# Department of Biotechnology

# PROGRAMME OUTCOMES-COURSE OUTCOMES OF M.Sc (5yrs) IntegratedBiotechnology

Department of	After successful completion of 5 year post graduate program a student should be able to
Biotechnology	
Programme	PO-1. Demonstrate, solve and an understanding of major concepts in all disciplines of biotechnology
Outcomes	
	PO-2. Apply knowledge of creativity & innovative thinking, Strategic and entrepreneurship
	PO-3. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the
	results of biological reactions.
	PO-4. Inculcate the scientific temperament in the students and outside the scientific community.
	PO-5. Use modern techniques, latest equipments, Bioinformatic's softwares to analyse and solve problems in
	various courses of biotechnology.
	PO-6. Solve the problem and also think methodically, independently and draw a logical conclusion
	PO-7. Create an awareness of the impact of biotechnology on the environment, society, and development
	outside the scientific community.
	PO-8. Understand, analyse and communicate global, economic and ethical aspects of biotechnology
<b>Programme Specific</b>	PSO-1. Gain the knowledge of biotechnology through theory and practical's.
Outcomes	
	PSO-2. Explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the biochemical reactions.
	PSO-3. Understand good laboratory practices and safety.
	PSO-4. Introduce advanced techniques and ideas required in developing area of biotechnology
	PSO-5. Carry out experiments in the area of organic biochemical analysis, estimation, separation and
	fermentation process
	PSO-6. Work in research and development sector to analyze sequences, detect samples for toxicity
	COURSE OUTCOMES M.Sc (5yrs) Integrated Biotechnology
	Semester-I
Course	Outcomes
	After completion of these courses students will be able to
INBTT-101	CO-1. Understand the chemical composition of biomolecules and bioenergetics
Biomolecules	CO-2. Know about structure, types and importance of carbhohydrates

Structure&	CO-3. Study about the essential and non essential aminoacids, structure of proteins and ramachandran plot
Function	CO-4. Discuss about lipids ,classification and their function
	CO-5. Explain structur, types and function of nucleic acid and build blocks of nucleic acids
INBTT-102	CO-1. Understand the structures, basic components of prokaryotic and eukaryotic cells
Cell biology	CO-2. Know about importance of protein localization, intracellular trafficking and receptor mediated
	endocytosis
	CO-3. Explain the physiology of cell cycle and mechanism of extra & intracellular signaling pathways
	CO-4. Discuss about the biology of cancer and cell death
	CO-5. Demonstrate life cycle, molecular biology of some important pathogens of AIDS, Malaria, Hepatitis,
	Tuberculosis, Filaria and Kala azar
INBTT-103	CO-1. Understand the nomenclature, classification and substitution reactions of halogen compounds.
Organic Chemistry	CO-2. Study about the structures, nomenclature, types and properties of hydroxyl compounds (alcohols).
	CO-3. Explain about preparation and properties of phenols including their reactions.
	CO-4. Explain the preparation of esters and ethers by different nomenclature along with their properties.
	CO-5.Illustrate the synthesis of different compounds like acetic acids, carboxylic acids, etcby carbanions
INBTT-104	CO-1. Know about poetry
English-I	CO-2. Understand about spoken english
	CO-3. Discuss about reading and writing short stories
	CO-4. Learn about one act play
	CO-5.Describe about letter writing and correction of sentences
	Semester-II
INBTT-201	CO-1. Explain about primary root and shoot tissues, tissue systems
Plant and Animal	CO-2. Study about structural modification of Shoot and root systems
Anatomy	CO-3. Demonstrate digestive system, respiratory system in vertebrates and compare from pisces to mammals
	CO-4.Illustrate on comparative anatomical features of circulatory and endocrine system in vertebrates
	CO-5. Study about the general account of wood structure and comparative study of reproductive system
	pisces to mammals
INBTT-202	CO-1. Know about History of Genetics and Mendelian laws
Genetics	CO-2. Study about Linkage & Crossing over, types and importance
	CO-3. Discuss about Blood group inheritance and Fine structure of gene operon concept
	CO-4.Explain sex determination mechanism
	CO-5. Understand about Chromosomal aberrations & human diseases

