Jaypee Institute of Information Technology

B. TECH BIOTECHNOLOGY

Course Descriptions

SEMESTER 10

Subject Code	**12M12BT119**	**Semester: ODD**	**Semester:** X **Session:** 2021-2022 **Month from:** July - Dec
Subject Name	**PHYTOTHERAPEUTICS AND PHARMACOLOGY**		
Credits	**3**	**Contact Hours**	**3+1**
Faculty (Names)	**Coordinator(s)**	1. Professor. Vibha Rani	
	Teacher(s) (Alphabetically)	1. Professor. Vibha Rani	

COURSE OUTCOMES		**COGNITIVE LEVELS**
CO130.1	Analyze the existing biotechnological techniques to develop plant-based therapeutics	**Analyzing (C4)**
CO130.2	Evaluate the classes, synthesis and structure functional relationship of Phyto molecules	**Evaluating (C5)**
CO130.3	Explain the therapeutic applications of phytochemicals	**Understanding (C2)**
CO130.4	Identify the current aspects of phytomedicines on toxicity and clinical trials	**Applying (C3)**
CO130.5	Case studies to analyze Ayurpharmaco-epidemiology	**Analyzing (C4)**
CO130.6	Use of bioinformatics tools and approaches to predict the molecular function of novel bioactive molecules	**Creating (C6)**

Module No.	**Subtitle of the Module**	**Topics in the module**	**No. of Lectures for the module**
1	**Introduction**	Concepts of Phototherapeutics, Trend and market analysis, Global herbal medicine market, Herbal Sector in India	3
2	**Medicinal Plants Metabolites**	Introduction to metabolites, Secondary metabolites, properties and beneficial aspects.	3
3	**Isolation technique extraction procedure**	Pharmacology Approaches in Phototherapeutics, Bioactive guided discovery process Isolation from medicinal plants. Isolation from aromatic plants. Recants advancements in extraction	4
4	**Characterization technique**	Qualitative and quantitative Analysis Gas Chromatography High Performance Liquid Chromatography: (HPLC) High Performance Thin Layer	4

		Chromatography: (HPTLC)	
5	**Structure functional relationship**	Bioinformatics approach in predicting structure functional relationship Mechanism of Action Unidentified Therapeutic Intakes Factors that Affect Metabolism	4
6	**Therapeutic Application**	Free radicals and antioxidants Plants used in Metabolic disorder Plants used in respiratory system Plants used in COVID Pandemic Plants used with antimicrobial activity. Plants used with neurodegenerative disorders Plants used in cardiovascular system.	8
7	**Toxicity Issue and Clinical Trials**	Current aspects of phytomedicine on toxicity and clinical trials	6
8	**Case studies**	Success stories, research-based case studies related to phototherapeutics	8
9	**Potential risks associated and future aspects**	Discussion	2
		Total number of Lectures	**42**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Class Test-1, Assignment-1&2, PBL, Case studies 1, 2& 3)
Total	**100**

Project based learning: Each student will opt a human health issues and diseases. To make subject application based, the students will analyze uncharacterized Indian medicinal herbs and will explore their therapeutic potential and also perform market research. Various phototherapeutics concepts will be discussed by students. Students would explain the critical disease targets and mechanism of actions of selected herbs by *in silico* methods. Understanding the concepts would enhances the student's knowledge and motivation for herbal drug discovery and its continuously growing market which will help their employability into various biotechnology and health sector.

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Papers, Reports, Websites etc. in the IEEE format)

1.	Plant Bioactive and Drug Discovery: Principles, Practice, and Perspectives. Valdir Cechinel-Filho (Ed.). 2012 John Wiley & Sons, Inc.
2.	Phototherapeutics (Recent Progress in Medicinal Plants). S. K. Sharma, J. N. Govil, V. K. Sing. 2005. Studium Press.
3.	Phytotherapies: Efficacy, Safety, and Regulation. Iqbal Ramzan (Ed.) 2015 John Wiley & Sons, Inc.
4.	Recent research articles and reviews related to each module.

