Jaypee Institute of Information Technology

Integrated M.Tech. Biotechnology

Semester III

Course Descriptions

Detailed Syllabus

Lecture-wise Breakup

Course Code	**15B11BT313**	**Semester ODD**	**Semester IIISession** 2018 -2019 **Month from** July to December
Course Name	**Genetics and Developmental Biology**		
Credits	4	**Contact Hours**	4

Faculty (Names)	**Coordinator(s)**	Dr. Sujata Mohanty
	Teacher(s) (Alphabetically)	Dr. Sujata Mohanty Dr. Shalini Mani

COURSE OUTCOMES		**COGNITIVE LEVELS**
C212.1	Explain principles of inheritance in genetics	Understand Level (C2)
C212.2	Compare early developmental mechanics in invertebrates, vertebrates and plants	Understand Level (C2)
C212.3	Analyze and solve the problems related to population genetics	Analyze Level (C4)
C212.4	Identify Human birth defects and genetic Disorders	Apply Level (C3)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction to Cell – The unit of life, Chromosomes and Heredity	I. Cell – The unit of life, Cell cycle and its regulation II. Chromosomes and abnormalities III. Specialized Chromosomes IV. DNA - the hereditary material, Genetic code, Genotype and Phenotype	06
2.	Principles of Inheritance:Mendelism	I. Inheritance of characters/genes from parents to offspring II. Mendelian laws of inheritance: Genes and Alleles	02
3.	Principles of Inheritance:Beyond	III. BeyondMendelism:Lethal and Multiple alleles, Gene-gene interaction, Pleiotropism, Penetrance and	06

	Mendelism and Extra-chromosomal	expressivity, IV. The Chromosome Theory of Heredity Extra-chromosomal inheritance: Overview of Mitochondrial and Chloroplast Genome	
4.	Linkage & crossing-over	The Discovery of Linkage, Linkage &Recombination, Calculating Recombinant Frequencies, Linkage maps	04
5.	Population Genetics	I. Molecular Basis of Mutation and Recombination, their role in Evolution, Somatic vs. germinal Mutation, Gene Mutations, Darwin's Revolution: Variation and Its Modulation, Sexual Reproduction and Variation, Polymorphism Behaviourof gene/genesin a population: Gene pool, Gene and genotype frequencies, Evolutionary forces in action: Migration, Recombination, Genetic drift Hardy-Weinberg Equilibrium	06
6.	Sex determination	Sex determination and dosage compensation, Sex chromosomes in human	02
7.	Introduction to early developmental process & developmental mechanics of cell specification	Fertilization, Cleavage, gastrulation, axis formation and fate map. Autonomous Specification, Conditional specification, Syncytial specification, Mosaic and regulative development,	04
8	Early development: Invertebrates, Vertebrates and Plant embryo	I. Patterning and Axis specification in Xenopus II. Gastrulation in fish, Bird &*Mus musculus* III. Shoot and root meristem and leaf development	06
9	Organogenesis	Development of tetrapod limb, heart	04
10	Human Birth defects and genetic disorders	Discussion on various Human disorders, Symptoms and causes	2
		Total number of Lectures	**42**

Evaluation Criteria

Components	**Maximum Marks**
T1	20

T2	20
End Semester Examination	35
TA	25 (Assignment 1 and 2, Class Test 1 and 2)
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.	Griffiths et al. *An Introduction to Genetic Analysis*, Ninth Edition ,2007, W. H. Freeman
2.	L.H. Hartwell et al.*Genetics: from Genes to Genomes*, 2nd Edition.2004, McGraw-Hill
3.	Strickberger M. W.,*Genetics*, McMillan, New York.
4.	E J Gardner, M J Simmons and D P Snustad, *Principles of Genetics*, John Wiley and Sons. New York.
5.	Lewin, *Genes VIII*, 8th Edition, Prentice Hall,
6.	Daniel L. Hartl and Andrew G. Clark, *Principles of Population Genetics*, 3rd Edition, Sinauer Associates
7.	L. Wolpert, "Principles of Development", Edition:4th, Oxford University Press,2011
8.	S.F. Gilbert, "Developmental Biology", Edition: 7th, Snaeur Associates Inc., 2003(eBook available)

Detailed Syllabus

Lab-wise Breakup

Course Code	**15B17BT373**	**Semester:** ODD	**Semester III Session** 2018 -2019 **Month** from July to December
Course Name	Genetics and Developmental Biology Lab		
Credits	1	**Contact Hours**	3

Faculty (Names)	**Coordinator(s)**	DrShalini Mani
	Teacher(s) (Alphabetically)	DrShalini Mani, Dr Sujata Mohanty

COURSE OUTCOMES		**COGNITIVE LEVELS**
C272.1	Understand the different stages of cell division	Understand Level (C2)
C272.2	Interpret the inheritance of human genetic traits.	Understand Level (C2)
C272.3	Make use of Drosophila as model organism in genetics studies.	Apply Level (C3)
C272.4	Compare the developmental stages of different organisms.	Analyze Level (C4)

Module No.	**Title of the Module**	**List of Experiments**	**CO**
1.	Cell architecture and Division	Observation of cells undergoing mitotic phases of cell division, using permanent slides	**CO1**
		Observation of cells undergoing meiotic phases of cell division using permanent slides	**CO1**
		Calculating the mitotic index from onion root tip	**CO1**
2.	Genotype vs. Phenotype	Introduction to Genetic model Drosophila, Study of life cycle,	**CO3**
		Sex comb-based species identification, Wild and mutant strain	**CO3**

3.	Specialized Chromosome	Cytogenetic preparation of polytene chromosome,	**CO3**
		Study of banding pattern and puff region, distinguishing hetero and euchromatic region	**CO 3**
4.	Gene and allele frequency	Blood group test, Principle of antigen-antibody reaction, possible genotype. Calculation of genotype and allele frequency in the class population	**CO 2**
		Study of inheritance pattern of common human genetic traits	**CO 2**
5.	Reproductive system	Dissection of reproductive organs in plants, pollen germination and pollen tube observation	**CO 4**
		Dissection of reproductive organs in Drosophila, No. of ovariole and sperm count	**CO 4**
6.	Development	Permanent slides of various stages of frog and chick embryo development.	**CO 4**