INBTT-203	CO-1. Write the classification of bacteria according to Bergey's manual
Microbiology	CO-2. Differentiate between different forms of virus and their cultivation methods
	CO-3. Demonstrate various methods of sterilization and cultivation of microbes
	CO-4. Explain Production, mode of action of toxins and their role in virulence.
	CO-5. Understand the mode of action of antibiotics
INBTT-204	CO-1 Know about poetry
English-II	CO-2. Understand about spoken english
	CO-3. Discuss about reading and writing short stories
	CO-4 Describe about communicative skills
	CO-5 Learning about written communicative skills
	Semester-III
INBTT-301	CO-1, know about biological importance of water and bonding types
Biophysical	CO-2. Study about Redox reactions and types of electrodes. Henderson-Hasselbalch equation and buffer
Chemistry	action and their importance in biological systems
C	CO-3. Explain about microscopy technique and its types
	CO-4. Study the working principle and applications of UV- Visible, NMR spectrophotometry, Circular
	dichroism (CD). X-ray diffraction and Mass spectrometry
	CO-5. Define radioactivity, detect and measure of radioactivity with Geiger Counters. Liquid scintillation
	counter, gamma ray and autoradiography
INBTT-302	CO-1. Know about Importance of water to plant life and Mechanism of transpiration and stomatal movement
Plant and Animal	CO-2. Understand about Photosynthesis and Respiration
Physiology	CO-3. Study about digestive, circulatory and respiratory mechanisms
	CO-4. Explain Structure of neuron, Axons and sensory systems-Hearing, taste, smell & visual receptors,
	action potential and synaptic transmission
	CO-5. Understand basic mechanism of hormone action and neuroendocrine regulation
INBTT-303	CO-1. Study about cell disruption method, types and its importance
Analytical	CO-2. Explain about concentration & separation of biomolecules
Techniques	CO-3. Understand centrifugation types and its importance
-	CO-4. Discuss Chromatography techniques, types and function
	CO-5 Discuss about electrophoresis and blotting techniques
INBTT-304	CO-1. Understand about Organization and complexity of DNA in Prokaryotes and Eukaryotes

CO-2. Study about replication of Prokaryotes and Eukaryotes
CO-3. Discuss DNA damage and repair mechanism, -Homologous and non-homologous recombination
CO-4. Know about transcription in Prokaryotes and Eukaryotes
CO-5. Explain Post transcriptional modifications in Prokaryotes and Eukaryotes
Semester-IV
CO-1. Discuss about Translation mechanism in Prokaryotes and Eukaryotes
CO-2. Study about Post-translational modifications and molecular chaperones
CO-3. Write of regulation of Prokaryotes and Eukaryotes
CO-4. Explain DNA – Protein interaction
CO-5.Understand Regulation of gene expression in prokaryotic and eukaryotic operon
CO-1. Understand the nomenclature, classification and general properties of Enzymes, Michaelis-Menten
equation and Lineweaver-burk plot.
CO-2. Describe different types of Enzyme inhibitions, methods and applications of Immobilized enzymes and
Biosensors.
CO-3. Explain the Introduction, Aerobic and anaerobic pathways of Carbohydrate Metabolism.
CO-4. Demonstrate Lipid Metabolism, Biosynthesis of fatty acids, triacylglycerol, phospholipids and
Cholesterol.
CO-5. Write the general reactions of Aminoacids metabolism, Biosynthesis, degradation of Purines and
Pyrimidines and Genetic errors of metabolism with Representative examples
CO-1. Study about history of Cells and Organs of the Immune system
CO-2. Study about antigens, antibodies and Polyclonal antibodies
CO-3. Explain Hybridoma technology, Antigen and antibody interactions
CO-4. Discuss about Immune effector mechanisms and Major histocompatibility complex
CO-5. Describe Humoral immune response and Cell mediated immune response
CO-1. Study about Modern concept of gene structure and Plasmids – Types, properties, functions
CO-2. Discuss about Transposable elements in prokaryotes and eukaryotes
CO-3. Know about gene transfer methods in bacteria:
CO-4. Explain about Genetic and Physical Mapping
CO-5.Describe Mutations and Mutagenesis
Semester-V
CO-1 Study about Hypersensitivity Immunonathology and Autoimmunity responses
CO-2 Understand Transplantation methodology and Transfusion methods

