

Discipline: Biotechnology	Semester: 5th		Name of the teaching faculty: JYOTI PATRA & POONAM PANDA
Subject:TH 1 Entrepreneurship and Management & Smart Technology	No. of Days/per week class allotted: 4		From Date: 01-08-2023 To 30-10-2023 No.of Weeks: 15
Week	SN	Class Day	Theory Topics
	UNIT 1:- Entrepreneurship [10 Periods]		
1st	1	1 st	Concept and need of Entrepreneurship
	2	2 nd	Characteristics and Qualities of entrepreneur
	3	3 rd	Types and Functions of entrepreneur
	4	4 th	Barriers in entrepreneurship,Entrepreneurs vs. Manager
2nd	5	1 st	Forms of Business Ownership: Sole proprietorship, partnership forms and others
	6	2 nd	Forms of Business Ownership: others
	7	3 rd	Types of Industries, Concept of Start-ups
	8	4 th	Entrepreneurial support agencies at National, State, District Level: DIC, NSIC,OSIC
3rd	9	1 st	Entrepreneurial support agencies: SIDBI, NABARD, Commercial Banks, KVIC etc
	10	2 nd	Technology Business Incubators and Science and Technology Entrepreneur Parks
	UNIT 2:- Market Survey and Opportunity Identification (Business Planning) [8 Periods]		
	11	3 rd	Business Planning
	12	4 th	SSI, Ancillary Units, Tiny Units, Service sector Units
4th	13	1 st	Time schedule Plan for Project Implementation
	14	2 nd	Agencies to be contacted for Project Implementation
	15	3 rd	Assessment of Demand and supply
	16	4 th	Potential areas of Growth
5th	17	1 st	Identifying Business Opportunity
	18	2 nd	Final Product selection
	UNIT 3:- Project report Preparation [4 Periods]		
	19	3 rd	Preliminary project report
	20	4 th	Detailed project report
6th	21	1 st	Techno economic Feasibility
	22	2 nd	Project Viability
	UNIT 4:- Management Principles [5 Periods]		
	23	3 rd	Definitions of management
	24	4 th	Principles of management

7th	25	1 st	Functions of management (planning, organising, staffing)
	26	2 nd	Functions of management (directing and controlling etc.)
	27	3 rd	Level of Management in an Organisation
	UNIT 5:- Functional Areas of Management [10 Periods]		
8th	28	4 th	a) Production management:Functions, Activities,Productivity,Quality control
	29	1 st	Production Planning and control
	30	2 nd	b) Inventory Management:Need and Techniques of Inventory management
	31	3 rd	c) Financial Management:Functions,Management of Working capital,Costing
9th	32	4 th	Break even Analysis,Brief idea about Accounting Terminologies
	33	1 st	d) Marketing Management:Concept of Marketing and Marketing Management
	34	2 nd	Marketing Techniques (only concepts), Concept of 4P's
	35	3 rd	e) Human Resource Management:Functions of Personnel Management
10th	36	4 th	Manpower Planning, Recruitment, Sources of manpower, Selection process,
	37	1 st	Method of Testing, Methods of Training & Development, Payment of Wages
	UNIT 6:-Leadership and Motivation [6 Periods]		
	38	2 nd	Leadership :Definition and Need/Importance,Qualities and functions of a leader
	39	3 rd	Manager Vs Leader,Style of Leadership (Autocratic, Democratic, Participative)
11th	40	4 th	b) MotivationDefinition and characteristics,Importance, Factors affecting motivation
	41	1 st	Theories of motivation (Maslow),Methods of Improving Motivation
	42	2 nd	Importance of Communication in Business
	43	3 rd	Types and Barriers of Communication
	UNIT 7:- Work Culture, TQM & Safety [5 Periods]		
12th	44	4 th	Human relationship and Performance in Organization
	45	1 st	Relations with Peers, Superiors and Subordinates
	46	2 nd	TQM concepts: Quality Policy, Quality Management, Quality system
	47	3 rd	Accidents and Safety, Cause, preventive measures
	48	4 th	General Safety Rules , Personal Protection Equipment(PPE)

13th	UNIT 8:- Legislation [6 Periods]		
	49	1 st	a)Intellectual Property Rights(IPR),
	50	2 nd	Patents
	51	3 rd	Trademarks
14th	52	4 th	Copyrights
	53	1 st	b) Features of Factories Act 1948 with Amendment (only salient points)
	54	2 nd	c) Features of Payment of Wages Act 1936 (only salient points)
	UNIT 9:- Smart Technology [6 Periods]		
	55	3 rd	Concept of IOT, How IOT works
15th	56	4 th	Components of IOT, Characteristics of IOT
	57	1 st	Categories of IOT
	58	2 nd	Applications of IOT- Smart Cities, Smart Transportation
	59	3 rd	Applications of IOT- Smart Home, Smart Healthcare, Smart Industry,
60	4 th	Applications of IOT- Smart Agriculture, Smart Energy Management etc.	