Evaluation Criteria

Components	**Maximum Marks**
Mid Term Exam	20
End Term Exam	20
Day to Day	60
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.	M Demerec, *Biology of Drosophila*, Cold Spring Harbour laboratory Press, 1994.
2.	Monroe W Strickberger, *Genetics (IIIrd edition*), Prentice Hall, 2004.
3	B N Behera, *Genetics through Problems*, Sarup and Sons, 2004
4	Design of experiments, principle and the expected outcome and related literature will be provided to the student

Detailed Syllabus

Lecture-wise Breakup

Course Code	**15B11GE301**	**Semester** Odd **(specify Odd/Even)**	**Semester III/VSession** 2018 -2019 **Month from** July to December
Course Name	Environment Sciences		
Credits	3	**Contact Hours**	3

Faculty (Names)	**Coordinator(s)**	Prof. Krishna Sundari S
	Teacher(s) (Alphabetically)	1. Ekta Bhatt 2. Dr. GarimaMathur 3. Prof. Krishna Sundari S 4. Manisha Singh 5. Prof. PammiGauba 6. Dr. Susinjan Bhattacharya

COURSE OUTCOMES		**COGNITIVE LEVELS**
CO205.1	Explain different aspects of environment, ecosystem and associated concerns	Understand Level (C2)
CO205.2	Identify various practices that can impact the environmental resource management	Apply Level(C3)
CO205.3	Apply modern techniques including sustainable solutions and green technologies for a better environment	Apply Level(C3)
CO205.4	Survey ground situation on specific environmental aspects, examine risks involved, make a field report and present the findings	Analyze Level(C4)
CO205.5	Recall environment related Government regulations, policies, safety norms and Laws.	Remember Level(C1)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**

1.	The Multidisciplinary nature of environmental studies & Biodiversity	Definition, scope and importance, Need for public awareness, Types of Ecosystems, World Biomes, Ecosystem functioning, Biogeochemical cycles, Diversity of flora and fauna, species and wild life diversity, Biodiversity hotspots, threats to biodiversity Case studies.	5
2.	Natural resources, Energy consumption & conservation, Global Conventions	Water, Land Energy (Renewable, non-renewable, wind, solar, hydro, Biomass), Mineral, Forest, & Food resources, Role of an individual in conservation of natural resources, Equitable use of resources, Global Conventions on Energy, Kyoto protocol, Case studies .	8
3.	Pollution, hazardous waste management	Air, Water & Land pollution, sources & causes, Space pollution, causes & effects, Electronic waste, Radioactive materials, toxicity limits of pollutants. Critical issues concerning Global environment (Urbanization, population growth, global warming, climate change, acid rain, ozone depletion etc.) and their roots in: cultural, social, political, commercial, industrial, territorial domains, Case studies.	9
4.	Urban planning, Disaster management	Sustainable building, Analyses of seismic data including magnitude and epicenters of earthquakes, Disaster Management and Contingency Planning, Modern safety systems, Case studies.	6
5.	Environmental Impact assessment, Use of Satellite Imaging	Objectives of impact assessment, Study of impact parameters, Methods for impact identification, Economics, Remote sensing imagery from satellite sensors and role in environmental impact studies, Case studies.	5
6.	Sustainability & Planned reversal of human destruction to environment	Redevelopment of brown fields, energy plantations, social forestry, engineering aspects of Re-use & Recycling, biogas for marginal income groups, organic farming, eco-consumerism, dematerialization, green technologies, eco-tourism, Case studies.	5
7.	Environmental Laws & Regulations	Regulation of technology and innovation, Policy and laws, Different Acts such as: Environmental Protection Act, Air and Water Acts, Wildlife and Forest Acts), US-EPA, National Environmental Policy; Function of pollution control boards (SPCB and CPCB), their roles and responsibilities, Eco-mark Scheme, Laws relating to Urban and Rural land use, Ethics, Case studies.	4

8.	Field Work	Explore the surrounding flora & fauna (Study of common plants, insects, birds document environmental assets), documentation of industries in local region and their possible effects, measure of water, air and land quality, Visit to a local polluted site-Urban/Rural /Industrial / Agricultural, Study of simple ecosystems-pond, river, hill slopes etc	5
Total number of Lectures			**47**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Assignments, Class Tests)
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.	Chiras D D.(Ed.). 2001. Environmental Science – Creating a sustainable future. 6th ed. Jones &Barlett Publishers.
2.	**Joseph, B., 2005, Environmental Studies, Tata McGraw Hill, India**
3.	**Textbook of Environmental Studies for UG Courses - ErachBharucha, University Press**
4.	Jogdanand S N 2004. Environmental Biotechnology: Industrial Pollution Management. Himalaya Pub. House, Delhi 284p
5.	David P Lawrence. 2003. Environment Impact assessment, Wiley publications
6.	Issues of the Journal: Down to Earth, published by Centre for Science and Environment

Detailed Syllabus

Lecture-wise Breakup

Course Code	15B11CI211	**Semester**ODD	**Semester** 3rd **Session** 2018 -2019 **Month from**July to December
Course Name	Software Development Fundamental – II		
Credits	4	**Contact Hours**	**3 (L)+ 1 (T)**

Faculty (Names)	**Coordinator(s)**	Deepti Singh
	Teacher(s) (Alphabetically)	NA

COURSE OUTCOMES		**COGNITIVE LEVELS**
CO1	Develop C programs using structures, pointers, functions, and files.	Level-3 (Applying Level)
CO2	Design solutions for data storage, retrieval, searching, and sorting by utilizing stack/queue.	Level-6 (Creating Level)
CO3	Construct linked list data structure and apply linked list to solve problems like polynomial operations and sparse matrix representation.	Level-3 (Applying Level)
CO4	Analyze operations like searching, insertion, deletion, traversing on given data structure.	Level-4 (Analyzing Level)
CO5	Explain basic features of object-oriented design such as objects, classes, encapsulation, polymorphism, inheritance, and abstraction.	Level-2 (Understanding Level)
CO6	Develop C++ programs using OOPs concepts like encapsulation, Inheritance, Polymorphism, and Standard Template Library.	Level-3 (Applying Level)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**