	CO-3. Discuss about Tumor Immunology and Infection and immunity
	CO-4. Explain Immunization methods and Therapeutic approaches
	CO-5.know about Antibody engineering and Advanced immunological technologies
INBTT-502	CO-1. Know about Microsporogenesis and megasporogenesis
Developmental	CO-2. Study about Fertilization, Endosperm, embryo and its types
Biology	CO-3. Discuss Early embryonic development
	CO-4. Explain Gastrulation in frog and Gastrulation in chick
	CO-5.Describe the Development of placenta, functions & diseases of placenta
INBTT-503	CO-1. Know about History of plant Tissue Culture technique and Composition of commonly used nutrient
Plant and Animal	culture media
Cell Culture	CO-2. Study about Types of cell culture media for plants, ; Preparation and sterilization of cell culture media
	and other reagents
	CO-3. Describe Culture of plant materials, explants culture, subcultuing, Micro propagation and Isolation of
	single cells and Cryopreservation techniques
	CO-4. Understand Animal cell culture and its techniques
	CO-5. Explain Cell culture based vaccines
INBTT-504	CO-1. Isolate genes/ DNA fragment and Enzymes used in molecular cloning.
Genetic Engineering	CO-2. Explain the different types of Cloning vectors and Expression vectors along with Cloning Strategies.
	CO-3. Describe different methods used in introduction of Cloned Genes in to Host cell, Identification and
	characterization of cloned genes.
	CO-4. Write about the PCR amplification, RFLP, RAPD, DNA finger printing and DNA sequencing methods.
	CO-5. Demonstrate different types of mutagenesis and Gene silencing techniques.
	Semester-VI
INBTT-601	CO-1. Know about sterilization techniques and media preparation, Initiation and maintenance of callus and
Plant &	suspension culture, somatic embryogenesis and Somatic hybridization
Agricultural	CO-2. Study about plant transformation techniques and Molecular marker techniques
Biotechnology	CO-3. Explain about transgenic plants, Biotic and abiotic stress tolerant plants
	CO-4. Discuss about Plant secondary metabolites and their pathways
	CO-5.understand the concept of therapeutic proteins and Plantibodies
INBTT-602	CO-1. Understand the Animal cell culture media and reagents, Primary cell culture, secondary cell culture,
Animal	Application of animal cell culture for virus propagation and <i>in vitro</i> testing of drugs.

Biotechnology	CO-2. Discuss on Animal reproductive Biotechnology, Structure of sperms and ova, Artificial insemination
	and Embryo transfer technology.
	CO-3. Explain Transgenic animal technology, Animal cloning, Development of transgenic mice, fishes,
	knockout mice and Applications of biotechnology in animal health.
	CO-4. Demonstrate different Biotechnological applications of Aquaculture, Genetic status and manipulations ir
	gynogenesis, androgenesis, sex reversal and induced breeding in fishes.
	CO-5. Write about the Baculoviruses in biocontrol and foreign gene expression and Pest management using juvenile
	horomone analogues.
INBTT-603	CO-1. Demonstrate different Types, methods for the measurement of pollution and Environmental
Environmental	Monitoring by using biosensors.
Biotechnology	CO-2. Write about the Water pollution & its control, Treatment schemes for waste waters of dairy distillery,
	tannery, Skin & Hide processing, sugar, antibiotic Industries.
	CO-3. Explain concepts & principles of Bioremediation and Microbiology for degradation of xenobiotics in
	environment.
	CO-4. Know Microbes in extreme environment, microbial biofilms, Biofouling & corrosion, antifouling
	paints, Biofertilizers, Biopesticides, Vermiculture.
	CO-5. Understand the microbial groups involved in biogas production & interactions, Biodiversity-levels and
	environmental safety guidelines.
INBTT-604	CO-1.Demonstrate the Isolation, screening, Preservation and maintenance of industrially important
Bioprocess	microorganisms.
Engineering &	CO-2. Explain the Basic principles of design and construction of Bioreactor
Technology	CO-3. Illustrate various Methods for off-line and on-line monitoring of bioreactors
	CO-4. Know Microbial Production of Alcohols & Beverages: Wine, beer, ethanol & acetone-butanol and
	other industrially important microorganisms
	CO-5.Understand the concepts of Food Spoilage and Preservation
	Semester-VII
INBTT-701	CO-1.
Community Project	CO-2.
	CO-3.
	CO-4.
	CO-5.
INBTT-702	CO-1. Discuss various methods of identification of organisms in spoiled food.