DISCIPLINE: BIOTECHNOLOGY	SEMESTER:5th	NAME OF THE TEACHING FACULTY: SWETANGINI NAIK
SUBJECT: (TH-2) Genetic Engineering	NO. OF DAYS/PER WEEK CLASS ALLOTTED:4	FROM DATE: 01-08-2023 TO DATE: 30-10-2023 NO OF WEEK: 15
WEEK:	CLASS DAY:	THEORY/PRACTICAL TOPICS:
1 st	1 st	1.1 Concept of Genetic Engineering.
	2 nd	Genes
	3 rd	Genome
	4 th	RDT, Basic steps of RDT.
2 nd	1 st	RDT, Basic steps of RDT.
	2 nd	Tools of RDT
	3 rd	Discussion about Restriction Endo nuclease enzyme.
	4 th	Discussion about Restriction Endo nuclease enzyme.
3 rd	1 st	Ligase enzyme and ligation
	2 nd	Plasmid
	3 rd	DNA modifying enzymes
	4 th	necessary role of RDT.
4 th	1 st	Application of RDT
	2 nd	Application of RDT
	3 rd	Vector system
	4 th	2.1 Gene cloning Vectors.
5 th	1 st	Gene cloning Vectors.
	2 nd	Gene cloning Vectors.
	3 rd	Plasmids and their properties.
	4 th	Plasmids and their properties.
6 th	1 st	Bacteriophage
	2 nd	Bacteriophage vectors for E. coli.
	3 rd	Bacteriophage vectors for E. coli.
	4 th	Life cycle of M13
7 th	1 st	Life cycle of M13
	2 nd	lambda phage in E. coli.
	3 rd	lambda phage in E. coli.
	4 th	Cosmids
8 th	1 st	Cosmids
	2 nd	Shuttle Vectors
	3 rd	Shuttle Vectors
	4 th	YAC vectors.
9 th	1 st	YAC vectors.
	2 nd	3.1 Integration of DNA insert in to vector.
	3 rd	Integration of DNA insert in to vector.

	4 th	Linkers
10 th	1 st	Linkers
	2 nd	adaptors
	3 rd	Homo polymer tailing.
	4 th	Homo polymer tailing.
	1 st	cDNA and Genomic Libraries.
11 th	1 st	cDNA and Genomic Libraries.
	2 nd	Introduction of foreign DNA into host cells.
	3 rd	Transformation- Griffith Effect, Infection, Transfection.
	4 th	Sequence based screening – colony hybridization
12 th	1 st	Sequence based screening – colony hybridization
	2 nd	Sequence based screening – colony hybridization
	3 rd	Chromosome walking
	4 th	Chromosome walking
13 th	1 st	Concept of chromosome Jumping
	2 nd	Concept of chromosome Jumping
	3 rd	Screening by PCR
	4 th	Screening by PCR
14 th	1 st	Gene Tagging
	2 nd	Blotting Techniques (Southern & Western blotting)
	3 rd	Blotting Techniques (Southern & Western blotting)
	4 th	Genetic finger printing.
15 th	1 st	Microarray Technology.
	2 nd	Different molecular genetic marker RFLP,RAPD only
	3 rd	Different molecular genetic marker RFLP,RAPD only
	4 th	Revision and Class test