1.	Advanced Cprogramming	Revision of Functions, Pointers, handling arrays through pointers,pointer arithmetic, file handling, linear andbinarysearch,insertion, selection, and bubble sort.	10
2.	Implementations and applications of elementary data structures.	Stacks, Queues, Deque and their applications, linked list, Link list application, binary trees, Binary tree array and link list basedstorage, sparse matrix	16
3.	Object Oriented Programming	Concepts ofObject-Orientation in C++, constructs, objects, classes, methods, constructors, function and operatoroverloading, inheritance, polymorphism, Introduction to SDLC,Testing fundamentals and test-case generation , STL	16
		Total number of Lectures	**42**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Quiz (10) + Tutorial (5) + Attendance &ClassPerformance (10))
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.	H. Cooper and H. Mullish, Jaico Publishing House. “Spirit of C”, 4th Edition, Jaico Publishing House,2006
2.	Herbert Schildt. “The Complete Reference C ”, 4th Edition, TMH, 2000
3.	Brian W. Kernighan and Dennis M. Ritchie ,“The C Programming Language”, 2nd Edition, Prentice-Hall India, New Delhi, 2002
4.	Ellis Horowitz, SartajSahni Fundamentals of Data Structures in C, 2008, Silicon press
5.	E Balaguruswamy , Object Oriented Programming With C++ , 4th Edition , TMH, 2008
6.	Manuals provided by the department on \\fileserver2

Detailed Syllabus

Lab-wise Breakup

Course Code	**15B17CI271**	**Semester :** ODD	**Semester** III **Session 2018 -2019** **Month from** July to December
Course Name	**Software Development Fundamental – 2 LAB**		
Credits	**1**	**Contact Hours**	**0-0-2**

Faculty (Names)	**Coordinator(s)**	**Prantik Biswas**
	Teacher(s) (Alphabetically)	Prantik Biswas, Vimal Kumar K

COURSE OUTCOMES		**COGNITIVE LEVELS**
CO1	**Make use of structures, pointers, functions, and files to build basic C programs.**	**Apply (level 3)**
CO2	**Construct stack/queue based solutions for data storage, retrieval, searching, and sorting problems.**	**Apply (level 3)**
CO3	**Apply linked list data structure to solve problems like polynomial operations and sparse matrix representation.**	**Apply (level 3)**
CO4	**Build operations like searching, insertion, deletion, traversing on binary tree data structure.**	**Apply (level 3)**
CO5	**Demonstrate fundamental concepts of object-oriented programming i.e. objects, classes, encapsulation, polymorphism, inheritance, and abstraction.**	**Understand (level 2)**
CO6	**Apply object-oriented programming features like encapsulation, Inheritance, Polymorphism, and Standard Template Library to construct C++ programs.**	**Apply (level 3)**

Module No.	**Title of the Module**	**List of Experiments**	**CO**
1.	Structures	Write C programs to store heterogeneous data and perform basic queries over it.	CO1

2.	Pointers & Functions	Write C programs using pointers and recursive functions like palindrome, factorial, fibonacci series, number system etc.	CO1
3.	File Handling & Dynamic Memory Allocation	Write menu driven C programs to perform basic file operations (create, read, write, update).	CO1
4.	Searching & Sorting	Write C programs to perform searching (Linear and binary) and sorting (Insertion, bubble, selection) on set of n numbers, strings using runtime input or stored input from a file.	CO2
5.	Stacks	Write C programs using LIFO concept such as push an element, pop an element, display status of the stack and arithmetic expressions evaluation and representations.	CO2
6.	Queue	Write programs in C to perform operations on queues using array implementation.	CO2
7.	Linked List	Write programs in C to perform basic operations (add, delete, search etc.) via linked list representation.	CO3
8.	Binary Tree	Write programs in C to implement binary tree properties (traversal, leaf node identification, height etc.) using array and linked list representation.	CO4
9.	Introduction to C++ : Classes and Objects	Understand fundamental concepts of OOPs i.e. objects, classes, constructor, destructor, friend function through output based C++ programs.	CO5
10.	Object oriented programming Concepts	Write programs in C++ using OOPs concept like encapsulation, Inheritance, Polymorphism and Abstraction.	CO6

Evaluation Criteria

Components	**Maximum Marks**
Lab Test -1	**20**
Lab Test -2	**20**
Lab Evaluations	**10**
Quiz	**20**
Project	**20**
TA	**10**
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.	H. Cooper and H. Mullish, Jaico Publishing House. “Spirit of C”, 4th Edition, Jaico Publishing House, 2006
2.	Herbert Schildt. “The Complete Reference C ”, 4th Edition, TMH, 2000
3.	Brian W. Kernighan and Dennis M. Ritchie ,“The C Programming Language”, 2nd Edition, Prentice-Hall India, New Delhi, 2002
4.	Ellis Horowitz, SartajSahni Fundamentals of Data Structures in C, 2008, Silicon press
5.	E Balaguruswamy , Object Oriented Programming With C++ , 4th Edition , TMH, 2008
6.	Manuals provided by the department on \\fileserver2

Detailed Syllabus

Lecture-wise Breakup

Course Code	15B11MA302	**Semester :Odd**	**Semester: III Session: 2018-2019** **Month from**July to December
Course Name	Probability and Statistics		
Credits	4	**Contact Hours**	3-1-0
Faculty (Names)	**Coordinator(s)**	Dr. Sudhakar Chaudhary	
	Teacher(s) (Alphabetically)	Dr. Sudhakar Chaudhary	