Course Code	17M12BT116	**Semester Odd**	**Semester X** **Session** 2021-2022 Month from July**19-Dec19**
Course Name	Regulatory Affairs		
Credits	3	**Contact Hours**	3

Faculty (Names)	**Coordinator(s)**	Prof. Shweta Dang
	Teacher(s) (Alphabetically)	Prof. Shweta Dang

COURSE OUTCOMES		**COGNITIVE LEVELS**
C120.1	Explain regulatory markets and agencies; preclinical and clinical trials	Understanding (Level 2)
C120.2	Analyze the guidelines for approvals of new drugs/biologics	Analyzing (Level 4)
C120.3	Compare innovator and generic pharmaceutical industry with Patent and Non patent exclusivity	Evaluating (Level 5)
C120.4	Interpret ICH guidelines applicable to drugs and biotechnology based therapeutic products.	Understanding (Level 2)
C120.5	Assess regulatory approvals via related case studies	Evaluating (Level 5)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction To Regulatory agencies	CDSCO, India USFDA, USA EMEA, European Union TGA, Australia	**2**
2.	Introduction To Pharmacopoeias and Monographs	Indian Pharmacopoeia (IP) British Pharmacopoeia (BP) United Sates Pharmacopoeia (USP) International Pharmacopoeia (Int. Ph.) European Pharmacopoeia	**2**

		(Eur. Ph.)	
3.	Safety and efficacy of drugs/biologics, preclinical studies, Clinical phases	Case studies of safety issues in history, Preclinical requirements, acute and chronic toxicity, dose determination, NOAEL, phases of clinical trials (I, II III)	**4**
4.	Approval pathways for Drugs/ biologic/ biopharmaceuticals in USFDA	FDA, CDER, CBER, IND, NDA, BLA, recalls, Phase IV, filing procedures	**7**
5.	Approval pathways for Drugs/ biologic/ biopharmaceuticals in Europe	EMEA, market authorization application. Centralized, Decentralized, National, Mutual recognition procedure. CTD, eCTD, Nees Submissions, ICH M4	**4**
6.	Approval pathways for Drugs/ biologic/ biopharmaceuticals in India and Japan	Central Drug Standard Control Organization, INDIA, Pharmaceutical and Medical Devices Agency of Japan	**3**
7.	Generics and Biosimilars	Hatch Wax man Act (Para I, II, III and IV filings), BPCI act USA, CDSCO guidelines, EMEA guidelines, Status of guidelines	**6**
8.	Non-Patent Exclusivities	Orphan Drug law, Market exclusivity, Pediatrics exclusivity, first to file exclusivity	**5**
9.	ICH Guidelines for Biologics and Good Clinical Practices	Overview of ICH guidelines, ICH QSEM, ICH Q5, Q6, ICH E6, ICH Q8,9,10	**5**
11.	Case Studies	Relevant Case studies	**4**
		Total number of Lectures	**42** **0 6**
Evaluation Criteria			

Components	Maximum Marks
T1	20
T2	20
End Semester Examination	35
TA	25 (Class Test, Assignment I and II) PBL (5 Marks)
Total	**100**

PBL: Students will be given a project to search orange book database of USFDA and prepare a patent and non-patent exclusivity status of drugs

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)	
1.	Sandy Weinberg, GUIDEBOOK FOR DRUG REGULATORY SUBMISSIONS, 2009 (first edition), John Wiley & Sons, Inc.
2.	The Common Technical Document (CTD), Internet: http://www.ich.org/
3.	Guideline for submitting supporting documentation in drug applications for the manufacture of drug substances, February 1987, Internet: http://www.fda.gov/cder/guidance/drugsub.pdf
4.	ICH Guideline: The Common Technical Document for the Registration of Pharmaceuticals for Human Use: Quality - M4Q; Quality Overall Summary of Module 2, Module 3: Quality, Internet: http://www.ich.org/MediaServer.jser?@_ID=556&@_MODE=GLB