DISCIPLINE: Biotechnology	SEMESTER:5th Sem	NAME OF THE TEACHING FACULTY: Sunil Biswajit Maharana
SUBJECT: (Th. 3) PLANT BIOTECHNOLOGY	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:04	FROM DATE: 01-08-2023 TO DATE: 30-10-2023 NO. OF WEEKS:15
WEEK	CLASS DAY	THEORY/ PRACTICAL TOPICS
1 st	1 st	1.1 What is Biotechnology.
	2 nd	1.1 Concept of Plant Biotechnology.
	3 rd	1.1 Concept of Plant Biotechnology.
	4 th	1.2 What is plant Tissue culture.
2 nd	1 st	1.2 Tissue culture laboratory .
	2 nd	1.2 Tissue culture laboratory (Equipments).
	3 rd	1.2 Tissue culture laboratory (glass wares).
	4 th	1.2 Tissue culture laboratory (chemicals).
3 rd	1 st	1.2 Tissue culture (Equipments, glass wares & chemicals)& sterilization.
	2 nd	1.3 What is Sterilization?
	3 rd	1.3 What is Aseptic condition?
	4 th	1.3 How to maintain Sterilization & Aseptic condition.
4 th	1 st	1.4 Applications of plant tissue culture.
	2 nd	1.4 Applications of plant tissue culture.
	3 rd	1.4 Applications of plant tissue culture.
	4 th	2.1 What is culture media?
5 th	1 st	2.1Types of culture media.
	2 nd	2.1preparation of culture media.
	3 rd	2.2 What is Callus?
	4 th	2.2 Techniques of callus culture.
6 st	1 st	2.2Different types and nature of Callus.
	2 nd	2.3 What is Protoplast?
	3 rd	2.3 Techniques for Isolation of protoplast.
	4 th	2.3 Techniques for fusion of protoplast.
7 th	1 st	2.3 Culture of protoplast.
	2 nd	2.4 What is Somatic Embryogenesis?
	3 rd	2.4 Protocols for inducing Somatic Embryogenesis.
	4 th	2.4 Importance Somatic Embryogenesis.
8 th	1 st	2.5 What is Single cell culture.
	2 nd	2.5 Methods of Single cell culture.
	3 rd	2.6What is Embryo culture?
	4 th	2.6 Methods of Embryo culture.
9 th	1 st	2.7 What is Somatic hybridization and Cybridization.
	2 nd	2.7 Methods of Somatic hybridization and Cybridization..
	3 rd	2.7 Importance of Somatic hybridization and Cybridization.
	4 th	3.1What is Vector?
10 th	1 st	3.1 Vector mediated Gene transfer.
	2 nd	3.1Mthod of Vector mediated Gene transfer.
	3 rd	3.1 Method of Vector mediated Gene transfer.
	4 th	3.2 What is Agro bacterium..
11 st	1 st	3.2Types of Agro bacterium mediated gene transfer methods.
	2 nd	3.2Types of Agro bacterium mediated gene transfer methods.
	3 rd	3.2 Importance of Agro bacterium mediated gene transfer .

	4 th	3.3 Ti-plasmid & Ri plasmid
12 th	1 st	3.3 Ti-plasmid & Ri plasmid
	2 nd	3.4 What is transgenic plant
	3 rd	3.4 Formation of transgenic plant
	4 th	3.4 Importance of transgenic plant.
13 th	1 st	3.5 Transposon & Transposable elements .
	2 nd	3.5 Transposon & Transposable elements ..
	3 rd	4.1 Flavor ,Savor (tomato)
	4 th	4.1 Flavor ,Savor (tomato)
14 th	1 st	4.1 Application of Flavor ,Savor (tomato).
	2 nd	4.2 What is BT cotton?
	3 rd	4.2 Technique of BT cotton.
	4 th	4.2 Application of BT cotton.
15 th	1 st	4.3 What is BT Brinjal?
	2 nd	4.3 Importance of BT Brinjal
	3 rd	4.4 What is Golden Rice?
	4 th	4.4 Importance of Golden Rice