COURSE OUTCOMES		**COGNITIVE LEVELS**
After pursuing the above mentioned course, the students will be able to:		
C202.1	demonstrate different diagrammatic representation of data and explain the measures of central tendency, dispersion and asymmetry.	Understanding Level (C2)
C202.2	explain the concepts of probability theory and Bayes' theorem.	Understanding Level (C2)
C202.3	explain and solve the problems of probability distributions along with their mean, variance & moment generating functions.	Applying Level (C3)
C202.4	explain sampling theory and apply test of hypothesis on small and large samples.	Applying Level (C3)
C202.5	apply the method of least squares for curve fitting and explain correlation and regression.	Applying Level (C3)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Classification of Data	Classification of data, graphic and diagrammatic representation of data, measures of central tendency and dispersion i.e. mean and standard deviation, measures of skew ness and kurtosis.	6
2.	Probability	Sample space and events, Permutations and combinations, Probability of an event, Axioms of probability, Equiprobable spaces, Conditional probability, Multiplication and addition theorems, Bayes' theorem, Independent events.	10
3.	Random Variables	Random Variable, Discrete and continuous distributions, Mean and variance of a random variable	4
4.	Probability Distributions	Binomial, Uniform, Normal and Poisson distributions.	8
5.	Sampling Theory	Test of hypothesis and significance. Test based on Exact (Small) Sampling- Chi-square test, t test and F test.	10
6.	Correlation and Regression	Curve fitting by the method of least squares, Correlation and regression.	4
		Total number of Lectures	**42**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Quiz , Assignments, Tutorials)
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.	**Walpole, R.E, Myers, R.H., Myers S.I and Ye. K**., Probability and Statistics for Engineers and Scientists, 8th Ed., Pearson, 2007
2.	**Papoulis, A. & Pillai, S.U.**, Probability, Random Variables and Stochastic Processes, Tata McGraw-Hill, 2002.
3.	**Spiegel, M.R.,**Statistics (Schaum'soulines), McGraw-Hill, 1995
4.	**Veerarajan, T.,**Probability, Statistics and Random Processes, Tata McGraw-Hill, 2002.
5.	**Johnson, R.A.**, Miller and Freund's Probability and Statistics for Engineers, 8th Ed., PHI Learning Private limited, 2011
6.	**Palaniammal, S.,** Probability and Random Processes, PHI Learning Private limited, 2012

Detailed Syllabus

Lecture-wise Breakup

Subject Code	15B11EC213	**Semester(specify Odd/Even) Odd**	**Semester** ODD **Session** 2018-2019 **Month from** July **to** December
Subject Name	Basic Electronics		
Credits	4	**Contact Hours**	4

Faculty (Names)	**Coordinator(s)**	1 Dr. Richa Gupta
	Teacher(s) (Alphabetically)	

COURSE OUTCOMES Upon completion of the course, the students will be able to		**COGNITIVE LEVELS**
CO1	familiarize with basic concepts of number systems, boolean algebra and logic circuits.	Understanding (C2)
CO2	analyse and design a combination circuit (boolean expression) and construct a cost effective solution (minimization).	Analyzing (C4)
CO3	understand the classification of signals &systems and learn fundamentals of operations performed on signals.	Applying (C3)
CO4	familiarise with concepts of OPAMP, its applications and basics of digital and analog communication systems.	Applying (C3)
CO5	develop understanding of the concept of 2-port network parameters and basic knowledge of electronics instruments.	Understanding (C2)

Module No.	**Subtitle of the Module**	**Topics**	**No. of Lectures**

1.	Introduction to two port network.	Z- parameter, Y – parameter, H – parameter, T – Parameter, Interrelationship (T and pi – network)	6
2.	Operational Amplifiers	Introduction to Operational Amplifiers, Ideal Characteristics, Basic Concepts and their Applications like Comparators, Inverting and Non-inverting Amplifier, Subtractor, Adder, Integrator and Differentiator circuits.	8
3.	Basics of digital electronics	Number System, Introduction to Boolean algebra, Boolean Laws, SOP, POS Canonical Forms, logic circuits and logic gates, k – Map, multiplexers, encoder and decoders.	15
4.	Introduction of Signals and Systems	Basic overview of Signals and Systems, Signal types and their representation-Time Domain, Frequency Domain.	5
5.	Introduction of Communications	Basics of analogue communication (AM, FM, PM), Analogue to Digital Conversion, digital communication (ASK, PSK, FSK, PCM)	4
6.	Instruments	CRO, digital meters, function generators, power supplies, moving coil, moving iron, energy meter and watt meter.	4
		Total number of Lectures	42

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Class Test, Assignment, Quiz)
Total	**100**

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

1.	Dorf, R.C. and Svoboda, J.A., 2010. *Introduction to electric circuits*. John Wiley & Sons.
2.	Mano, M.M., 2002. *Digital design*. Pearson Education Asia.
3.	Oppenheim, A.V., Willsky, A.S. and Nawab, S.H., 1983. *Signals and systems*. Prentice-Hall.

Detailed Syllabus

Lab-wise Breakup

Course Code	15B17EC273	**Semester** ODD **(specify Odd/Even)**	**Semester** III **Session** 2018 -2019 **Month from** July to December
Course Name	Basic Electronics Lab		
Credits	**1**	**Contact Hours**	02

Faculty (Names)	**Coordinator(s)**	SumeghaYadav
	Teacher(s) (Alphabetically)	Dr. Madhu Jain, Dr. Richa Gupta

COURSE OUTCOMES		**COGNITIVE LEVELS**
CO1	Build logic gates and combinational circuits in digital electronics	Applying (Level III)
CO2	Construct Op- Amp IC 741 based electronics circuits	Applying (Level III)
CO3	Analyze Z and h parameters of two – port network	Analyzing (Level IV)

Module No.	Title of the Module	List of Experiments	CO
1.	Digital System Design	Review of Digital ICs, specifications, study of the data sheet, concept of Vcc and ground, verification of the truth tables of logic gates using ICs.	CO1
2.	Digital System Design	Implementation of basic gates (AND, OR, NOT, XOR, XNOR) using the universal gates NAND and NOR.	CO1
3.	Digital System Design	To implement Half Adder, Full Adder and Half Subtractor, Full Subtractor circuits using logic gates.	CO1
4.	Digital System Design	To realize 4:1 Multiplexer using NAND gates.	CO1
5.	Digital System	To realize 2:4 Decoder using basic logic gates.	CO1