Functional Foods &	CO-2. Explain the Food Processing Principles, methods and food processing aids						
Neutraceuticals	CO-3.Know about cultivation of marine macro-algae for agar, alginates and other products of commercial						
	importance.						
	CO-4. Development of Genetically modified foods, designer foods, Functional foods and nutraceuticals, and						
	their detection approaches						
	CO-5.Understand the status of food processing industries and Food quality management						
INBTT-703	CO-1. Explain the types, quality of research and steps in scientific research						
Research	CO-2. Understand and formulate the research problem						
Methodology	CO-3. Write characteristics of a good sample design						
	CO-4. Distinguish between measures of central tendency and measures of dispersion						
	CO-5. Write research reports according to journal format publications						
INBTT-704	CO-1.						
Project	CO-2.						
	CO-3.						
	CO-4.						
	CO-5.						
	Semester-VIII						
INBTT-801							
Project Phase-II							
INBTT-802							
<b>Project Presentation</b>							
	Semester-IX						
INBTT-901	CO-1. Understand the measures of central tendency and methods of sampling						
<b>Biostatistics</b> and	CO-2. Study the importance of databases and identify their domains						
Bioinformatics	CO-3. Identify various sequence alignments methods and distinguish between Homology, Phylogeny and						
	evolutionary tree						
	CO-4. Explain the computer analysis of nucleic acid structure, Handling of available software on enzyme						
	kinetics and protein sequencing analysis						
	CO-5. Know the concept of molecular modeling of drugs with target validation by docking studies						
INBTT-902	CO-1. Know about Central nervous system and Autonomic nervous system						
Neurobiology	CO-2. Explain Synapses and its types, Neurotransmitters						

	CO-3. Discuss about Environmental factors affecting neural system and Neurological disturbances due to					
	altered environment					
	CO-4. Describe Neurobiology of Learning and Memory, types and importances					
	CO-5.Understand about Neurological diseases and Strategies for the treatment of neurodegenerative					
	disorders- Nanotherapeutics.					
INBTT-903	CO-1. Study the Introduction to Genomics, Proteomics and Transcriptomics, DNA sequencing, Tools for					
Genomics and	genome analysis, and Human Genomic Project.					
Proteiomics	CO-2. Understand the Accessing and retrieving genome project information from web; Comparative					
	genomics and different genome Mapping methods.					
	CO-3. Explain Proteomics and Transcriptomics, Properties of proteins, 2D electrophoresis of proteins, Mass					
	Spectrometry, MALDI-TOF ESI.					
	CO-4. Demonstrate different mechanisms of protein folding, tertiary folds and methods for protein-protein					
	interaction analysis.					
	CO-5. Write the Protein sequencing, Protein modifications and proteomics, Protein engineering and Clinical					
	application of proteomics.					
INBTT-904	CO-1. Study the causes of cancer, different forms of cancer, cell proliferation, Death and differentiation					
Cancer Biology	CO-2. Compare between Chemical carcinogenesis, Genotoxic carcinogenesis, Nongenotoxic carcinogenesis,					
	and Radiation Carcinogenesis					
	CO-3. Define Oncogenes and further Identification of Oncogene products					
	CO-4. Know different forms of therapy, Chemo therapy-Alkyloting agents, Radiotherapy and Hormone					
	therapy					
	CO-5. Understand the approaches to Cancer prevention with Diet					
	Semester-X					
INBTT-1001	CO-1. Understand the current status & future prospects of Biopharmaceuticals					
Medical &	CO-2. Study the Pharmcodynamic and Pharmcokinetic properties of the drug					
Pharmaceutical	CO-3. Explain about Immunostimulants for vaccines and tumor therapy					
Biotechnology	CO-4. Discuss on the role of biopharmaceuticals in treatment of various health disorders					
	CO-5. Define Biopharming and know about DNA fingerprinting uses in forensic science					
INBTT-1002	CO-1. Know about nanobiotechnology, Nanomaterials and synthesis of Nanomaterials					
Nanobiotechnology	CO-2. Study about the Characterization Techniques of nanoparticles					
	CO-3. Explain about applications of Nanomaterials for diagnostics, drug delivery					

