per the requirement.

Recommended Books:

Refer to theory books mentioned in the syllabus.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of Program:	Bachelor of Engineering	Semester:	V
Branch:	Common to All Branches	Code:	300565 (46)
Subject:	Personality Development	Tutorial Period:	NIL
No. of Lectures:	2/Week	Marks in TA:	20
Total Marks in ESE:	NIL	Minimum number of Class Tests to be conducted:	Two

Objective: The course is introduced to develop one's outer and inner personality tremendously and enrich the abilities to enable one to meet the challenges associated with different job levels. Personality Development is essential for overall development of an individual apart from gaining technical knowledge in the subject.

Course Objectives

Upon completion of this course, the student shall be able

- To understand the concept of personality and image;
- To develop leadership, listening and interacting skills;
- To develop attitudinal changes;
- To develop decision-making qualities; and
- To communication skill.

UNIT I Personality concepts: What is Personality – its physical and psychic aspects. How to develop a positive self-image. How to aim at Excellence. How to apply the cosmic laws that govern life and personality. How to improve Memory – How to develop successful learning skills. How to develop and effectively use one's creative power. How to apply the individual MOTIVATORS that make you a self-power personality.

UNIT II Interpersonal Skills: Leadership: Leaders who make a difference, Leadership: your idea, What do we know about leadership? If you are serious about Excellence. Concepts of leadership, Two important keys to effective leadership, Principles of leadership, Factors of leadership, Attributes. Listening: Listening skills, How to listen, Saying a lot- just by listening, The words and the music, How to talk to a disturbed person, Listening and sometimes challenging. How to win friends and influence people, How to get along with others. How to develop art of convincing others. How can one make the difference. How to deal with others particularly elders. Conflicts and cooperation.

UNIT III Attitudinal Changes: Meaning of attitude, benefits of positive attitudes, How to develop the habit of positive thinking.

Negative attitude and wining: What is FEAR and how to win it. How to win loneliness. How to win over FAILURE. How to win over PAIN. How to win over one's ANGER and others anger. What is stress and how to cope up with it? The art of self-motivation. How to acquire mental well-being. How to acquire physical well-being.

UNIT IV Decision Making: How to make your own LUCK. How to plan goals/objectives and action plan to achieve them. How to make RIGHT DECISION and overcome problems. How to make a Decision. Decision making: A question of style. Which style, when? People decisions: The key decisions. What do we know about group decision making? General aids towards improving group decision making.

UNIT V Communication Skills: Public Speaking: Importance of Public speaking for professionals. The art of Speaking - Forget the fear of presentation, Symptoms of stage fear, Main reason for speech failure, Stop failures by acquiring Information; Preparation & designing of speech, Skills to impress in public speaking & Conversation, Use of presentation aids & media.

Study & Examination: How to tackle examination, How to develop successful study skills.

Group discussions: Purpose of GD, What factors contribute to group worthiness, Roles to be played in GD.

Course Outcomes:

- The students will be able to develop inner and outer personality exposure;
- The students will be able to develop effective leadership qualities and interacting skills;
- The students will be able to develop positive attitude, motivating skills and develop winning philosophies;
- The students will be able to develop decision-making tools; and
- The students will be able to develop group presentation, public speaking and impressive conversation.

Text Books:

Name of the Programme: Bachelor of Engineering :::: Duration of the Programme: Four Years

1. Basic Managerial Skills for all by E. H. McGrawth, prentice Hall India Pvt. Ltd., 2006
2. Basic Employability Skills by P. B. Deshmukh, BSP Books Pvt. Ltd., Hyderabad, 2014

Reference Books:

1. How to Develop a Pleasing Personality by Atul John Rego, Better Yourself Books, Mumbai, 2000
2. How to Succeed by Brain Adams, Better Yourself Books, Mumbai, 1969
3. Personality: Classic Theories & Modern Research; Friedman ; Pearson Education, 2006
4. How to Win Friends and Influence People by Dale Carnigie, A. H. Wheeler 2006