Project Based Learning -II (17M17BT212) oordinator: Dr. Ashwani Mathur				
PROJECT BASED LEARNING-II (17M17BT112) Viva- I / Mid Term Viva: 30 Marks Viva-II / End Term Viva: 35 Marks Day to Day Marks from Supervisor: 35				
	COURSE OUTCOMES	**Cognitive level**	**Assessment tool** **Direct (80%)**	**Assessment tool** **Indirect (20%)**
CO1	Compare and contrast the existing literature and interpret the research problem	Understanding Level 2	**Viva-I** (Defining and Interpreting the research problem- **5**; summarize and evaluate the current knowledge of the topic based on Literature reviewed **- 5,** Viva **-5)**, Day **to Day Marks from Supervisors** ((Defining and Interpreting the research problem- **2**; summaries' and evaluate the current knowledge of the topic based on Literature reviewed **- 3)**	Exit Survey
CO2	Make use of biotechnological and allied fields to explore different strategies	Applying Level 3	**Viva-I** (Rational of the study & Objectives-**5**), **Day to Day Marks by Supervisor** (Rational of the study & Objectives-**5**), **Viva-II** (Strategic approach proposed for exploring answers to the research problem	Exit Survey

			and attained -**10**); **Day to Day Marks by Supervisor (**Strategic approach proposed for exploring answers to the problem statement and attained -**5)**	
C03	Designing the research strategy	Create Level Level 6	Viva-I (Designing the research strategy / work plan -**10) Day to Day Marks by Supervisor (**Understanding of the proposed research strategy/ work plan **-5)** **Viva-II** (Research strategy followed and outcomes of the study -10), **Day to Day Marks by Supervisor** (Research strategy followed the outcomes of the study -**5**)	Exit Survey
C04	Conclude the research finding through presentation and technical report	Analyzing Level 4	**Viva-II** (Conclusion / Learning Outcome, Viva and Report) – **15**, Day to **Day marks from Supervisor** (Conclusion / Learning Outcome, Report – **10**)	Exit Survey
Project based learning: The students learn the importance of secondary data collection using databased, journals, periodicals and databases. They perform wet lab and in-silico, experimental studies, systematic review or survey-based analysis to define the problem statement and learn biotechnological and allied approaches to answer the problem statements. Such knowledge help student to develop independent thinking and inculcate the practice of following good laboratory, scientific and ethical practices in their career.				

Seminar & Term Paper (17M17BT211) – M Tech: INTGT X Sem and M.T. III Sem					
Viva- I / Mid Term Viva: 20 Marks Viva-II / End Term Viva: 20 Marks Term paper: 20 Marks Day to Day Marks from Supervisor: 40 Marks Coordinator: Dr. Vibha Gupta					
		Course Outcome	**Cognitive level**	**Assessment tool**	
				Direct	Indirect
1	CO212.1	Make use of existing literature to define a research problem.	Apply Level (Level III)	**(i) Midterm Seminar -** includes Literature survey (5 marks) and Problem identification (5 marks) **(ii) End term Seminar -** includes Literature survey (10 marks) and critical reflection reflections on problem solution (5 marks) **(iii)Supervisor's assessment of day-to-day work prior to Midterm** includes regularity of interaction (5 marks) and literature survey (content and number of research papers / technical articles/databases etc. referred (10 marks) **(iv) Supervisor's assessment of day to day after Midterm & up to End Term** includes regularity of interaction (5 marks), literature survey (content and number of research papers / technical articles/databases etc. referred (10 marks) and contribution to the topic (5 marks)	Exit Survey
2	CO212.2	Survey the available scientific resources & databases to address the problem	Analyze Level (Level IV)		Exit Survey
3	CO212.3	Evaluate and critique acquired knowledge	Evaluate Level (Level V)		Exit Survey
4	CO212.4	Conclude through oral and written scientific presentations	Evaluate Level (Level V)	**Midterm and End term seminar presentations** will include content of the seminar, communication style, explanation and reasoning,	Exit survey

				conclusions (10 marks) **Midterm Report (10 marks) & Term paper (20 marks)** include organization of the report, Reference style, Plagiarism and punctuality of submission)	
Project based learning: Students research on topic of their interest and define problem statement, figure out probable solution by reviewing the current literature and communicate their findings orally and by writing. This develops independent working and thinking ability and other set of skills such as research, problem identification, problem solution, written and oral communication, etc. that are attractive for prospective employers.					