	Design		
6.	Digital System Design	To realize and implement 2-bit Magnitude Comparator using logic gates.	CO1
7.	Digital System Design	To design a 2-bit Multiplier using basic logic gates.	CO1
8	Operational Amplifier Circuits	To realize inverting and non inverting amplifier configuration using Op- Amp IC 741.	CO2
9.	Operational Amplifier Circuits	To realize Adder and Subtractor circuits using Op-Amp IC 741.	CO2
10.	Operational Amplifier Circuits	To realize integrator and differentiator circuits using Op-Amp IC-741.	CO2
11.	Two-Port Networks	To determine the Z-parameters of a 2- port resistive network.	CO3
12.	Two-Port Networks	To determine the h-parameters of a two-port resistive network.	CO3

Evaluation Criteria

Components	**Maximum Marks**
Viva 1	20
Viva 2	20
DTD	60
Total	**100**

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

1.	Dorf, R.C. and Svoboda, J.A., 2010. *Introduction to electric circuits*. John Wiley & Sons.
2.	Mano, M.M., 2002. *Digital design*. Pearson Education Asia.
3.	Oppenheim, A.V., Willsky, A.S. and Nawab, S.H., 1983. *Signals and systems*. Prentice-Hall.

Detailed syllabus

Lecture-wise Breakup

Subject Code	15B1NHS432	**Semester:** ODD	**Semester** III **Session** 2018-2019 **Months:** from July 2018 to December 2018
Subject Name	INTRODUCTION TO PSYCHOLOGY		
Credits	3	**Contact Hours**	2-1-0
Faculty (Names)	**Coordinator(s)**	Dr.Badri Bajaj and Dr.RuchiGautam	
	Teacher(s) (Alphabetically)	Dr.Badri Bajaj Dr.RuchiGautam	

COURSE OUTCOMES		**COGNITIVE LEVELS**
After pursuing the above mentioned course, the students will be able to:		
C206-6.1	Demonstrate a basic understanding of different perspectives and concepts of psychology	Understanding Level (C2)
C206-6.2	Apply the concepts of psychology in day to day life	Applying Level (C3)
C206-6.3	Examine the different theoretical perspectives and models of psychology	Analyzing Level (C4)
C206-6.4	Develop solutions for problems related to psychology using appropriate tools/models	Creating Level (C6)

Module No.	**Subtitle of the Module**	**Topics in the module**	**No. of Lectures for the module**
1.	Introduction to Psychology	Definition, Nature, and Scope of Psychology; Approaches: Biological, Psychodynamic, Behaviorist, and	3

		Cognitive. Methods: Experimental, Observation and Case study; Fields of application.	
2.	Basic Concepts	Person, Consciousness, Behavior and Experience, Perception and learning	5
3.	Memory	Process of Memory: Encoding, Storage, Retrieval; Stages of Memory: Sensory, Short term and Long term	3
4.	Motivation	Motives: Intrinsic and Extrinsic Frame Work, Theories of Motivation; Techniques of Assessment of Motivations; Frustration and Conflict.	3
5.	Emotions	Concept, Development, Expression, Theories of Emotions.	2
6.	Intelligence	Nature, Theories, Measurement and Approaches - Genetic and Environmental	3
7.	Personality	Nature, Approaches, Determinants and Theories; Techniques of Assessment: Psychometric and Projective Techniques.	5
8.	Psychology of Adjustment	Psychological Disorders: Anxiety, Stress, Depression; Psychotherapies.	4
Total number of Lectures			**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Assignment, Quiz, Oral Questions)
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.	R.A. Baron and G. Misra, Psychology, 5th Ed., Pearson, 2015
2.	S. Nolen-Hoeksema, B. L. Fredrickson, G. R. Loftus, and C. Luts, Introduction to Psychology, 16th Ed., Cengage Learning, 2014
3.	S. K. Ciccarelli and G. E. Meyer, Psychology, Pearson, 5th Ed., 2017

Detailed Syllabus
Lecture-wise Breakup

Course Code	16B1NHS332	**Semester : ODD (specify Odd/Even)**	**Semester** : III **Session** 2018 -2019 **Month from:** July-December
Course Name	Quantitative Methods for Social Sciences		
Credits	**03**	**Contact Hours**	**2-1-0**

Faculty (Names)	**Coordinator(s)**	ManasRanjanBehera
	Teacher(s) (Alphabetically)	ManasRanjanBehera

COURSE OUTCOMES		**COGNITIVE LEVELS**
After pursuing the above mentioned course, the students will be able to:		
C206-3.1	*Demonstrate* the key concepts of different quantitative methods used in social sciences.	Understanding Level- (C2)
C206-3.2	*Classify and summarize the* data to be used for analysis.	Understanding Level- (C2)
C206-3.3	*Apply* the theoretical concept toperform basic data analysis in social sciences.	Apply Level –(C3)
C206-3.4	*Examine* different statistical methods and be able to discuss the merits and limitations of a particular method	Analyze Level –(C4)
C206-3.5	*Recommend* appropriate conclusions following empirical analysis	Evaluation Level- (C5)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction	Introduction to Quantitative Methods, Classification & Presentation of Data: Tabulation-Types of Table, Diagrammatical and Graphical presentation.	3
2.	Mathematical	Mathematical basis of Managerial Decision-Concepts,	3

	Concepts	Frequency Distribution and their Analysis	
3.	Statistical Concepts	Measures of Central Tendency, Measures of Dispersion, Measures of Association, Sampling and sample size estimation, Point estimation, Statistical Intervals based on Single sample.	4
4.	Hypothesis Testing	Hypothesis Testing based on single sample, Inferences based on Two samples, t, Z and chi- square and F tests	8
5.	Regression Analysis	Simple Linear Regression and Correlation, Multiple Regression Model	3
6.	Time Series Analysis	Trend Projection, Moving averages and Exponential smoothing Techniques, Index Numbers	3
7.	Multivariate Analysis	ANOVA, MANOVA, Factor Analysis, Discriminant Analysis	4
		Total number of Lectures	**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Quiz+ Assignment+Viva-voce)
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.	Sirkin, RM. Statistics for the Social sciences. 3rd ed. Thousand Oaks, Calif: Sage Publications; 2006.
2.	Montgomery, DC. , George C. Runger. Applied statistics and probability for engineers. 3rd ed. Hoboken, NJ: Wiley.,2007
3.	Healey, JF. Statistics: A Tool for Social Research. 9th ed. Calif: Wadsworth Cengage Learning; 2012.

