AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNJAB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: MSc Biotechnology

NAME OF COURSE: Principles of Biochemistry Sem-Ist

NAME OF FACULTY: Dr Parvinder Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Describe the importance of biological macromolecules.	**Exams, Class tests, class assignment, presentations and Seminars.**
CO-2	Demonstrate an understanding of fundamental biochemical principles, such as structure and functions of biomolecules, various metabolic pathways of biomolecules and their regulation.	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-3	Identify the role of structures of biomolecules in reactivity.	**Exams, Class tests, class assignment, presentations and Seminars.**
CO-4	Estimate bio- molecules quantitatively and qualitatively.	**Lab work**
CO-5	Communicate biochemical concepts and experimental results through effective written and oral communication	**Viva, quiz, class assignments**
CO-6	Work collaboratively with members of a team in classroom and /or laboratory activities.	**Group discussions, Group projects and group assignments.**

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNAJB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **M. Sc Biotechnology**

NAME OF COURSE: **Introductory Microbiology (Paper- III)**

NAME OF FACULTY: **Love Singla**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Demonstrate about parts of microscope, type and its principle, theory and practical skills in microscopy and their handling techniques and different methods of staining techniques	**Exams, Oral Exams, Quizzes, Home Assignments, Virtual Labs**
CO-2	Summarize the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes.	**Exams, Oral Exams, Quizzes, Home Assignments, Virtual Labs, Authentic Problem solving**
CO-3	Evaluate various culture media and their applications and also understand various physical and chemical means of sterilization	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-4	Explain general bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae, master aseptic techniques.	**Exams, Oral Exams, Quizzes, Home Assignment**
CO-5	Comprehend the various methods for identification of unknown microorganisms, understand the microbial transport systems.	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-6	Evaluate various physical and chemical growth requirements of bacteria and get equipped with various methods of bacterial growth measurement.	**Exams, Oral Exams, Quizzes, Home Assignments**

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE

BELA ROPAR PUNJAB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **M.Sc. Biotechnology**

NAME OF COURSE: **Immunology (Paper IV)**

NAME OF FACULTY: **A.P. Navjot Bharti**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Describe detailed Introduction, history scope of immunology, Types of immunology (innate-acquired, active-passive immunity.	University exam, Group discussion, Class test, Presentation
CO-2	Explain antigens, antigenicity, immunoglobulins (types, structures, distribution, function, cellular immunity: Cells and organs of immune system, lymphocyte, macrophages.	Class assignment, class test, ppt.
CO-3	Discuss and describe humoral immune response, hypersensitivity types and autoimmunity.	Ppt., Assignment, Group discussion
CO-4	Define and explain immunization and vaccines (active-passive) (traditional-modern vaccines), cytokines, MHC complex	Class test, MST, University exam
CO-5	Analyze antigen-antibody assays (agglutination, immunodiffusion, immunoelectrophoresis, RIA, fluorescent assays, ELISA) immunoblot, methods of assay cell mediated immune response	Lab work, viva, assignment
CO-6	Describe hybridoma technology, myeloma cell lines, fusion, selection and screening of positive hybrid cells, cloning methods, purification, characterization and application of monoclonal antibodies in diagnosis and therapy and in biomedical research, antibody engineering and abzymes	Presentation, Seminar, Class test, Oral test

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNJAB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: MSc Biotechnology

NAME OF COURSE: Molecular Genetics Sem-Ist

NAME OF FACULTY: Manpreet Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Describe the importance of genomics and techniques involved in genetic studies	**Exams, Class tests, class assignment, presentations**
CO-2	DNA replication process and importance of transcription for expression of coding genes	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-3	Description of translation process and regulation of genes	**Class tests, Class assignment, presentations and Seminars.**
CO-4	Explain genome organization,mapping and proteome analysis	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-5	Communicate genetic concepts and experimental results of various genetic techniques through effective written and oral communication	**Viva, quiz, class assignments**
CO-6	Work collaboratively with members of a team in classroom and /or laboratory activities.	**Group discussions, Group projects and group assignments.**

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNAJB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food technology**