	CO-4. Understand about the application of nanobiotechnology in food industries
	CO-5.Describe Environmental, ecological and health hazards of nanoparticles
<b>INBTT-1003</b>	CO-1. Know about gene therapy and Overview of inherited and acquired diseases for gene therapy
Molecular	CO-2. Understand about embryonic and adult stem cells
therapeutics	CO-3. Explain Clinical applications of recombinant technology
	CO-4. Study about Antisense therapy and Tissue and organ transplantation
	CO-5.describe Liposome and nanoparticles mediated gene delivery and Ethical issues
<b>INBTT-1004</b>	CO-1. Discuss about biosafety, socio – economic, legal and ethical impacts of biotechnology
Innovation,	CO-2. Develop business Plan, qualities of a successful entrepreneur and built Entrepreneurial ecosystem
Bioentrepreneurship	CO-3. Know Franchising Enterpreneurship opportunities for Enthusiastic young Women Biotechnologists
and IPR	CO-4. Explain the Importance of Finance for Bio business –Sectorial support by Government of India -
	policies, and frameworks
	CO-5. Learn Environmental Biotechnology, Applications form and Procedures-Patent cost and Values

## M. Sc BIOTECHNOLOGY PROGRAM OUTCOMES (PO) – COURSE OUTCOMES (CO) MAPPING YEAR - I SEMESTER – I (H- High; M- Medium; L - Low)

INBTT-101	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Biomolecules	CO101.1	Н	L	Μ	Н	Μ	L	Μ	Μ
Structure&									
Function	CO101.2	Н	Н	Н	Н	Н	Μ	Н	Н
	CO101.3	Н	Н	Н	Н	Н	Н	Н	Н
	CO101.4	Н	Μ	$\mathbf{M}$	Μ	Н	Μ	Н	Н

	CO101.5	Н	Μ	Μ	Н	Н	Н	Н	Н
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INBTT-102	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Cell biology	CO102.1	Н	Μ	Μ	Н	Μ	Н	Μ	Н
	CO102.2	Н	Н	L	Μ	Н	Μ	М	М
	CO102.3	Н	Μ	Н	Н	Μ	L	L	Μ
	CO102.4	Н	Μ	Μ	Μ	Н	Μ	Μ	Μ
	CO102.5	Н	Η	Н	Н	Н	Н	Н	Μ

INBTT-	СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
103	CO103.1	Н	Н	Н	H	H	Н	Н	Η
Organic									
Chemistry	CO103.2	Н	Н	Н	Н	Н	Н	Н	Н
	CO103.3	Н	Н	Н	Н	Н	Н	Н	Н
	CO103.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO103.5	Н	Н	Н	Н	Н	Н	Н	Н

INBTT-	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
104	CO104.1	Н	Н	Н	Н	Н	Н	Н	Н
English-I									
0	CO104.2	Н	Н	Н	Н	Н	Н	Н	Н

CO104.3	Н	Н	Н	Н	Н	Н	Н	Н
CO104.4	Н	Н	Н	Н	Н	Н	H	Н
CO104.5	Н	Н	Н	H	Н	Н	H	Н

#### Semester-II

INBTT-201	СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
Plant and	CO201.1	Η	Μ	Μ	Μ	Μ	Μ	Μ	Μ
Animal									
Anatomy	CO201.2	Η	Μ	Μ	Μ	Μ	Μ	Μ	Μ
	CO201.3	Н	Μ	Μ	Μ	Μ	Μ	Μ	Μ
	CO201.4	Η	Μ	Μ	Μ	Н	Μ	Μ	Μ
	CO201.5	Μ	Μ	Μ	Μ	Μ	Μ	Μ	Μ

INBTT-202	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Genetics	CO202.1	Н	Μ	Μ	Μ	Μ	Μ	Μ	Μ
	CO202.2	Н	Μ	Μ	Μ	Μ	Μ	Μ	Μ

CO202.3	Н	Μ	Μ	M	Μ	Μ	М	Μ
CO202.4	Н	М	М	М	Н	Μ	М	Μ
CO202.5	Н	Μ	Μ	Μ	Μ	Μ	Μ	М

INBTT-203	СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
Microbiology	CO203.1	Н	Μ	L	Н	Н	L	M	Μ
	CO203.2	Н	Н	Н	Н	Н	Μ	H	Н
	CO203.3	Н	Н	Н	Н	Н	Н	Н	Н
	CO203.4	Н	Μ	Μ	Μ	Н	Μ	Н	Н
	CO203.5	Η	Н	Н	Н	Н	Н	Н	Н

INBTT-204	CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
English-II	CO204.1	Н	Н	Н	Н	Н	Н	Н	Н
	CO204.2	Н	H	Н	Н	Н	Н	Н	Н
	CO204.3	Н	H	Н	Н	Н	Н	Н	Н
	CO204.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO204.5	Н	H	Н	Н	Н	Н	Н	Н