Course Code	**19M12HS211**	**Semester** Odd (specify Odd/Even)	**Semester** III **Session** 2021-22 **Month** from July to December
Course Name	**Cost Accounting for Engineering Projects**		
Credits	3	**Contact Hours**	3-0-0
Faculty (Names)	**Coordinator(s)**	Dr. Praveen Kumar Sharma	
	Teacher(s) (Alphabetically)	Dr. Praveen Kumar Sharma	

COURSE OUTCOMES	
C201-1.1	Understand basic concepts of Cost Accounting
C201-1.2	Apply concepts of cost in project management
C201-1.3	Analyze cost behavior for decision making
C201-1.4	Construct different budgets for controlling the cost

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction	Introduction & Overview of Cost Management Process	3
2.	Cost Concepts	Relevant Cost, Differential Cost, Incremental Cost, Opportunity Cost, Objectives of a costing system, Inventory Valuation, Provision of data for decision making	4
3.	Project execution	Meaning, Different types, why to manage, cost overruns centers, various stages of project execution: conception to commissioning. Project execution as conglomeration of technical and nontechnical activities. Detailed Engineering activities.	5
4.	Project Execution	Pre project execution main clearances and documents Project team: Role of each member. Importance Project site Data required with significance, Project contracts, Types and contents, Project execution, Project cost	6

		control, bar charts & network diagrams, Project commissioning	
5.	Cost Behavior	Distinction between Marginal Costing and Absorption Costing; Break-even Analysis, Cost-Volume-Profit Analysis. Various decision-making problems.	6
6.	Profit Planning Marginal Costing	Standard Costing and Variance Analysis. Pricing strategies: Pareto Analysis. Target costing, Life Cycle Costing. Costing of service sector. Just-in-time approach	6
7.	Material Planning	Material Requirement Planning, Enterprise Resource Planning, Total Quality Management and Theory of constraints. Activity-Based Cost Management, Bench Marking; Balanced Score Card& value chain analysis.	6
8.	Budgetary Control	Flexible budgets, Performance budgets, zero based budgets, Measurements of divisional profitability pricing decisions including transfer pricing.	6
Total number of Lectures			**42**

Evaluation Criteria

Components Maximum

Marks

T1 20

T2 20

End Semester Examination 35 TA 25 (Test +Quiz+ Assignment)

Total 100

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)	
1.	B. M. L. Nigam and I. C. Jain, *Cost Accounting: Principles and Practice, PHI Learning Pvt. Ltd*. PHI Learning Pvt. Ltd., 2010.
2.	C. T. Horngren, *Cost accounting: A managerial emphasis, 13/e Pearson Education India*. Pearson Education India, 2009.
3.	R. S. Kaplan and A. A. Atkinson, *Advanced management accounting*. PHI Learning, 2015.
4.	A. K. Bhattacharyya, *Principles and practice of cost accounting*. PHI Learning Pvt. Ltd.,

	2004.
5.	N. D. Vohra, *Quantitative Techniques in Management, 3e*. Tata McGraw-Hill Education, 2006.

Project based learning: student will form the group of four to five students. To make subject application based, student will apply various concepts such as Cost management and various types of Costing, project execution & quantitative technique for cost management, cost behaviour and profit planning. Student will apply these concept on organization, or in any ongoing project or interdisciplinary base research project or any innovative idea in any particular industry along with feasibility.

Faculty (Names)	**Coordinator(s)**	Prof. Reema Gabrani
	Teacher(s) (Alphabetically)	Dr. Chakresh K. Jain, Dr. Indira P. Sarethy, Dr. Neeraj Wadhwa, Dr. Pammi Gauba, Dr. Priyadarshini, Dr. Reema Gabrani, Dr. Sujata Mohanty, Dr. Vibha Rani

COURSE OUTCOMES		**COGNITIVE LEVELS**
C111.1	Apply basic analytical techniques in biotechnology	Apply Level (C3)
C111.2	Develop skills in molecular biology techniques	Apply Level (C3)
C111.3	Examine and analyse gene expression	Analyze (Level C4)
C111.4	Make use of purification techniques for natural products	Apply Level (C3)