NAME OF THE PROGRAMME: **M.Sc. Biotechnology Sem-I**

NAME OF COURSE: **Pertaining to: Theory Paper I: Principles of Biochemistry**

Theory Paper II: Molecular Genetics

NAME OF FACULTY: **A.P. Navjot Bharti**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Analysis Qualitative and quantitative of reducing, protein, lipids and total sugars by biochemical and biophysical techniques.	Lab work, viva
CO-2	Determine acid value of a fat/oil, cholesterol-total, free, esterified, Tm of DNA, phosphate content of DNA and RNA, starch content from wheat flour and conjugation mapping in *E.coli*.	Lab work ,viva
CO-3	Demonstrate DNA of *E. coli* and RNA of yeast, Hill reaction and polymerase chain reaction (PCR).	Demonstration, viva
CO-4	Separate nucleotides by electrophoresis.	Lab work, viva
CO-5	Apply Henderson-Hasselbalch equation for the preparation of buffer solutions.	Discussion ,viva
CO-6	Isolate casein from milk and determine vitamin C content in a citrus fruit.	Lab work , viva

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNAJB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **M. Sc. Biotechnology**

NAME OF COURSE: **Practical pertaining to Paper- III and Paper-IV**

NAME OF FACULTY: **Love Singla**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Staining techniques in Microbiology-simple, negative and differential staining.	**Lab work, Virtual Labs, Class Assignment, Home Assignments**
CO-2	Isolation, purification, maintenance and preservation techniques of aerobic and anaerobic cultures.	**Lab work, Virtual Labs, Class Assignment, Home Assignments**
CO-3	Morphological, cultural and biochemical characterization of microorganisms, isolation of bacteria by pure culture techniques.	**Lab work, Virtual Labs, Class Assignment, Home Assignments**
CO-4	Measurement of size of microorganism by microscopic technique, checking motility of microorganism by hanging drop method and viability determination of microorganisms by microscopic technique.	**Lab work, Virtual Labs, Class Assignment, Home Assignments**
CO-5	Strain improvement by physical and chemical mutagenesis, presumptive and confirmation test for the determination of coliform bacteria.	**Lab work, Virtual Labs, Class Assignment, Home Assignments**
CO-6	Microbial growth measurements by different techniques and determination of factors affecting growth of microorganisms	**Lab work, Virtual Labs, Class Assignment, Home Assignments**

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNJAB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: M.Sc Biotechnology- Sem-II

NAME OF COURSE: Molecular Biophysics (Paper-VI)

NAME OF FACULTY: Dr Parvinder Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Demonstrate knowledge of the fundamental concepts in physics and chemistry that underlie biological processes.	**Exams, Class tests, class assignment, presentations and Seminars.**
CO-2	Apply scientific understanding of analytical techniques such as spectroscopy, nuclear & electronic magnetic resonance and optical activity to define structural characteristics and examine parameters that determine stability of structure and functions of nucleic acids and proteins	**Exams, Class tests, class assignment, Lab work**
CO-3	Illustrate basic concepts of molecular modelling, protein folding, protein designing and methods of prediction of protein structure.	**Exams, Class tests, class assignment, dry lab experiments on computer**
CO-4	Identify and practise computer simulations to alter physical properties of DNA, to determine RNA folding and molecular dynamics.	**Lab work, Computer simulations**
CO-5	Communicate molecular biophysics related concepts and experimental results through effective written and oral communication.	**Viva, quiz, class assignments**
CO-6	Work collaboratively with members of a team in classroom and /or laboratory activities.	**Group discussions, Group projects and group assignments.**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: M.Sc Biotechnology 2ND SEMESTER

NAME OF COURSE: Fundamentals of Bioprocess Development (Paper-VII)

NAME OF FACULTY: A.P. **Parneet kaur**

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Define chemical and Biochemical engineering, Enlist various applications of biochemical engineering in bioprocess development.	**Exams, Class tests, class assignment, and Seminars.**
CO-2	Describe basic concept in bioprocess development.	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-3	Identify different types of mode of operation used in bioprocess.	**Exams, Class tests, class assignment, presentations and Seminars.**
CO-4	Classify fluid flow , Heat transfer and Mass transfer process in bioprocess development.	**Exams, Class tests, class assignment, group discussion.**
CO-5	Enlist the various types of bioreactors used in bioprocess, Illustrate different types of monitoring and controlling devices used in bioprocess.	**Group discussions, class assignments, Exams.**
CO-6	Explain sterilization of bioreactors and media, Define scale-up of bioprocess , downstream processing and Bioprocess economics.	**Exams, group assignments .**

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNAJB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: M. Sc .Biotechnology Sem- II