#### Semester-III

INBTT-301	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Biophysical	CO301.1	Н	Μ	Μ	Μ	Н	Μ	Н	Н
Chemistry									
	CO301.2	Н	Μ	Μ	Μ	Μ	Μ	Μ	Μ
	CO301.3	Н	Н	Н	Н	Н	Н	Н	Н
	CO301.4	Н	Н	Н	Н	Н	Μ	Н	Н
	CO301.5	Н	Н	Н	Н	Н	Н	Н	Н

INBTT-302	СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
Plant and	CO302.1	Н	Μ	Μ	Μ	Μ	Μ	Μ	Μ
Animal									
Physiology	CO302.2	Η	Μ	Μ	Μ	Μ	Μ	Μ	Μ
	CO302.3	Η	Μ	Μ	Μ	Μ	Μ	Μ	Μ
	CO302.4	Η	Μ	Μ	Μ	Η	Μ	Μ	Μ
	CO302.5	Η	Μ	Μ	Μ	Μ	Μ	Μ	Μ

INBTT-303	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Analytical	CO303.1	Н	Н	H	Η	Η	Η	H	Η
Techniques									
-	CO303.2	Н	Н	Н	Н	Н	Н	Н	Н

CO303.3	Н	Н	Н	Н	Н	Н	Н	Н
CO303.4	Н	Н	Н	Н	Н	Н	Н	Н
CO303.5	Н	Н	Н	Н	Н	Н	Н	Н

INBTT-304	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>
Molecular	CO304.1	Н	Н	Н	Н	Н	Н	Н	Н
<b>Biology-I</b>									
	CO304.2	Н	Н	Н	Н	Н	Н	Н	Н
	CO304.3	Н	Н	Н	Н	Н	Н	Н	Н
	CO304.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO304.5	Н	Н	Н	Н	Н	Н	Н	Н

#### Semester-IV

INBTT-401	СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
Molecular	CO401.1	Н	Н	Н	H	Н	Н	H	Η
Biology-II									
	CO401.2	Н	Η	H	H	H	Η	H	H

CO401.3	Н	Н	Н	Н	Н	Н	Н	Н
CO401.4	Н	Н	Н	Н	Н	Н	Н	Н
CO401.5	Н	H	Н	Η	H	Η	Н	Н

INBTT-402	СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
Enzymology	CO402.1	Н	Μ	Μ	Μ	Н	Μ	Μ	Μ
&									
Metabolism	CO402.2	Н	Н	Н	Н	Н	Н	H	Μ
	CO402.3	Η	Μ	Μ	Μ	Μ	Μ	Μ	Μ
	CO402.4	$\mathbf{H}$	Μ	Μ	Μ	Μ	Μ	H	H
	CO402.5	$\mathbf{H}$	Μ	Μ	Μ	H	Μ	H	H

INBTT-403	СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
Principles of	CO403.1	Н	Μ	Μ	Н	Н	Μ	Н	Н
Immunology									
	CO403.2	Н	Н	Н	H	Н	Н	Н	Н
	CO403.3	Н	H	Η	H	Η	Η	Μ	Μ
	CO403.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO403.5	Н	Н	Н	Н	Н	Н	Н	Н

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Molecular Genetics	CO404.1	Н	М	М	М	М	М	М	М
Genetics	CO404.2	Н	М	М	М	М	М	М	М
	CO404.3	Н	М	М	М	М	М	М	M
	CO404.4	Н	M	Μ	M	Н	Μ	M	Μ
	CO404.5	Н	M	Μ	M	Μ	Μ	M	M

#### Semester-V

INBTT-501	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Immunotechnology	CO501.1	Н	Н	Н	Н	Н	H	Н	Н
	CO501.2	Η	Η	Η	Η	Η	Η	Η	Η
	CO501.3	Н	Н	Н	Н	Н	Н	Н	Н
	CO501.4	Н	Н	Н	H	H	H	Η	Η
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	CO501.5	Н	Н	Н	H	H	H	Н	Н

INBTT-502	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Developmental	CO502.1	Н	Μ	Μ	Μ	Μ	Μ	Μ	Μ
Biology									
	CO502.2	Н	Μ	Μ	Μ	Μ	Μ	Μ	Μ

