Detailed Syllabus
Lecture-wise Breakup

Course Code	15B11EC413	**Semester** Even	**Semester** IV **Session** 2020 –2021 **Month from** Jan to June
Course Name	DIGITAL SIGNAL PROCESSING		
Credits	4	**Contact Hours**	**4**

Faculty (Names)	**Coordinator(s)**	Madhu Jain, Hemant Kumar
	Teacher(s) (Alphabetically)	Parul Arora, Smriti Bhatnagar

COURSE OUTCOMES		**COGNITIVE LEVELS**
C215.1	Recall the principles of z-transforms, explain the DFTs (Discrete Fourier Transform) and develop FFT (Fast Fourier Transform) algorithms for DFT.	Applying (C3)
C215.2	Construct and Analyze the digital FIR (Finite Impulse Response) and IIR (Infinite Impulse Response) filters.	Analyzing (C4)
C215.3	Demonstrate multi-rate signal processing and relate DSP (Digital Signal Processing) in various applications.	Understanding (C2)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	**Review of Discrete time Signals and Systems**	Review of discrete–time sequences and systems, discrete time system analysis using Z transform.	**3**
2.	**Discrete Fourier Transform and FFT**	Discrete Fourier Transform (DFT) and its properties, Linear filtering methods based on DFT, Frequency analysis of signals using the DFT, Fast Fourier Transform (FFT) algorithms using decimation in time and decimation in frequency techniques.	11
3.	**FIR Filter design**	Basic structures of digital filters; Significance of Linear phase response, FIR filters design - Frequency sampling and Windowing techniques, Computer aided design.	8
4.	**IIR Filter design**	Approximation of filter functions: Butterworth, Chebyshev, Elliptic; IIR filter design based on analog filter functions- Impulse Invariant and modified invariant response techniques, Bilinear transformation method.	10
5.	**Multi-rate Digital Signal Processing**	Decimation & Interpolation, Filter design with sampling rate conversion by a rational factor I/D	5
6.	**DSP Applications**	Applications in speech and image processing, and power spectrum estimation.	7
		Total number of Lectures	44
Evaluation Criteria			

Components	Maximum Marks
T1	20
T2	20
End Semester Examination	35
TA	25
Total	**100**

Project based learning: Students will learn different techniques used for the generation, transformation, extraction and interpretation of information via discrete signals which is essential for smart phones, home appliances, healthcare devices, cameras and in general for many digital systems. Student shall be given various practical situation based design exercises to be implemented in MATLAB or OCTAVE. This would enable them to recall and apply various techniques and algorithms taught in course to design and analyse the required system that meets the given technical specification.

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.	L. Tan and Jean Jiang , Digital Signal Processing Fundamentals and Applications, Third Edition, Academic Press, 2013
2.	J. G. Proakis & D. G. Manolakis, Digital Signal Processing, Principles, Algorithms and Applications, Fourth edition, PHI, 2007.
3.	S. K. Mitra, Digital Signal Processing: A Computer Based Approach, Fourth Edition, McGraw Hill, 2013.
4.	L. R. Rabiner, B. Gold, Theory and application of digital signal processing, Third Edition, PHI, 2012
5.	A. Antoniou, Digital Signal Processing: Signals, Systems, and Filters, TMH, 2006

Detailed Syllabus
Lab-wise Breakup

Course Code	**15B17EC473**	**Semester Even**	**Semester** IV **Session** 2020 -2021 **Month from** Jan – Jun
Course Name	**Digital Signal Processing (DSP) Laboratory**		
Credits	1	**Contact Hours**	0-0-2

Faculty (Names)	**Coordinator(s)**	Dr. Bajrang Bansal, Dr. Madhu Jain
	Teacher(s) (Alphabetically)	Dr. Bajrang Bansal, Dr. Kuldeep Baderia, Dr. Sajai Vir Singh, Dr. Madhu Jain, Dr. Vineet Khandelwal, Dr. Abhinav Gupta, Dr. Rahul Kaushik, Mr. Ritesh Sharma, Ms. Smriti Bhatnagar

COURSE OUTCOMES		**COGNITIVE LEVELS**
C277.1	Recall and interpret discrete time signals and systems in time domain and in frequency domain	Understanding Level (C2)
C277.2	Develop and demonstrate coding skills from basic mathematical operations to complex operations like DFT and FFT.	Applying Level (C3)
C277.3	Identify and examine different digital filter structures.	Analyzing Level (C4)
C277.4	Determine and observe magnitude and phase characteristics (Frequency response Characteristics) of digital IIR-Butterworth, Chebyshev filters and digital FIR filters using window techniques for various applications of DSP.	Evaluating Level (C5)