NAME OF COURSE: Fundamentals of Fermentation Technology Paper-VIII

NAME OF FACULTY: A.P. Parminder Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Explain Fermentation design and control; Fermentation products-primary metabolites, secondary metabolites and single cell proteins. Media microbial fermentations, Nutritional requirements, Chemically defined and complex media formulation.	**Exams, Class tests, presentations and Seminars.**
CO-2	Describe Fermentation types, Factors influencing liquid and solid state fermentations; Merits and demerits of different types of fermentations, Inoculums development Development of inoculum for bacterial, yeast and fungal fermentations at industrial level and Microbial growth kinetics.	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-3	Define General characteristics of fermentation modeling; Types of models; Criteria for selection of a suitable model, Immobilized biocatalysts, Immobilization of whole cells, Factors influencing the operational stability of immobilized biocatalyst.	**Exams, Class tests, class assignment, presentations and Seminars.**
CO-4	Demonstrate Biotransformations, Future of biotransformations, Production technology of different types of wines, beer and whisky.	**Class discussion, Class tests, group assignment, presentations and Seminars.**
CO-5	Discuss Baker's yeast; Single cell proteins-production, composition, economic parameters and constraints; Mass cultivation of *Spirulina*; Safety aspects of SCP.	**Class discussion, Class tests, class assignment, presentations and Seminars.**
CO-6	Enlist Production and applications of bioinsecticides, biopesticides and biofertilizers. Fermentative production of liquid fuels-ethanol, acetone and butanol, etc.; Factors affecting production of biofuels.	**Class discussion, Class tests, class assignment, presentations and Seminars.**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: MSc Biotechnology

NAME OF COURSE: Genetic Engineering Sem-2nd

NAME OF FACULTY: Manpreet Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Describe techniques of genetic engineering along with construction and applications of libraries.	**Exams, class assignment, presentations**
CO-2	Summarise different vectors and transformation importance	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-3	Description of recombinant selection and expression, mutagenesis process	**Class tests, Class assignment, presentations and Seminars.**
CO-4	Cloning process in animals, plants and bacteria	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-5	Communicate genetic concepts and experimental results of various genetic techniques through effective written and oral communication	**Viva, quiz, class assignments**
CO-6	Work collaboratively with members of a team in classroom and /or laboratory activities.	**Group discussions, Group projects and group assignments.**

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNAJB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: M.Sc Biotechnology 2nd semester

NAME OF COURSE: Practical Pertaining to theory paper VII and Paper VIII

NAME OF FACULTY: A.P. Parneet Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Demonstrate laboratory scale Bioreactor.	**Viva , quiz .**
CO-2	Perform isolation, extraction and purification of intracellular as well as extracellular bioproducts using various biochemical techniques.	**Lab work**
CO-3	Analyze the thermal death time of *Bacillus staerothermophilus*.	**Lab work**
CO-4	Produce ethanol using free and immobilized cells.	**Lab work**
CO-5	Produce various types of wine using fermentative techniques.	**Lab work**
CO-6	Communicate Bioprocess development related concepts and experimental results through effective written and oral communication.	**Viva, quiz, class assignments**

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BELA ROPAR PUNJAB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: MSc Biotechnology Sem-III

NAME OF COURSE: Enzymology Paper-IX

NAME OF FACULTY: Dr Parvinder Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Describe structure, functions and the mechanisms of action of enzymes.	**Exams, Class tests, class assignment, presentations and Seminars.**
CO-2	Analyze the kinetics of enzyme catalyzed reactions & enzyme inhibitory and regulatory processes.	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-3	Identify and apply wide applications of soluble and immobilized enzymes.	**Exams, Class tests, class assignment, presentations and Seminars.**
CO-4	Design, execute, record and analyze the results of enzymes related experiments using classical techniques , modern instruments and computer softwares.	**Lab work, Computer simulations**
CO-5	Communicate enzymology related concepts and experimental results through effective written and oral communication.	**Viva, quiz, class assignments**
CO-6	Work collaboratively with members of a team in classroom and /or laboratory activities.	**Group discussions, Group projects and group assignments.**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food technology**

NAME OF THE PROGRAMME: **M.Sc. Biotechnology**

NAME OF COURSE: **Environmental Biotechnology (Paper-XI)**

NAME OF FACULTY: **A.P. Navjot Bharti**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Describe introduction of environmental pollutants, environmental applications of biotechnology and principal of treatment.	Seminars, Presentation, class assignment, Exams
CO-2	Explain and discuss microbial transformation of heavy metal ions, bioleaching, biomining and biohydrometallurgy.	MST, University exams, discussion, class test
CO-3	Outline and differentiate the aerobic and anaerobic waste treatment technologies and techniques underpinning the application of these techniques to the environment	Ppt., Assignment, presentation, Oral test
CO-4	Define and explain solid waste treatment methods (land farming, composting, Vermicomposting) and biogas technology, its microbiology, biochemistry, factors, status and production in India.	Home assignment, presentation ,written test, MST, University exams
CO-5	Discuss and define treatment of waste air by bioscrubbers, biotowers and bioventing, biosensors, tranducers, biosensor for heavy metals ions and BOD biosensors.	Discussion ,Home Assignment, Oral presentation
CO-6	Describe construction of biosensors and kits, protein engineering and construction of generic biosensors.	Oral presentation, home assignment, exams