CO502.3	Н	М	Μ	М	M	М	M	M
CO502.4	Н	Μ	Μ	Μ	Н	Μ	Μ	Μ
CO502.5	Н	Μ	Μ	Μ	Μ	Μ	Μ	М

INBTT-503	СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
Plant and	CO503.1	Н	Н	Н	Н	Н	Н	Н	H
<b>Animal Cell</b>									
Culture	CO503.2	Н	Η	Н	Н	Н	Н	Н	H
	CO503.3	Η	Η	Η	Η	Η	Η	H	H
									<u> </u>
	CO503.4	$\mathbf{H}$	H	Η	H	Η	$\mathbf{H}$	H	H
	CO503.5	$\mathbf{H}$	H	Η	H	Η	$\mathbf{H}$	H	H
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INBTT-504	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Genetic	CO504.1	Н	Н	Н	Н	Н	Н	Н	Н
Engineering									
	CO504.2	Н	Н	H	Н	Н	Н	Н	Н
	CO504.3	H	Η	Η	Η	Η	Н	Η	H
	CO504.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO504.5	Н	Н	Н	Н	Н	Н	Н	Н

### Semester-VI

INBTT-601	СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
Plant &	CO601.1	Н	Н	Н	Н	Н	Н	Н	Η
Agricultural									
Biotechnology	CO601.2	Н	H	Н	Н	Η	H	Н	Η
	CO601.3	Н	H	Н	Н	Η	H	Н	Η
	CO601.4	$\mathbf{H}$	Μ	Μ	H	Η	H	Η	Η
	CO601.5	Н	Η	Н	H	Η	Η	H	Η

INBTT-602	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Animal	CO602.1	Н	Н	Н	Н	Н	Н	Н	Н
Biotechnology									
	CO602.2	Н	Н	Н	Н	Н	Н	Н	Н
	CO602.3	Н	Н	Н	Н	Н	Н	Н	Н
	CO602.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO602.5	Н	Н	Н	Н	Н	Н	Н	Н

INBTT-603	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>
Environmental	CO603.1	Н	Н	Н	Н	Н	Н	Н	H

Biotechnology	CO603.2	Н	Н	Н	Н	Н	Н	Н	Н
	CO603.3	Н	H	Н	Н	Н	Н	Н	Н
	CO603.4	Н	H	Н	Н	Н	Н	Н	Н
	CO603.5	Н	Н	Н	Н	Н	Н	Н	Н

INBTT-604	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Bioprocess	CO604.1	Н	Н	Н	Н	Н	Н	Н	Н
Engineering									
&	CO604.2	Н	Н	Н	Н	Н	Н	Н	Н
Technology									
	CO604.3	Н	Н	Н	Н	Н	Н	Н	Н
	CO604.4	$\mathbf{H}$	$\mathbf{H}$	$\mathbf{H}$	Η	$\mathbf{H}$	$\mathbf{H}$	Η	$\mathbf{H}$
	CO604.5	Η	Η	Н	Н	$\mathbf{H}$	Н	Η	$\mathbf{H}$

Semester-VII

INBTT-701	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Community	CO701.1	Н	Н	Н	Н	Н	Н	Н	Н
Project									
	CO701.2	Н	Н	Н	Н	Н	Н	Н	Н

CO701.3	Н	Н	Н	Н	Н	Н	Н	Н
CO701.4	Н	Н	Н	Н	Н	Н	Н	Η
CO701.5	Н	Н	Н	Н	Н	Н	Н	Н

INBTT-702	CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Functional	CO702.1	Н	Н	Н	Н	Н	Н	Н	Н
Foods &									
Neutraceuticals	CO702.2	Н	Н	$\mathbf{H}$	Η	Η	Н	Η	Η
	CO702.3	Н	Н	$\mathbf{H}$	Η	Η	Н	Н	Η
	CO702.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO702.5	Н	Н	Н	Н	Н	Н	Н	Н

INBTT-703	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Research	CO703.1	Н	Н	Н	Н	Н	Н	Н	Н
Methodology									
	CO703.2	Н	Н	Н	Н	Н	Н	Н	Н
	CO703.3	Н	Н	Н	Н	Н	Н	Н	Н
	CO703.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO703.5	Н	Н	Н	Н	Н	Н	Н	Н

	INBTT-704	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>
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Project	CO704.1	Н	Н	Н	Н	Н	Н	Н	Н
	CO704.2	Н	Н	Н	Н	Н	Н	H	Н
	CO704.3	Н	Н	Н	Н	Н	Н	H	Н
	CO704.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO704.5	Н	Н	Н	Н	Н	Н	Н	Н