Detailed Syllabus
Lecture-wise Breakup

Course Code	15B1NHS431	**Semester** : Odd	**Semester** III **Session** 2018 -2019 **Month** from July 2018 to Dec 2018
Course Name	Introduction to Literature		
Credits	3	**Contact Hours**	2-1-0
Faculty (Names)	**Coordinator(s)**	Dr. Monali Bhattacharya (Sector 62) Dr. Ekta Srivastava (Sector 128)	
	Teacher(s) (Alphabetically)	Dr. EktaSrivastava , Dr. Monali Bhattacharya.	

COURSE OUTCOMES		**COGNITIVE LEVELS**
C206-5.1	Understand figurative language to demonstrate communication skills individually and in a group	Understand Level (C2)
C206-5.2	Develop a critical appreciation of life and society through a close reading of select texts	Apply Level(C3)
C206-5.3	Analyze a literary text thematically and stylistically and examine it as representing different spectrum of life, human behaviour, and moral consciousness of society.	Analyse Level(C4)
C206-5.4	Interpret Literature as reflection of cultural and moral values of life and society	Evaluate Level(C5)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction to Literature & Genres	Introduction Literary Genres Literary Devices	3
2.	Poems	On His Blindness: John Milton Ode to a Grecian Urn: John Keats My Last Duchess: Robert Browning Success is Counted Sweetest: Emily Dickinson A Prayer before Birth: Louis MacNeice	7

		Goodbye Party for Miss Pushpa T.S.: Nissim Ezekiel	
3.	Prose & Short Stories	The Spectator Club: Richard Steele Ultima Thule: John Galsworthy Toba Tek Singh: Saadat Hasan Manto	6
4.	Plays & Drama	Select Soliloquies of Macbeth & Hamlet The Characters of Macbeth, Lady Macbeth & Hamlet as Universal Characters. The Caretaker: Harold Pinter	8
5.	Novel	To Sir With Love: E.R. Braithwaite	4
		Total number of Lectures	**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Paper/Poster, Presentation , Oral Questions)
Total	**100**

Recommended Reading material:

1	**M.H. Abrams**, *'A Glossary of Literary Terms'*, 7th Edition, Hienle&Hienle: Thomson Learning, USA, 1999
2	**Mark William Roche**, *'Why Literature matters in the 21st Century'*, First Edition, Yale University Press, 2004.
3	**E.R. Braithwaite**, *'To Sir With Live'*, First Edition, Bodley Head, UK, 1959. Susie Thomas(Ed), "E. R. Braithwaite: 'To Sir, with Love' – 1959", Available at http://www.londonfictions.com
4	**Khalid Hasan**(Translator), *'Saadat Hasan Maanto : Toba Tek Singh'* Reprint, Penguin Books, India, 2008.
5	**Harold Pinter**, *'The Caretaker: A Play in Three Acts'*, First Edition, Encore Publishing Co.,London, 1960
6	**Anon,** (n.d.). *The Spectator Club. Sir Richard Steele. 1909-14. English....* [online] Available at: http://www.bartleby.com/27/7.html [Accessed 2018].
7	*All poems online: http://www.poetryfoundation .org*
8	Wolfgang**Clemen**, '*Shakespeare's Soliloquies'*, First Edition, Routledge, London, 1987.

Detailed Syllabus

Lecture-wise Breakup

Course Code	**15B1NHS435**	**Semester Even** **(specify Odd/Even)**	**Semester Session** 2018 - 2019 **Month from Jan-June 2019**
Course Name	Financial Accounting		
Credits	3	**Contact Hours**	3 (2,1,0)

Faculty (Names)	**Coordinator(s)**	Dr. Mukta Mani (Sec-62), Dr. SakshiVarshney (Sec-128)
	Teacher(s) (Alphabetically)	Dr. Mukta Mani, Dr. SakshiVarshney

COURSE OUTCOMES		**COGNITIVE LEVELS**
C206-8.1	Understand the basic concepts of Accounting.	Understanding level (C2)
C206-8.2	Apply accounting concepts for recording of business transactions.	Applying level (C3)
C206-8.3	Compare and reconcile the accounting records with other sources of information	Analyzing level (C4)
C206-8.4	Evaluate the accounting records to identify and rectify the errors made during accounting process.	Evaluating level (C5)
C206-8.5	Construct the final accounts of a business	Creating (C6)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction to Accounting	Meaning of Accounting, Objectives of Accounting, Understanding Company Management, Stakeholders versus Shareholders, Financial Reporting Standards, Financial Reporting	3
2.	Understanding Accounting	Elements of Financial Statements- Assets, Current assets, Liabilities, Current liabilities, Equity, Income,	4

	Elements	Expenses, Accounting Equation	
3.	Accounting Concepts	Business entity concept, Money measurement concept, Going concern, Consistency, Matching concept, Cost concept, Dual aspect concept, Materiality, Full disclosure Generally Accepted Accounting Principles (GAAP)	4
4.	Journal Transactions	Journal, Rules of Debit and Credit, Compound Journal entry, Opening entry	5
5.	Ledger Posting and Trial Balance	Ledger, Posting, relationship between Journal and Ledger, Rules regarding Posting, Trial balance	5
6.	Rectification of Errors	Different types of errors, their effect on trial balance, rectification and preparation of suspense account	3
7.	Bank Reconciliation Statement	Meaning of Bank Reconciliation Statement, technique of preparing BRS, Causes of difference	2
8.	Final Accounts	Trading account, Profit and Loss account, Balance sheet, Adjustment entries	2
		Total number of Lectures	**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Quiz + Class test +Class Participation)
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.	**Text Books:** **Maheshwari S. N., Financial and Management Accounting, 5th Ed., S. Chand & Sons Publication, 2014. ISBN No.: 978-81-8054-529-0**
2.	**Reference Book:** **Ghosh, T.P., Financial Accounting for Managers, 4th Ed., Taxmann Publications, 2009**