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology & Food Processing /Computer Science**

NAME OF THE PROGRAMME: **M.Sc. Biotechnology/M.Sc. Information Technology**

NAME OF COURSE: **Research Methodology**

NAME OF FACULTY: **Dr. Mamta Arora**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Describe Objectives and types of research (Descriptive Vs. analytical research, applied Vs. fundamental research, qualitative Vs. quantitative research, conceptual versus empirical research)	Exam, Class test, Group discussion
CO-2	Formulate research problem and its necessity	Assignment, Viva, Authentic problem solving
CO-3	Develop the research hypothesis & Research	Rapid fire question, seminar
CO-4	Execute research, observation and collection of data, Compare and contrast methods of data collection, primary data, secondary data; Sampling methods, data processing and analysis, statistical tools, hypothesis testing, generalization and interpretation	Authentic problem solving, Home assignment, field Assignment
CO-5	Appraise Techniques and importance of documentation	Open book exam/Self-Test/ portfolio
CO-6	Critically evaluate different steps in preparation of a written scientific document	Poster presentation, paper presentation

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNJAB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: MSc Biotechnology

NAME OF COURSE: Microbial food Technology Sem-3rd

NAME OF FACULTY: Manpreet Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Describe microbial transformation and pharmaceutical products	**Exams, Class tests, class assignment, presentations**
CO-2	Explain fermentative production of vaccines,food additives and vitamins	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-3	Demonstration about Indian fermented food, dairy products, immobilized cells importance in beer, wine production	**Class tests, Class assignment, presentations and Seminars.**
CO-4	Description of food preservation, waste utilization and regulation authorities	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-5	Identify food concepts and various food productions	**Viva, quiz, class assignments**
CO-6	Work collaboratively with members of a team in classroom and /or laboratory activities.	**Group discussions, Group projects and group assignments.**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: M.Sc Biotechnology Sem -III

NAME OF COURSE: Practical Pertaining to theory paper XI and XII

NAME OF FACULTY: Dr Parvinder Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Perform separation of pesticides, determination of heavy metals ions in industrial effluents, characterization of industrial effluents.	**Lab work**
CO-2	Evaluate BOD, COD and microbiological analysis of waste water.	**Lab work**
CO-3	Identify and enlist various ISO certified companies in India	**Project assignments**
CO-4	Perform national patent search from patent database using computers.	**Computer simulation**
CO-5	Carry out internet surveys on Biotechnological industries in Punjab and India	**Computer and assignment**
CO-6	Communicate enzymology related concepts and experimental results through effective written and oral communication.	**Viva, quiz, class assignments**

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNAJB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: M.Sc Biotechnology 2nd year

NAME OF COURSE: Tissue culture technology

NAME OF FACULTY: Mrs.Jaspreet Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Describe history of plant cell culture and animal cell culture.	**Exams, Class tests, class assignment, presentations and Seminars.**
CO-2	Illustrate callus and cell culture ,regeneration and maintenance.	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-3	Explain protoplast culture and fusion, somaclonal variation.	**Exams, Class tests, class assignment, presentations and Seminars.**
CO-4	Discuss animal cell culture ,establishment ,properties of animal cell line.	**Exams, Class tests, class assignment**
CO-5	Demonstrate culture techniques for laboratory and scale up of culture .	**Viva, quiz, class assignments**
CO-6	Enlist applications of somatic cell fusion ,animal,cell culture,stem cell culture ,animal cloning and embryo transfer	**Group discussions, Exams, Class tests.**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology & Food Processing**