Module No.	**Title of the Module**	**List of Experiments**	**CO**
1.	Introduction to MATLAB	Introduction to the MATLAB and its features.	C277.1
2.	Introduction to applications of MATLAB	Introduction to the different applications of MATLAB.	C277.1
3.	Discrete-Time Signals	Generation of discrete time signals with different operation on independent and dependent variable.	C277.1
4.	LTI Systems	Write your own MATLAB function to implement linear convolution as an operation to analyze discrete time LTI system.	C277.1
5.	Z-transform	Compute z- transform and inverse z-transform of a discrete time signals and systems. Plot pole-zero map of the same using symbolic tool box.	C277.1
6.	Discrete Fourier Transform (DFT)	Write your own MATLAB function to compute DFT (Discrete Fourier Transform) and IDFT (Inverse Discrete Fourier Transform) for the spectral analysis of signals.	C277.2
7.	Spectral Analysis	To determine magnitude and power spectrum of given signal.	C277.2
8.	Circular Convolution	Write your own MATLAB function ‘mycirconv’ to compute circular convolution of two sequences.	C277.2

9.	FFT	Develop radix-2 butterfly FFT (Decimation in Time) algorithm for the computation of N-point dft.	C277.2
10.	FIR Filter	Write MATLAB program to design digital FIR filter employing windowing technique.	C277.4
11.	IIR Filter	Write MATLAB program to design IIR digital filter for a given specification using bilinear transformation and impulse invariant method.	C277.4
12.	IIR Structures	Write MATLAB program for realization of digital IIR filter using direct form-I & II, cascade and parallel method.	C277.3
13.	DFT Properties	Virtual Lab: Study of Transform domain properties and its use.	C277.2
14.	FIR Filter Study	Virtual Lab: Study of FIR filter design using window method.	C277.4
15.	IIR Filter Study	Virtual Lab: Study of Infinite Impulse Response (IIR) filter.	C277.4

Evaluation Criteria

Components	**Maximum Marks**
V1	20
V2	20
AC	25
Attendance	15
Report	15
Virtual Lab Exp	5
Total	**100**

Project based learning: Students will design Digital filters (FIR and IIR) for the given design specifications using MATLAB programming as well Filter Design Analysis tool. Additionally, students in group sizes of two-three will realize various applications of DSP employing digital filters.

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.	Sanjit K. Mitra, Digital Signal Processing: With DSP Laboratory Using MATLAB: A Computer-Based Approach, *4th Edition, TMH*, 2013.
2.	Vinay K. Ingle, John G. Proakis, Digital Signal Processing Using MATLAB, *3rd Edition, Cengage Learning*, 2012.

Detailed Syllabii
Lecture-wise Breakup

Subject Code	18B11EC212	**Semester** **EVEN**	**Semester 4th Session** 2020-21 **Month from Jan to June**
Subject Name	ANALOG AND DIGITAL COMMUNICATION		
Credits	4	**Contact Hours**	3-1-0

Faculty (Names)	**Coordinator(s)**	ReemaBudhiraja, , Yogesh Kumar
	Teacher(s) (Alphabetically)	Bhawna Gupta, Raghvendra Kumar

COURSE OUTCOMES		**COGNITIVE LEVELS**
C211.1	Understand need of modulation and differentiate among various amplitude modulation schemes and design simple systems for generating and demodulating amplitude modulated signals.	ApplyingLevel (C1)
C211.2	Analyze the generation and detection of FM signal and design basic systems for the indirect and direct generation of FM signals.	Analyzing Level (C4)
C211.3	Understand the concepts of transmitters and receivers for analog modulations, Sampling process, time division multiplexing and GSOP.	Understanding Level (C2)
C211.4	Understand the concepts of waveform coding techniques, Line coding schemes and analysis of ISI Mitigation Techniques	Analyzing Level (C4)
C211.5	Understand the concepts of digital modulation techniques and evaluate their probability of error and bandwidth efficiency.	Evaluating Level (C5)