Module No.	**Title of the Module**	**List of Experiments**	**CO**
1.	Analytical techniques	To explore drug-protein interacti ons	2
2.	Molecular biology techniques	Cloning strategy: Screening of recombinants: isolate recombinant plasmid DNA from bacterial cells; Restriction enzyme digestion, separate and visualize DNA bands by agarose gel electrophoresis	4
3.	Gene expression techniques	Designing primers for amplification of gene of interest by PCR, PCR amplification, analyze PCR products; Analysis of a recombinant protein by polyacrylamide gel electrophoresis	3
4.	Purification techniques	To obtain antimicrobial compound from bacterial culture; to purify the antimicrobial compound by column chromatography; use of bioactivity-guided fractionation to analyze and quantify the compound	3
		Total	**12**

Evaluation Criteria

Components	**Maximum Marks**
Mid-Term Viva	20
Day-to-Day (Lab record, attendance, performance)	60
Final Viva	20
Total	**100**

Project Based Learning: The students learn column chromatography, molecular biology, and analytical techniques and analyze gene expression which is required for the Biotech industry.

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication, etc. Textbooks, Reference Books, Journals, Reports, Websites, etc. in the IEEE format)

1.	Introduction to Biotechnology, Laboratory Manual: http://www.austincc.edu/awheeler/Files/BIOL%201414%20Fall%202011/BIOL1414_Lab%20Manual_Fall%202011.pdf

2.	Frederick M. Ausubo, Roger Brent, Robert E. Kingston, David D. Moore, J.G. Seidman, John A. Smith, Kevin Struhl (eds.) Current Protocols in Molecular Biology. John Wiley & Sons Inc; ringbou edition (December 4, 2003)
3.	Molecular Biology web book- http://www.web-books.com/MoBio/
4.	S. V. S. Rana, Biotechniques Theory and Practice. Rastogi Publications 2008.
5.	Methods standardized in lab

Subject Code	17M12BT111	**Semester Odd (specify Odd/Even)**	**Semester III Session Month from July to Dec.**
Subject Name	Biosensors		
Credits	**3**	**Contact Hours**	**3**

Faculty (Names)	**Coordinator(s)**	1. Prof. Sudha Srivastava
	Teacher(s) (Alphabetically)	1. Prof. Sudha Srivastava

Cos	**Cos description**	Level
CO111.1	Understand biosensor, its performance characteristics and types of biosensor and advancement thereof	Understand Level 2
CO111.2	Analyze different immobilization methods and their effect on biosensor performance	Analyze level 3
CO111.3	Evaluate performance of a given biosensor, for disease diagnosis, drug screening, pathogen and pollutant detection	Evaluate level 5
CO111.4	Design methods to improve sensitivity of the biosensor	Create Level 6

Module No.	**Subtitle of the Module**	**Topics in the module**	**# of Lectures**
1.	**Introduction:**	Sensors and biosensors, definitions, types of sensors, markets, target analytes, glucose and other medical sensors	2
2.	**Biosensor Advancements and nanotechnology**	First-, second-, third generation biosensors, Nanotechnology and present day biosensors	3
3.	**Basic Design Considerations**	Calibration, dynamic Range, signal to noise, sensitivity, selectivity, interference.	3
4.	**The biological component**	Whole cell sensors, enzymes – sensing substrates or inhibitors, antibodies (Mab, Fab). And other binding proteins, oligonucleotides and aptamers.	3
5.	**Types of biosensors**	Optical biosensors, Electrochemical biosensors, Piezoelectric biosensor, Calorimetric biosensors	8
6.	**Immobilization method**	Non-covalent immobilization - entrapment and multipoint electrostatic attachment. Covalent attachment via thiol, amino and hydroxyl groups. Affinity interactions - avidin/biotin, , complementary oligonucleotides.	4
7.	**Techniques for sensing : Physical**	Absorbance, fluorescence, chemi/bioluminescence and phosphorescence, Surface Plasmon Resonance (SPR),	8

	and chemical	quartz crystal microbalance, cyclic voltammetry	
8.	**Sensor stabilization**	Storage and operational stability. Polyols, polymers and low Mw compounds as stabilizing agents for drying and long term storage. Stabilization mechanisms.	3
9.	**Applications**	Pharmaceutical**,** agricultural, food safety, biomedical applications, food processing: state of the field, market potential, unique design criteria and needs, current sensors in use.	8
		Total number of Lectures	**42**