#### Semester-VIII

BTT-801	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
	CO801.1	Н	Н	Н	Н	Н	Н	Н	Н
Project 1	CO801.2	Н	Н	Н	Н	Н	Н	Н	Н
	CO801.3	Н	Н	Н	Н	Н	Н	Н	Н
	CO801.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO801.5	Н	Н	Н	Н	Н	Н	Н	Н

BTT-802	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Project 11	CO802.1	Н	Н	Н	Н	Н	Н	Н	Н
	CO802.2	Н	Н	Н	Н	Н	Н	Н	Н

CO802.3	Н	Н	Н	Н	Н	Н	Н	Н
CO802.4	Н	Н	Н	H	H	Н	Н	Η
CO802.5	Н	Н	Н	H	H	Н	Н	Η

### Semester-XI

INBTT-901	СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
<b>Biostatistics</b>	CO901.1	Н	Н	Н	Н	Н	Н	Н	Н
and									
<b>Bioinformatics</b>	CO901.2	$\mathbf{H}$	H	Η	H	H	Η	Η	Н
	CO901.3	$\mathbf{H}$	H	Η	H	H	Η	Η	Н
	CO901.4	$\mathbf{H}$	H	Η	H	H	Η	Η	Н
	CO901.5	Н	H	Н	Н	Н	Н	Н	Н

INBTT-902	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Neurobiology	CO201.1	Н	Μ	Μ	Μ	Μ	Μ	Μ	Μ
	CO201.2	Н	М	М	М	М	М	М	М

CO201.3	Н	М	Μ	Μ	M	Μ	М	Μ
CO201.4	Н	М	Μ	Μ	Н	М	М	Μ
CO201.5	Н	Μ	Μ	Μ	Μ	Μ	Μ	М

INBTT-903	СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
Genomics	CO903.1	Н	Н	Н	Н	Н	Н	Н	Н
and									
Proteiomics	CO903.2	$\mathbf{H}$	H	Η	H	Η	$\mathbf{H}$	H	H
	CO903.3	Н	H	H	H	Η	$\mathbf{H}$	Η	Η
	CO903.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO903.5	Н	Н	Н	Н	Н	Н	Н	Н

INBTT-904	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Cancer	CO904.1	Н	Н	Н	Н	Н	Н	Н	Н
Biology									
	CO904.2	Н	Н	Н	Н	Н	Н	Н	Н
	CO904.3	Н	H	H	H	H	Η	H	$\mathbf{H}$
	CO904.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO904.5	Н	Н	Н	Н	Н	Н	Н	Н

Semester-2	X
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<b>INBTT-1001</b>	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Medical &	CO1001.1	Н	Н	Н	Н	H	Н	H	Н
Pharmaceutical									
Biotechnology	CO1001.2	Η	H	Η	H	H	Η	Η	Н
	CO1001.3	Η	H	Η	H	H	Η	Η	Н
	CO1001.4	Η	H	Η	H	H	Η	Η	Н
	CO1001.5	Н	Н	Н	Н	Н	Н	Н	Н

INBTT-1002	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Nanobiotechnology	CO1002.1	Н	Н	Н	Н	Н	Н	Н	Н
	CO1002.2	Η	Н	Η	Н	Н	Η	Н	Н
	CO1002.3	Η	Н	Η	Н	Н	Η	Н	Н
	CO1002.4	Н	Н	Н	Н	Н	Н	Н	Н
	CO1002.5	Η	Н	Η	Н	Н	Η	Н	Н

<b>INBTT-1003</b>	СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8
Molecular	CO1003.1	Н	Η	Н	Η	Н	Н	Η	Н
therapeutics	CO1003 2	п	u	п	и	U	U	п	п
	CO1003.2	п	п	п	п	п	п	п	п

CO1003.3	Н	Н	Н	Н	Н	Н	Н	Н
CO1003.4	Н	Н	Н	Н	Н	Н	Н	Н
CO1003.5	Н	Н	Н	Н	Н	Н	Н	Н

INBTT-1004	СО	<b>PO1</b>	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>
Innovation,	CO1004.1	Н	Н	Н	Н	Н	Н	Н	Н
Bioentrepreneurship									
and IPR	CO1004.2	H	H	H	H	Н	H	H	H
	CO1004.3	$\mathbf{H}$	H	H	H	$\mathbf{H}$	H	Η	H
	CO1004.4	Н	Η	Η	Η	Н	Η	Η	H
		Н	H	H	H	Н	H	H	H