Module No.	**Subtitle of the Module**	**Topics**	**No. of Lectures**
1.	Introduction	Elements of a communication system;Analog and digital signals, bandlimited signals and systems, bandwidth	2
2.	Amplitude modulation	Introduction to modulation; AMSC,DSB, SSB, VSB Communication. Detection of AM signals: Coherent detection, Envelope detection,Costas receiver.	7
3.	Angle modulation	Concepts of FM and PM,Narrowband and wideband FM, Direct and indirect methods of FM generation, Detection of FM signals	6
4.	Transmitters , Receivers and Multiplexing Techniques	AM and FM Transmitters, Superheterodyne AM and FM Receivers. FDM,TDM, Interchannel crosstalk and bandwidth effects	3
5.	Sampling and Quantization techniques	Time and frequency domain sampling with aperture effects, Reconstruction of signals, Quantization process and mean	5

		square quantization error, GSOP.	
6.	Speech Coding ,Line Coding and Baseband Digital Transmission	Pulse Code modulation,Line Codes: Unipolar-NRZ, polar-NRZ, Unipolar-RZ, Bipolar-RZ, Manchester Code, DPCM, DM, Bit rate and bandwidth of digital signals, ISI Mitigation Techniques	11
7.	Digital Modulation Techniques	ASK, FSK ,PSK, QPSK Modulation, 16-QAM, Demodulation, Constellation diagrams, BER and their BW calculation,	9
		Total number of Lectures	43

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25
Total	**100**

Project based learning: Here, students will learn the process of analog and digital modulation schemes as it is of the utmost importance to understand the process of communication system and to design the same. Student will be able to design the communicationsystem as per requirements and some simulation on Matlab can also be performed to analyze the same . Understating of these techniques will further help to work in any communication based industry.

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

1.	LathiB.P, Modern Digital and Analog CommunicationSystems, 5th /ed ,Oxford University Press,2018
2.	H. Taub, D. L. Schilling and GautamSaha, Principles of Communication Systems, 4th/ed,TMH, 2017
3.	S.Haykin, Digital Communication Systems,John Wiley & Sons, 2013

ADC LAB PROPOSAL FOR SPECIAL SEM 2021

Course Code	18B15EC212	**Semester (special sem)**	**Semester IV Session 2020-2021** Month from **Jan** to **June**
Course Name	***Analog and Digital Communication Lab***		
Credits	**1**	**Contact Hours**	2 Hrs per week

Faculty (Names)	**Coordinator(s)**	Bhawna Gupta, Atul Kumar	
	Faculty involved in deciding mode of conduction	Ashish Goel, Neetu Joshi, Reema Budhiraja, Richa Gupta, Bajrang Bansal, Kapil Dev Tyagi	

COURSE OUTCOMES		**COGNITIVE LEVELS**
CO1	Analyse and construct various analogue modulation/ demodulation techniques	Analyzing (Level IV)
CO2	Understand the concepts of sampling process and time division multiplexing.	Applying (Level III)
CO3	Analyze and verify various digital modulation techniques.	Analyzing (Level IV)
CO4	Utilize Scilab/Octave to implement and understand the concept of Pulse code modulation and Delta modulation.	Analyzing (Level IV)

Module No.	**List of Experiments**	**COs**
1.	Study and simulation of amplitude modulation with full carrier for all three cases of modulation indices.	CO1
2.	Study and simulation of double side band suppressed carrier (DSB SC) modulation.	CO1
3.	Study and simulation of frequency modulation schemes NBFM and WBFM.	CO1
4.	Study and simulation of Sampling and signal reconstruction.	CO2
5.	Study and simulation of time division multiplexing (TDM).	CO2
6.	Study and simulation of binary amplitude shift keying (BASK) modulation scheme.	CO3
7.	Study and simulation of the binary phase shift keying (BPSK) modulation scheme.	CO3
8.	Study and Simulation of binary frequency shift keying (BFSK) modulation scheme.	CO3
9.	Study and simulation of generation and demodulation of pulse code modulation (PCM).	CO4

10.	Study and simulation of generation of delta modulation.	CO4

Evaluation Criteria Components Maximum Marks		**Day to day breakup**		**Assessment Components**	
Viva 1(Mid Sem Viva)	20	Assessment Components	45	AC 1- Lab record AC 2- Day to day work AC 3- Teacher Assessment AC 4- Execution of experiment	
Viva 2(End Sem Viva)	20	Attendance	15		
Day to day	60	**Total**			
Total	**100**	**60**			