DISCIPLINE: Biotech	SEMESTER: 5th	NAME OF THE TEACHING FACULTY: Dr. Sasmita Panigrahi
SUBJECT: (Th-4) Biochemistry	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 04	FROM DATE: 01-08-2023 TO DATE: 30-10-2023 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	About organic Chemistry
	2 nd	Basics of Biochemistry
	3 rd	Functions of Carbohydrates
	4 th	Structure and function of monosaccharides
2 nd	1 st	Structure and function of disaccharides
	2 nd	Structure and function of polysaccharides
	3 rd	Proteoglycans
	4 th	Glycoprotein with glycolipids
3 rd	1 st	Some commercially important carbohydrates
	2 nd	Amino acids, Peptides and proteins
	3 rd	Structure and function of amino acids
	4 th	Classification of amino acids
4 th	1 st	Functional group of amino acids
	2 nd	Biological activity of small peptides
	3 rd	Biosynthesis of amino acids
	4 th	Structure and function of protein
5 th	1 st	Different types of protein with respect to their structure and function
	2 nd	Nucleotides and Nucleic Acid
	3 rd	Structure and function of nucleotides
	4 th	Properties of nucleotide bases that affect the structure of nucleic acid
6 th	1 st	Chemistry of nucleic acid
	2 nd	Structure of nucleic acid
	3 rd	Lipids and Fats
	4 th	Storage lipids.
7 th	1 st	Structural lipids
	2 nd	Lipids with specific biological activities
	3 rd	Lipid Bilayer
	4 th	Amphipathic nature of membrane lipids that form the bilayer.
8 th	1 st	Role of lipid in plasma membrane
	2 nd	Function of protein
	3 rd	Nucleotide and nucleoside formation
	4 th	About DNA structure
9 th	1 st	DNA synthesis
	2 nd	RNA structure
	3 rd	RNA synthesis
	4 th	Protein synthesis
10 th	1 st	Chemistry of nucleic acid
	2 nd	Properties of nucleotide bases
	3 rd	Structure of nucleic acid
	4 th	Test 1

11 th	1 st	Storage lipid & Distructural lipids
	2 nd	Biological function of lipid
	3 rd	Test 2
	4 th	Plasma membrane structure
12 th	1 st	Plasma membrane functions
	2 nd	Cell and biosynthesis
	3 rd	Amphipathic nature of membrane
	4 th	Adipose tissuer
13 th	1 st	Fat biosynthesis
	2 nd	Mono- glycerides & Di-glyceride structure
	3 rd	Lipid bilayer & Lipid biosynthesis
	4 th	Determination of pH color comparison pH meter determination of PKa value
14 th	1 st	Qualitative tests on carbohydrates and proteins
	2 nd	Estimation of total sugar by anthrone method
	3 rd	Estimation of reducing sugar by Benedict's test
	4 th	Fatty acid titration
15 th	1 st	Verification of Beer Lambert's law
	2 nd	Determine iodine value of different fat samples
	3 rd	Quantify amino acid using ninhydrin reaction
	4 th	Test 3

DISCIPLINE: Biotech	SEMESTER: 5th	NAME OF THE TEACHING FACULTY: Dr. Sasmita Panigrahi
SUBJECT: (Th-5) Instrumentation & Chemical Analysis	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 04	FROM DATE: 01-08-2023 TO DATE: 30-10-2023 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	Instrument
	2 nd	Instruments and its importance
	3 rd	Standards of measurement
	4 th	Functional elements of instruments
2 nd	1 st	Performance characteristics of an instrument
	2 nd	Measurements of characteristics
	3 rd	Measurement of viscosity by Red Wood Viscometer
	4 th	Measurement of viscosity by Falling Sphere Viscometer
3 rd	1 st	Measurement of viscosity by Continuous Viscometer
	2 nd	Principle and uses of spectrophotometer
	3 rd	Principle and uses of polarimeter
	4 th	Measurement of refractive index by Refractometer
4 th	1 st	pH & Conductivity Measurement
	2 nd	Measurement of pH
	3 rd	Measurement of electrical conductivity
	4 th	Temperature Measurement
5 th	1 st	Different temperature scales
	2 nd	Different methods of temperature measurement
	3 rd	Temperature measurement by liquid in glass thermometer
	4 th	Temperature measurement on electrical phenomena – like thermocouple, resistance thermometer, optical pyrometer, radiation pyrometer.
6 th	1 st	Test 1
	2 nd	Basic reasons of pressure
	3 rd	Pressure Measurement
	4 th	Different types of pressure
7 th	1 st	Different methods of measurement of pressure
	2 nd	Pressure measurement by Bourdon tube, Bellows
	3 rd	Maintenance and repair of pressure measuring instruments
	4 th	Automatic control
8 th	1 st	Automatic control system
	2 nd	Application of Automatic control system
	3 rd	Elementary idea about transfer functions for a first order system
	4 th	Elementary idea about transfer functions for a time constant.
9 th	1 st	Block diagram
	2 nd	Components of Process Control system
	3 rd	Types of process control system
	4 th	Advantages and disadvantages of process control system