PBL: Students form group or as individual and present a report on biosensor designing and performance for various applications like agriculture, environment and healthcare

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

1.	Ligler, F.S. and Rowe Taitt, C.A. 2002. Optical Biosensors: Present & Future. Elsevier, The Netherlands. ISBN: 0-444-50974-7.
2.	Yang, V.C. and T.T. Ngo. 2000. Biosensors and Their Applications. Kluwer Academic/Plenum Publishers, New York, NY. ISBN: 0-306-46087-4.
3.	Recent research articles

Detailed Syllabus
Lecture-wise Breakup

Course Code	**19M13HS211**	Semester: Odd	Semester: III Session: 2021-22 Month from: July-December
Course Name	**Constitution of India**		
Credits	2	Contact Hours	(2-0-0)
Faculty (Names)	Coordinator(s)	Dr. Chandrima Chaudhuri	
	Teacher(s) (Alphabetically)	Dr. Chandrima Chaudhuri	

COURSE OUTCOMES		**COGNITIVE LEVELS**
C202.1	Demonstrate an understanding of the conflict between the Fundamental Rights and Directive Principles as given in the Indian Constitution	Understand (C2)
C202.2	Assess the nature of the Indian constitution and its applicability in the study of politics in India.	Evaluate (C5)
C202.3	Assess the devolution of powers and authority of governance of the Union government and the local government	Evaluate (C5)
C202.4	Demonstrate an understanding of the powers and functions of the Indian executive, legislature and judiciary	Understand (C2)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	History of Making of the Indian Constitution	• History Drafting Committee-Composition & Working	3
2.	Philosophy of the India Constitution	• Preamble -Salient Features	1
3.	Fundamental Rights and Directive Principles	• Right to Equality • Right to Freedom • Right against Exploitation • Right to Freedom of Religion • Cultural and Educational Rights • Right to Constitutional Remedies • Directive Principles of State Policy	5
4.	Organs of Governance	• Parliament-Composition, Qualifications & and Disqualification ,Powers and Functions • Executive- President , Governor , Council of Ministers • Judiciary-Appointment and Transfer of Judges, Qualifications, Power and Functions	8

5.	Local Administration	• District's Administration head: Role and Importance • Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation • Panchayati raj: Introduction, PRI: Zila Panchayat. Elected officials and their roles, CEO Zila Panchayat: Position and role. Block level: Organizational Hierarchy(Different departments),Village level, Importance of Grass root democracy	8
6.	Election Commission	• Election Commission: Role and Functioning	3
Total number of Lectures			**28**

Evaluation Criteria

Components	**Maximum Marks**
Mid Term Examination:	30
End Semester Examination	40
TA	30 (Assignment and Presentation)
Total	**100**

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

1.	Austin, G. (1996). *The Indian Constitution: Corner Stone of a Nation*. Oxford: Oxford University Press
2.	Bakshi, P.M.(2015). *The Constitution of India*. Delhi: Universal Law Pub. Co. Pvt. Ltd
3.	Bhuyan, D. (2016). *Constitutional Government and Democracy in India*. Cuttack:Kitab Mahal..
4.	Busi, S.N. (2016). *Dr. B. R. Ambedkar framing of Indian Constitution*. Hyderabad*:*Ava Publishers
5.	Basu, D.D. (2018). *Introduction to the Constitution of India*. Nagpur: Lexis Nexis
6.	Jayal, N.G. & Mehta, P.B. (eds.)(2010). *The Oxford Companion to Politics inIndia*. New Delhi: Oxford University Press.
7.	Kashyap, S.C.(1995). *Our Constitution/ Our Parliament/Our Judiciary*. New Delhi: NBT
8.	Raghunandan, J. R. (2012).*Decentralization and local governments: The Indian Experience*. New Delhi: Orient Black Swan
9.	Sharma, B.K. (2005). Introduction to the Constitution of India. New Delhi: Prentice Hall of India Prvt Limited
10.	Sikri, S.L.(2002).*Indian Government and Politics*. New Delhi: Kalyani Publishers

Project: Projects based on the different aspects of the Indian Constitution have to be submitted by the students as a part of the project-based learning. This would help the students

learn about the nitty gritty of the Constitution, their rights and duties which would later on help them not only in their work place but in their general life