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.	LATHI, B.P, Modern Digital and Analog Communication Systems, Oxford University Press, 3rd edition, 2005.
2.	S. Haykin, Communication Systems, John Wiley & Sons, Intl. Ed, 2004.
3.	**Online platform: GNU Octave or SciLab**
4.	**Octave tutorials:** https://www.youtube.com/watch?v=8gczfvuwnf8 https://www.youtube.com/watch?v=mvvmJLmfwNw **Scilab tutorials:** https://youtu.be/AzElVPaS71U Scilab software download: https://www.scilab.org/download/6.1.0
5	**Supporting links:** **sampling and reconstruction: https://youtu.be/sC1cLeme6fU**

Detailed Syllabus
Lecture-wise Breakup

Subject Code	18B11EC215	**Semester** Even	**Semester** IV **Session** 2020-21 **Month from** January **to** June
Subject Name	Digital Circuit Design		
Credits	4	**Contact Hours**	3-1-0

Faculty Members	**Coordinator(s)**	Bhartendu Chaturvedi, Jasmine Saini
	Teacher(s)	Akansha Bansal, Jitendra Mohan

COURSE OUTCOMES- At the end of the course, students will be able to:		**COGNITIVE LEVELS**
C212.1	Understand the representation and conversion of various number systems and binary codes.	Applying Level (C3)
C212.2	Understand the fundamental concepts and techniques used in digital electronics which in turn form a digital logic.	Applying Level (C3)
C212.3	Analyze and construct combinational and sequential logic circuits. Develop skill to troubleshoot digital circuits using Finite state machines. Study and Implement combinational and sequential circuits using VHDL.	Analyzing Level (C4)
C212.4	Classify different semiconductor memories and analyze digital system design using PLDs. Classify and analyze wave shaping circuits and digital logic families.	Analyzing Level (C4)

Module No.	Subtitle of the Module	Topics in the Module	No. of Lectures
1	Introduction to Digital Systems, Binary Codes and Boolean Algebra	Digital systems, Importance, Analog vs. digital world; Conversion of bases, Representation of negative numbers, 9's and 1's complements, 10's and 2's complements, Arithmetic using 1's and 2's complements; Hexadecimal code, BCD, Excess-3 code, Gray code and Alphanumeric code; Basic theorems and properties of Boolean algebra; Digital logic gates.	4
2	Boolean Function Representation and Minimization Techniques	Canonical and standard forms; Prime implicants and essential prime implicants; Minimization of Boolean functions using Karnaugh map and Quine-McCluskey technique; Two-level gate implementation.	5
3	Combinational logic circuits	Binary adders and subtractors: Half adder, full adder, half subtractor, full subtractor, full adder using half adder, parallel adder, adder cum subtractor, look ahead carry adder; Circuit delay calculation; Magnitude comparator; Decoder and encoder; Multiplexer and demultiplexer; Binary multiplier; Code converters .	9
4	Sequential logic circuits	Latches and flip-flops: SR, JK, master-slave JK, T	10

		and D; Conversion of flip-flops; Synchronous and asynchronous counters; Registers and shift registers; Counters using shift registers; State diagram; Analysis of sequential circuits using flip-flops.	
5	State machines	Finite state machine of sequential circuits - Moore and Mealy machines.	3
6	Programmable logic devices	RAMs- DRAM, SRAM and ROM. PLDs: PLAs, PALs and PROMs.	3
7	Wave shaping circuits	Linear wave shaping circuits, Schmitt trigger, Square wave generator, IC-555 based multivibrators.	2
8	Introduction to digital logic families	Parameters of logic families, Types- DTL, RTL, TTL, CMOS.	3
9	Introduction to VHDL	Basic language elements, Different modeling styles: Dataflow, structural and behavioral.	3
Total Lectures			42

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25
Total	**100**

Project based learning: Digital Circuit Design is a fundamental course in Electronics and Communication Engineering. In this course, a description of the effective and innovative logic circuit design is presented, which can be utilized to design various logic circuits. The project based exercises using Boolean logic functions, constructing a truth table, assembling the logic gates, counters design and FSM are also included. In addition to understand digital era, this course also delivers VHDL based basic learning methods that bring knowledge to drive state of art projects.

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. Morris Mano, “Digital logic and computer design,” 5th ed., Pearson Prentice Hall, 2013.
2.	M. Morris Mano and Michael D. Ciletti, “Digital Design with an Introduction to the Verilog Hdl,” 5th Edition, Pearson Education, 2013.
3.	J. Bhasker, “A VHDL Primer,” 3rd ed., Pearson Education, 2015.
4.	R. P. Jain, “Modern Digital Electronics,” 4th Edition, Tata McGraw-Hill Education, 2009.
5.	A. Anand Kumar, “Fundamentals of Digital Circuits,” PHI; 4th Revised edition, 2016.