NAME OF THE PROGRAMME: **M.Sc. Biotechnology**

NAME OF COURSE: **Research Methodology Paper-XIV**

NAME OF FACULTY: **Dr. Mamta Arora**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Describe Objectives and types of research (Descriptive Vs. analytical research, applied Vs. fundamental research, qualitative Vs. quantitative research, conceptual versus empirical research)	Exam, Class test, Group discussion
CO-2	Formulate research problem and its necessity	Assignment, Viva, Authentic problem solving
CO-3	Develop the research hypothesis & Research	Rapid fire question, seminar
CO-4	Execute research, observation and collection of data, Compare and contrast methods of data collection, primary data, secondary data; Sampling methods, data processing and analysis, statistical tools, hypothesis testing, generalization and interpretation	Authentic problem solving, Home assignment, field Assignment
CO-5	Appraise Techniques and importance of documentation	Open book exam/Self-Test/ portfolio
CO-6	Critically evaluate different steps in preparation of a written scientific document	Poster presentation, paper presentation

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNAJB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **M. Sc. (HONS) Biotechnology**

NAME OF COURSE: **Computer and Biostatistics (Paper XV)**

NAME OF FACULTY: **Love Singla**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Describe the better understanding of the descriptive statistics and measures of association.	Exams, Oral Exams, Quizzes, Home Assignments
CO-2	Justify the basic principles of statistical inference, modelling and testing.	Exams, Oral Exams, Quizzes, Home Assignments, Class Assignments
CO-3	Conclude knowledge to recognize the type of problem they are dealing with and choose appropriate methods for analysing simple biological data sets.	Exams, Oral Exams, Quizzes, Home Assignments, Virtual Labs, Authentic Problem solving
CO-4	Demonstrate to perform the analysis with statistical software.	Exams, Oral Exams, Quizzes, Home Assignments, Authentic Problem solving
CO-5	Devise a general idea of how these methods could be used in practice in the field of biotechnology, drug development and clinical diagnostics and in fundamental academic research.	Exams, Oral Exams, Quizzes, Home Assignments
CO-6	Comprehensive and detailed study of Binomial, poisson and normal distributions.	Exams, Oral Exams, Quizzes, Home Assignments, Virtual Labs, Authentic Problem solving

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: M.Sc Biotechnology

NAME OF COURSE: Fundamentals of Bioinformatics Sem-IV

NAME OF FACULTY: Dr Parvinder Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Describe the contents and properties of the most important bioinformatics databases & perform text- and sequence-based searches, and analyze and discuss the results in light of molecular biological knowledge.	**Exams, Class tests, class assignment, dry lab work**
CO-2	Explain and perform the major steps in pair wise and multiple sequence alignment by dynamic programming and predict the secondary and tertiary structures of protein sequences.	**Exams, Class tests, class assignment, Dry Lab work**
CO-3	Explain the basic principles that underpin Bioinformatics analyses, and apply these principles when analyzing biological data	**Exams, Class tests, class assignment, dry lab experiments on computer**
CO-4	Investigate and analyze biological data using a variety of Bioinformatics tools	**Dry Lab work and class assignments**
CO-5	Interpret correctly the outputs from tools used to analyze biological data and make meaningful predictions from these outputs.	**Lab work , assignments, class tests**
CO-6	Work collaboratively with members of a team in classroom and /or laboratory activities.	**Group discussions, Group projects and group assignments.**

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNAJB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: M.Sc (Hons.)Biotechnology

NAME OF COURSE: Practical Pertaining to theory PAPER XIII and XIV

NAME OF FACULTY: Mrs. Jaspreet Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Prepare medium and callus initiation	**Lab work**
CO-2	Perform callus subculturing from an established callus	**Lab work**
CO-3	Prepare growth curve of mammalian cell line in culture and determination of cell doubling time.	**Lab work**
CO-4	Analyse lymphocyte and monolayer culture technique ,viability test.	**Lab work**
CO-5	Demonstrate orientation to a tissue culture facility	**Viva ,quiz**
CO-6	Produce micropropagation of provided plant material.	**Lab work**

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNAJB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **M. Sc. Biotechnology**

NAME OF COURSE: **PRACTICALS PERTAINING TO (Paper XV & XVI)**

NAME OF FACULTY: **Love Singla**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Practice question based on graphical representation	**Group discussion, Class Assignment**
CO-2	Enumerate the problems based on measures of central tendency & dispersion	**Group discussion, Class Assignment**
CO-3	Calculate the situations based on binomial distributions normal distributions	**Group discussion, Class Assignment**
CO-4	Solve problems based on t, f, z and Chi-square	**Group discussion, Class Assignment**
CO-5	Demonstrate poisson distributions with the help of examples	**Group discussion, Class Assignment**
CO-6	Calculate the problems based on measures of kurtosis.	**Group discussion, Class Assignment**