10 th	1 st	Test 2
	2 nd	Elementary idea about different types of automatic controllers
	3 rd	Principle of PLC
	4 th	Computer Aided measurement and control
11 th	1 st	Modern analytical instruments for measuring process parameters
	2 nd	Fatty acid titration
	3 rd	instruments used in the process industry
	4 th	Principles of measuring instruments.
12 th	1 st	Verification of Beer Lamberb's law
	2 nd	Structure of Industrial Instrumentation in Real Time Applications
	3 rd	Measurement of physical variables such as flow, temperature, level, or pressure
	4 th	Separation of Iron using solvent extraction technique
13 th	1 st	Determine pH and conductivity of a given solution by pH-meter
	2 nd	Concentration of sugar in sugar solution by Polarimeter
	3 rd	Refractive index of different liquids by Abbe's Refractometer
	4 th	Maximum wavelength of a solution of cobalt chloride
14 th	1 st	Beer's Law and apply it to find the concentration of the given unknown solution by Spectrophotometer
	2 nd	Beer's law of solution of KMnO ₄ and K ₂ Cr ₂ O ₇ using calorimeter
	3 rd	Demonstrate different types of pressure gauges and temperature measuring devices
	4 th	Determine the viscosity of an Oil by Red Wood Viscometer at different temperature
15 th	1 st	Plotting a graph between viscosity and temperature
	2 nd	Calibration of a thermocouple
	3 rd	Demonstrate function of digital multi-meter
	4 th	Test 3

DISCIPLINE: Biotech	SEMESTER: 5th	NAME OF THE TEACHING FACULTY: Dr. Sasmita Panigrahi
SUBJECT: (Pr-1) Instrumentation & Chemical Analysis	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 03	FROM DATE: 01-08-2023 TO DATE: 30-10-2023 NO. OF WEEKS: 15
WEEK	CLASS DAY	PRACTICAL TOPICS
1 st	1 st	Instrument
	2 nd	Discuss about Instrumentation
	3 rd	Difference between solvent and solute
2 nd	1 st	Separation of Iron using solvent extraction technique
	2 nd	Repeat
	3 rd	Repeat
3 rd	1 st	Discuss about pH
	2 nd	About pH meter and its electrode
	3 rd	Conductivity discussion
4 th	1 st	Determination of pH and conductivity of a given solution by pH meter
	2 nd	Result and discussion
	3 rd	Repeat
5 th	1 st	Writing of record
	2 nd	Record checking
	3 rd	Discuss about Polari meter
	1 st	Concentration sugar preparation
	2 nd	Determine of Concentration of sugar in sugar solution by Polari meter
	3 rd	Abbs refracto meter
6 th	1 st	Refractive index
	2 nd	Relation between refractive index values
	3 rd	Determine the refractive index by different liquids by Abbs refracto meter
7 th	1 st	Beers Law
	2 nd	Lamberts Law
	3 rd	Web length discussion
8 th	1 st	Study of Spectro photo meter
	2 nd	Cobalt chloride b preparation
	3 rd	Measurement of different solution of Cobalt chloride
9 th	1 st	Repeat
	2 nd	Repeat
	3 rd	Record writing
10 th	1 st	Record checking
	2 nd	Record checking
	3 rd	Verify Beers law by using KMNO ₄ solution
11 th	1 st	Verification Beers Law by using K ₂ Cr ₂ O ₇ using Calori meter
	2 nd	Demonstrate different types of pressure gauge and temperature measuring devices
	3 rd	Discuss about Viscosity
12 th	1 st	Viscometer its parts and use
	2 nd	Determine the viscosity of an oil by Redwood

		viscometer at different temperature
	3 rd	Graph preparation
13 th	1 st	Calibration of thermo couples
	2 nd	Function of digital multi meter
	3 rd	Writing of record
14 th	1 st	Repeat
	2 nd	Record checking
	3 rd	Record checking
15 th	1 st	Doubt Clear session
	2 nd	Repeat
	3 rd	Repeat