Detailed Syllabus
Lab-wise Breakup

Course Code	18B15EC215	**Semester:** Even **(specify Odd/Even)**	**Semester:** 4th **Session** 2020-21 **Month from:** January to June
Course Name	Digital Circuit Design Lab		
Credits	1	**Contact Hours**	2

Faculty (Names)	**Coordinator(s)**	Dr. Jitendra Mohan, Dr. Richa Gupta
	Teacher(s) (Alphabetically)	Dr. Abhishek Kashyap, Dr. Ashish Goel, Dr. Bajrang Bansal, Dr. Bhartendu Chaturvedi, Dr. Vimal Kumar Mishra, Mr. B.suresh, Ms. Bhawna Gupta

COURSE OUTCOMES - At the end of the course, students will be able to:		**COGNITIVE LEVELS**
C271.1	Learn the nomenclature of digital ICs, familiarize and verify the truth tables of logic gates using ICs.	Applying Level (C3)
C271.2	Analyze, construct and verify various combinational circuits and their functionalities.	Analyzing Level (C4)
C271.3	Identify basic requirements to analyze, construct and verify sequential circuits.	Analyzing Level (C4)
C271.4	Utilize VHDL to implement and simulate the combinational and sequential logic circuits.	Applying Level (C3)

Module No.	Title of the Module	List of Experiments	CO
1.	Nomenclature and specifications of digital ICs	Introduction to Digital Circuit Design Lab: Nomenclature of Digital ICs, specifications, study of the data sheet, concept of V_{CC} and ground, verification of the truth tables of logic gates using ICs.	C271.1
2.	Implementation of basic logic gates	(a) To implement basic logic gates AND, OR, NOT using NAND and NOR gates (b) To implement Ex-OR gate using NOR gates only (c) To implement the Boolean expression(s) using NAND gates	C271.1
3.	Combinational Logic circuits	To design 4-bit Binary to Gray and Gray to Binary Code Converters.	C271.2
4.	Combinational Logic circuits	To realize a Half Adder, Full Adder and Half Subtractor using logic gates.	C271.2
5.	Combinational Logic circuits	To design a 2-bit Multiplier using basic logic gates.	C271.2
6.	Combinational Logic circuits	To realize and implement 2-bit Magnitude Comparator using logic gates.	C271.2
7.	Combinational Logic circuits	To realize 4:1 Multiplexer using NAND gates.	C271.2
8.	Combinational Logic circuits	To realize 2:4 Decoder using basic logic gates and to realize Half Adder using 2:4 Decoder as a block.	C271.2
9.	Seven-segment display	Display decimal digit between 0-9 on seven segment using BCD Decoder IC-7447.	C271.2
10.	Sequential Logic circuits	To realize and verify the truth table of SR, Gated SR, Gated D Latch using logic gates and of JK flip flop using IC-74LS76.	C271.3

11.*	Sequential Logic circuits	To design a Ripple Counter (Asynchronous) using JK flip flop IC-74LS76 and display the output on seven segment.	C271.3
12.*	Sequential Logic circuits	To Design and implement counting sequence 0, 7, 1, 6, 2, 5, 0, 7…. (Repeating) using IC-74LS76.	C271.3
13.*	Wave shaping circuits	Using IC-555 in Astable mode to generate a rectangular pulse of 1ms period with duty cycle 75%.	C271.3
14.*	Combinational and Sequential Logic Circuits using VHDL	(a) Write the VHDL program for the following logic circuits: Half Adder, Full Adder, 2X1 Multiplexers, 2:4 Decoder. (b) Write VHDL program for D, JK, T and RS flip flops.	C271.4

Evaluation Criteria

Components	**Maximum Marks**
Mid Sem Viva	20
End Sem Viva	20
Day-to-day performance	30
Attendance	15
Lab Record	15
Total	**100**

Project Based Learning: The main learning objective of this Lab course is that students should be able to analyze and design simple combinational and sequential circuits by means of discrete components and hardware description language. Students' opinions have been obtained by means of course exit survey at the end of the course.

*** These are advanced level experiments.**

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. Morris Mano, Digital logic and computer design, 5th ed., Pearson Prentice Hall, 2013.
2.	M. Morris Mano and Michael D. Ciletti, "Digital Design with an Introduction to the Verilog Hdl," 5th Edition, Pearson Education,2013.
3.	J. Bhasker, A VHDL Primer, 3rd ed., Pearson Education, 2015.
4.	R. P. Jain, "Modern Digital Electronics," 4th Edition, Tata McGraw-Hill Education, 2009.
5.	A. Anand Kumar, "Fundamentals of Digital Circuits," PHI; 4th Revised edition, 2016.