Detailed Syllabus

Lecture-wise Breakup

Course Code	**15B1NHS433**	**Semester** ODD **(specify Odd/Even)**	**Semester** III **Session** 2018 -2019 **Month from** July to Dec
Course Name	**INTRODUCTION TO SOCIOLOGY**		
Credits	**3**	**Contact Hours**	**2-1-0**

Faculty (Names)	**Coordinator(s)**	…
	Teacher(s) (Alphabetically)	…

COURSE OUTCOMES		**COGNITIVE LEVELS**
C206-7.1	Explain the major sociological perspectives and methods in the systematic study of society.	Remembering (C1)
C206-7.2	Develop and maximize the idea to explain processes of socialization, social control and how socialization operates in different societies and cultures and concepts of culture and its components (e.g., norms, values).	Understanding(C2)
C206-7.3	Explain the concept of social stratification and types of stratification as class, caste and gender.	Understanding (C2)
C206-7.4	Apply sociological perspective on the origin, development and characteristics of rural and urban societies.	Applying(C3)
C206-7.5	Analyse various social structures in societies and how it shapes and influences social interactions.	Analysing (C4)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction	Introduction to sociology and the sociological imagination	2

2.	Basic Concepts of Sociology	Status, Roles, Communities, Interaction, Society and Groups Socialization, Culture, Social Stratification and Deviance	6
3.	Types of Communities	Caste(Sanskritization, Westernization,) ,Class & Tribes, Rural Societies Urban Structures	5
4.	Sociology of Institutions	Kinship, Family ,Religion, Education &Economy in Society	5
5.	Process of Change and Mobility	Modernization, Urbanization, Globalization, Liberalization and Knowledge and Power in Development	4
6.	Sociology of Science	Science, the Environment, and Technology	3
7.	Sociology of Collectivity	Collective Action, Social Movements, and Social Change	3
		Total number of Lectures	**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25
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.	Anthony Giddens, *Sociology*, 6th Edition, Wiley Publishers 2009
2.	C. Wright. And Mills, *The Sociological Imagination*, Oxford: Oxford University Press, 1959
3.	Peter Berger, *Invitation to Sociology: A Humanistic Perspective* (1963)
4.	Peter L Berger, *The Social Construction of Reality: a Treatise in the Sociology of Knowledge. Garden City*, New York: Anchor. (1966).
5	Conley and Dalton, *You May Ask Yourself: An Introduction to Thinking Like a Sociologist*, 2nd Ed, W. W. Norton & Company New York: (2011) ISBN: 0393935175 or 978-0393935172
6	Ballentine and Roberts, *Our Social World: Introduction to Sociology*, 4th Edition, Sage. 2013
7	Robert Parkin and Linda Stone, (ed.). *Kinship and Family: An Anthropological Reader*, U.S.A.: Blackwell, 2000, selected chapters

Detailed Syllabus

Lecture-wise Breakup

Course Code	16B1NHS333	**Semester :** Odd	**Semester III Session** 2018 -2019 **Month from** July 2018 to Dec 2018
Course Name	Ethics and Corporate Governance		
Credits	3	**Contact Hours**	2-1-0

Faculty (Names)	**Coordinator(s)**	Dr. Monica Chaudhary(JIIT-62), Dr.Amba Agarwal (JIIT-128)
	Teacher(s) (Alphabetically)	Dr.Amba Agarwal, Dr. Monica Chaudhary

COURSE OUTCOMES		**COGNITIVE LEVELS**
After pursuing the above mentioned course, the students will be able to:		
C206-4.1	Apply the basic principle and theories of ethics in different contexts.	Applying Level (C3)
C206-4.2	Understand the various elements of Corporate Governance Structure, Principles and Functions.	Understanding Level (C2)
C206-4.3	Analyze perspectives of different stakeholders on ethical issues	Analyzing Level (C4)
C206-4.4	Illustrate the evolution and development of Corporate Governance in India and globally.	Understanding Level (C2)
C206-4.5	Evaluate the Corporate Governance failures through real life cases.	Evaluating Level (C5)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction	Ethics, Business Ethics, Corporate Governance, Governance through Inner Consciousness and Sustainability. The Role and Responsibility of Business in Society.	4
2.	Ethical Principles in Business	Corporate Governance Structure, Corporate Governance Principles, Corporate Governance Functions, Failure of Governance and its Consequences.	4

3.	Conceptual Framework of Corporate Governance	Introduction, Need and Scope of Corporate Governance in India. Developments in Corporate Governance – A Global Perspective, Elements of Good Corporate Governance.	4
4.	Board of Directors	Role of Board of Directors. Organization Climate & Structure and Ethics. Addressing Ethical Dilemmas. Code of Ethics; Ethics Committee. Case Studies and Contemporary Developments.	4
5.	Board Effectiveness - Issues and Challenges	Board Composition; Diversity in Board Room; Types of Directors; Board's Role and Responsibilities. Relationship between Directors and Executives. Visionary Leadership. Performance Evaluation of Board and Directors.	4
6.	Board Committees	Various Board Committees, their Composition, Role, Responsibilities and Contribution. Audit Committee. Shareholders Grievance Committee. Remuneration Committee. Nomination Committee. Corporate Governance Committee. Corporate Compliance Committee & Other Committees.	3
7.	Legislative Framework of Corporate Governance – An International Perspective	Australia, Singapore, South Africa, United Kingdom, Contemporary Developments in the Global Arena.	3
8.	Corporate Governance and Other Stakeholders	Employees, Customers, Lenders, Vendors, Government and Society.	2
		Total number of Lectures	**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Presentation & Viva)
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.	ZabihollahRezaee, Corporate Governance and Ethics, First Edition, Wiley, 2008.
2.	Robert A. G. Monks, Nell Minow, Corporate Governance, Fifth Edition, Wiley, 2011.