DISCIPLINE: Biotech	SEMESTER: 5th	NAME OF THE TEACHING FACULTY: Dr. Sasmita Panigrahi
SUBJECT: (Pr-2) Biochemistry	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 06	FROM DATE: 01-08-2023 TO DATE: 30-10-2023 NO. OF WEEKS: 15
WEEK	CLASS DAY	PRACTICAL TOPICS
1 st	1 st	About pH meter
	2 nd	Determination of Pka value
	3 rd	Relation between pH and Pka
	4 th	Numericals
	5 th	Numericals
	6 th	Numericals
2 nd	1 st	Qualitative tests demonstration
	2 nd	Test for Carbohydrates
	3 rd	Test for protein
	4 th	Results and discussions
	5 th	Results and discussions
	6 th	Results and discussions
3 rd	1 st	Repeat Exp- 1
	2 nd	Repeat Exp- 1
	3 rd	Repeat Exp- 1
	4 th	Checking of records
	5 th	Checking of records
	6 th	Checking of records
4 th	1 st	Anthrone reagent preparation
	2 nd	Preparation of stock
	3 rd	Preparation of stock
	4 th	Results and discussions
	5 th	Results and discussions
	6 th	Results and discussions
5 th	1 st	Repeat Exp- 2
	2 nd	Repeat Exp- 2
	3 rd	Repeat Exp- 2
	4 th	Checking of records
	5 th	Checking of records
	6 th	Checking of records
6 th	1 st	Discussion about reducing sugar
	2 nd	Benedicts reagent preparation
	3 rd	Discuss about colori meter
	4 th	Discuss about Spectro meter
	5 th	Discuss about visible length of light
	6 th	Discuss about visible length of light
7 th	1 st	Estimation of reducing sugar
	2 nd	Estimation of reducing sugar by Benedicts test
	3 rd	Estimation of reducing sugar by Benedicts test
	4 th	Repeat Exp- 3
	5 th	Repeat Exp- 3
	6 th	Repeat Exp- 3
8 th	1 st	Checking of records

	2 nd	Checking of records
	3 rd	Checking of records
	4 th	Discuss about fatty acid
	5 th	Fatty acid seponification
	6 th	Titration
9 th	1 st	Fatty acid titration with use of oil
	2 nd	More About titration
	3 rd	Results
	4 th	Repeat Exp- 4
	5 th	Repeat Exp- 4
	6 th	Checking of records
10 th	1 st	Beer Lambarts Law
	2 nd	Colorimeter using for Beers Law
	3 rd	Verification of Beer Lambarts Law
	4 th	Repeat Exp- 5
	5 th	Repeat Exp- 5
	6 th	Repeat Exp- 5
11 th	1 st	Checking of records
	2 nd	Checking of records
	3 rd	Checking of records
	4 th	About Iodine value
	5 th	Discuss about fats
	6 th	Determine the Iodine value of different fat samples
12 th	1 st	Repeat Exp- 6
	2 nd	Repeat Exp- 6
	3 rd	Repeat Exp- 6
	4 th	Checking of records
	5 th	Checking of records
	6 th	Checking of records
13 th	1 st	Discuss about Amino acid
	2 nd	Structure of Amino acid
	3 rd	Classification of Amino acid
	4 th	Ninhydrin reagent preparation
	5 th	Quantify Amino acid using in ninhydrine reagent
	6 th	Quantify Amino acid using in ninhydrine reagent
14 th	1 st	Repeat Exp- 7
	2 nd	Repeat Exp- 7
	3 rd	Repeat Exp- 7
	4 th	Checking of records
	5 th	Checking of records
	6 th	Checking of records
15 th	1 st	Repeat Exp- 8
	2 nd	Repeat Exp- 8
	3 rd	Repeat Exp- 8
	4 th	Checking of records
	5 th	Checking of records
	6 th	Checking of records