Detailed Syllabus

Lecture-wise Breakup

Course Code	**18B12HS411**	**Semester :ODD (specify Odd/Even)**	**Semester III Session** Month from July -December
Course Name	**Political Processes in India**		
Credits	*3* …	**Contact Hours**	2-1-0

Faculty (Names)	**Coordinator(s)**	…
	Teacher(s) (Alphabetically)	…

CO Codes	**COURSE OUTCOMES**	**COGNITIVE LEVELS**
After pursuing the above mentioned course, the students will be able to:		
C206-2.1	Explain importance of Constitution and the formation of democratic rights of individual in Indian.	Understanding (C2)
C206-2.2	Understand different modes of political process to understand political system.	Understanding (C2)
C206-2.3	Interpret the working of the constitution	Understanding (C2)
C206-2.4	Explain the institutional formation	Understanding (C2)
C206-2.5	Examine which concepts are most useful for political processes of the country	Analysing (C4)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	**Political Parties**	National and regional parties.	6

	and the Party System	Trends in the party system From the Congress system to the era of multiparty coalitions. The nature of, and challenges to, the electoral system social determinants of voting.	
2.	**FederalismRegional Aspirations**	Politics of secession, autonomy and accommodation. Centre - state relations; Regionalism Ethnicity Globalizations.	6
3.	**Caste and Politics**	Caste in politics and the politicization of caste. Interaction of caste with class and gender. Caste discrimination and affirmative action policies	4
4.	**Institution Building**	Parliament (Committees and Sub Committees) Election Commission CAG National Human rights commission. The Supreme Court. Executive's – All India Services	12
		Total number of Lectures	**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25
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.	Arora, B. (2000) 'Negotiating Differences: Federal Coalitions and National Cohesion', in Frankel, F. Hasan, Z. Bhargava, R. and Arora, B. (eds.) *Transforming India: Social and*

	Political Dynamics of Democracy. New Delhi: Oxford University Press
2.	Jaffrelot, C. (2001) 'The SanghParivar Between Sanskritization and Social Engineering', in Hansen, T.B. and Jaffrelot, C. (eds.) *The BJP and the Compulsions of Politics in India.* New Delhi: Oxford University Press
3.	Kothari, R. (2004). 'The Congress "System" in India', in Hasan, Z. (ed.) *Parties and Party Politics in India*, New Delhi: Oxford University Press
4.	Manor, J. 'Regional Parties in Federal Systems', in Arora, B. and Verney, D.V. (eds.) *Multiple Identities in a Single State: Indian Federalism in Comparative Perspective.* Delhi: Konark
5.	Shankar, B.L. &Rodrigues,V. (2005) *The Indian Parliament: A Democracy at Work*, New Delhi: Oxford University Press
6.	Manor, J. (1994) 'The Prime Minister and the President', in B.D. Dua, and J. Manor (eds.) *Nehru to the Nineties : The Changing Office of the Prime Minister in India*, Vancouver: University of British Columbia Press

Detailed Syllabus

Lecture-wise Breakup

Course Code	**16B1NHS331**	**Semester** Even **(specify Odd/Even)**	**Semester** 3 **Session** 2018 -2019 **Month from** July 2018 to Dec 2018
Course Name	Social and Legal Issues		
Credits	3	**Contact Hours**	**2-1-0**

Faculty (Names)	**Coordinator(s)**	Dr Swati Sharma
	Teacher(s) (Alphabetically)	Dr. Praveen Kumar Sharma, Dr Swati Sharma

CO Code	COURSE OUTCOMES	COGNITIVE LEVELS
C206-1.1	Demonstrate an understanding of social science and business law to individuals and businesses.	Understanding Level (C2)
C206-1.2	Critically evaluate how information technology, contractual agreements, rights and obligations affects business and society	Evaluating Level (C5)
C206-1.3	Analyse legal implications of societal laws.	Analyzing Level (C4)
C206-1.4	Develop acceptable attitudes with respect to ethical cultural and social issues related to technology, system, information	Applying Level (C3)

Module No.	Title of the Module	Topics in the Module	No. of Lectures for the module
1.	Introduction	Introduction to Social and Legal Issues	1
2.	Social Structure and Impact	Social Structure Social Impact on Information system and Technology Corporate Social Responsibility	3
3.	Ethics	Business Ethics & Values, Professional Conduct, Code of ethics for an Engineer, Ethics in Bio-Tech.	2

4.	Societal Laws	Introduction to Constitution, Right to information, Consumer Protection Act,	6
5.	Business Laws	Contract Act, Company Act, Negotiable Instruments Acts	8
6.	Intellectual Property & Cyberspace	Intellectual Property Issues:(What is Intellectual Property , Copyright Law, Trademark and Law of Patent	5
7.	Cyber Crime, Laws and IT Act	Computer Crimes(Fraud and Embezzlement, Sabotage & Information Theft, Intruders, Hacking& Cracking), Computer Crime Laws, Digital Forgery, Cyber Terrorism, Wiretapping, IT Act	3
		Total number of Lectures	**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Assignment and Oral Viva)
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.	Albuquerque D, Business Ethics Principles and Practices, 1st edition, Oxford University Press,2010
2.	Baase,S, A Gift Of Fire Social, Legal, & Ethical Issues in Computing and Internet,2nd edition Prentice Hall, US, 2006
3.	Diwan,P. &Kapoor,S, Cyber And E-Commerce Laws with information Technology Act, & Rules,2nd edition, Prakesh Publication House,Jaipur , 2000
4	Gogna,P.P.S., A Text book of Business Law, 1sted, , S Chand & Company LTD.2000
5	Ghosh,B., Ethics in Management and Indian Ethos, 2nd Edition, Vikas Publishing house,New Delhi, 2006