DISCIPLINE: Biotechnology.	SEMESTER: 5th	NAME OF THE TEACHING FACULTY: Mr.Sunil Biswajit Maharana
SUBJECT: (Pr-3) Tissue culture laboratory	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 03	FROM DATE: 01-08-2023 TO DATE: 30-10-2023 NO. OF WEEKS: 15
WEEK	CLASS DAY	PRACTICAL TOPICS
1 st	1 st	Instrument
	2 nd	Discuss about Instrumentation
	3 rd	Dry heat Sterilization
2 nd	1 st	Steam Sterilization
	2 nd	Flame Sterilization
	3 rd	Filter Sterilization
3 rd	1 st	Repeated
	2 nd	Repeated
	3 rd	Discussion and writing record
4 th	1 st	Record checking
	2 nd	Discussion about media
	3 rd	Sterilization of glassware's
5 th	1 st	Collection of distil water
	2 nd	Preparation of chemicals
	3 rd	Preparation of chemicals
6 th	1 st	Preparation of chemicals
	2 nd	Preparation of media
	3 rd	Preparation of media and sterilization.
7 th	1 st	Discussion and writing record
	3 rd	Instrument
8 th	1 st	Discuss about Instrumentation
	2 nd	Preparation of chemicals
	3 rd	Sterilization of instruments
8 ⁹ ^h	1 st	Discussion about surface sterilization.
	2 nd	Inoculation process
	3 rd	Repeat
10 th	1 st	Repeat
	2 nd	Record writing
	3 rd	Record checking
11 th	1 st	Instrument
	2 nd	Discussion about callus
	3 rd	Discussion about suspension culture.
12 th	1 st	Sterilization of glassware's
	2 nd	Collection of distil water
	3 rd	Preparation of chemicals
13 th	1 st	Preparation of chemicals
	2 nd	Preparation of media
	3 rd	Preparation of media
14 th	1 st	Sterilization of media
	2 nd	Inoculation of explant
	3 rd	Inoculation of explant
15 th	1 st	Observation of growth of explant
	2 nd	Record writing.
	3 rd	Record checking

DISCIPLINE: Biotechnology	SEMESTER: 5th Sem.	NAME OF THE TEACHING FACULTY: Dr. Sasmita Panigrahi
SUBJECT: Project phase-I	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:04	SEMESTER FROM DATE: 01-08-2023 TO DATE: 30-10-2023 NO. OF WEEKS:15
PROJECT TITLE- <i>IN VITRO</i> REGENERATION OF PLANTLETS OF BANANA		
WEEK	CLASS/ DAY	THEORY/ PRACTICAL TOPICS
1 st	1 st	Discussion about the project.
	2 nd	Discussion about the project.
	3 rd	Discussion about the project.
	4 th	Discussion about the project.
2 nd	1 st	Collection of research article regarding project.
	2 nd	Collection of research article regarding project.
	3 rd	Planning of project work.
	4 th	Preparation of distil water.
3 rd	1 st	Preparation of distil water.
	2 nd	Sterilization of glass wares
	3 rd	Preparation of chemicals.
	4 th	Preparation of chemicals.
4 th	1 st	Preparation of chemicals.
	2 nd	Preparation of MS media with different hormone combination for growth of callus.
	3 rd	Preparation of MS media with different hormone combination for growth of callus.
	4 th	Preparation of MS media with different hormone combination for growth of callus.
5 th	1 st	Preparation of MS media with different hormone combination for growth of callus.
	2 nd	Preparation of MS media with different hormone combination for growth of callus.
	3 rd	Inoculation of explants
	4 th	Inoculation of explants
6 st	1 st	Inoculation of explants
	2 nd	Observation of growth.
	3 rd	Observation of growth.
	4 th	Observation of growth.
7 th	1 st	Observation of growth.
	2 nd	Observation of growth.
	3 rd	Observation of growth.
	4 th	Observation of growth.
8 th	1 st	Observation of growth.

	2 nd	Observation of growth.
	3 rd	Observation of growth.
	4 th	Observation of growth.
9 th	1 st	Review of the project work.
	2 nd	Review of the project work.
	3 rd	Review of the project work.
	4 th	Preparation of MS media with different hormone combination for shooting..
10 th	1 st	Preparation of MS media with different hormone combination for shooting.
	2 nd	Preparation of MS media with different hormone combination for shooting.
	3 rd	Inoculation of Callus.
	4 th	Inoculation of Callus.
11 st	1 st	Inoculation of Callus.
	2 nd	Observation of growth.
	3 rd	Observation of growth.
	4 th	Observation of growth.
12 th	1 st	Observation of growth.
	2 nd	Observation of growth.
	3 rd	Observation of growth.
	4 th	Observation of growth.
13 th	1 st	Observation of growth.
	2 nd	Observation of growth.
	3 rd	Observation of growth.
	4 th	Observation of growth.
14 th	1 st	Review of the project work.
	2 nd	Review of the project work.
	3 rd	Review of the project work.
	4 th	Writing of project.
15 th	1 st	Writing of project.
	2 nd	Writing of project.
	3 rd	Discussion and presentation.
	4 th	Discussion and presentation.