Detailed Syllabus
Lecture-wise Breakup

Course Code	**15B1NHS431**	**Semester : EVEN**	**Semester IV Session** 2020-2021 **Month: January 2021 to June 2021**
Course Name	**Introduction to Literature**		
Credits	**3**	**Contact Hours**	**3 (2-1-0)**

Faculty (Names)	**Coordinator(s)**	Dr. Monali Bhattacharya (Sector 62) & Dr. Ekta Srivastava (Sector 128)
	Teacher(s) (Alphabetically)	Dr. Ekta Srivastava , Dr. Monali Bhattacharya

COURSE OUTCOMES		**COGNITIVE LEVELS**
C206-5.1	Understand figurative language to demonstrate communication skills individually and in a group.	CL-2 Understanding
C206-5.2	Develop a critical appreciation of life and society through a close reading of select texts.	CL-3 Applying
C206-5.3	Analyse a literary text thematically and stylistically and examine it as representing different spectrum of life, human behavior and moral consciousness of society.	CL-4 Analysing
C206-5.4	To interpret Literature as reflection of cultural and moral values of life and society.	CL-5 Evaluating

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 Learning Communication Skills through Literature	5
2.	Poems	On His Blindness: John Milton My Last Duchess: Robert Browning “Hope” is the thing with feathers: Emily Dickinson A Prayer before Birth: Louis MacNeice Goodbye Party for Miss Pushpa T.S.: Nissim Ezekiel	6
3.	Prose & Short Stories	The Spectator Club: Richard Steele Evidence: Isaac Asimov Toba Tek Singh: Saadat Hasan Manto	6
4.	Plays & Drama	Andher Nagari Chaupat Raja: Bhartendu Harishchandra The Characters of Macbeth & Lady Macbeth as Universal Characters. Arms & The Man: G B Shaw	7
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 (Assignment, Project, Class participation)
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	G.B Shaw, 'Arms & The Man', Paperback, 2013 https://onemorelibrary.com/index.php/en/?option=com_djclassifieds&format=raw&view=download&task=download&fid=10428
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

Subject Code	**15B1NHS432**	**Semester: Even**	**Semester IV Session 2020-2021** **Months: from Jan to June**
Subject Name	**INTRODUCTION TO PSYCHOLOGY**		
Credits	**3**	**Contact Hours**	**(2-1-0)**
Faculty (Names)	**Coordinator(s)**	Dr. Badri Bajaj	
	Teacher(s) (Alphabetically)	Dr. Badri Bajaj	

COURSE OUTCOMES		**COGNITIVE LEVELS**
C206-6.1	Demonstrate a basic understanding of different perspectives and concepts of psychology	Understanding (Level 2)
C206-6.2	Apply the concepts of psychology in day to day life	Applying (Level 3)
C206-6.3	Examine the different theoretical perspectives and models of psychology	Analyzing (Level 4)
C206-6.4	Develop solutions for problems related to psychology using appropriate tools/models	Creating (Level 6)

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 Cognitive. Methods: Experimental, Observation and Case study; Fields of application.	**3**
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:	**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Project, Assignment, Oral Questions)
Total	**100**

Project based learning: Students in a group will choose a research topic from the syllabi of psychology. Students will cover the following points to prepare project reports: Understanding of concept, related theories and perspectives; Describe the relevance of the chosen concept for personal growth; Discuss the application of chosen topic for your professional life; Elaborate the relevance of the topic at group level and societal level. Discussions on these practical aspects will enhance students' understanding & application of concepts of psychology in day to day life.

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.
4.	Clifford Morgan, Richard King, John Weisz, John Schopler, Introduction to Psychology, 7th Ed., McGraw Hill Education, 2017.
5.	James W. Kalat, Introduction to Psychology, 9th Ed., Wadsworth Publishing; 2010
6.	Gregory Feist and Erika Rosenberg, Psychology: Perspectives and Connections, 5th Ed., McGraw-Hill Education, 2021

Detailed Syllabus
Lecture-wise Breakup

Course Code	**15B1NHS433**	**Semester** EVEN **(specify Odd/Even)**	**Semester** IV **Session** 2020 -2021 Month Jan 2021- June2021
Course Name	**INTRODUCTION TO SOCIOLOGY**		
Credits	**3(2-1-0)**	**Contact Hours**	3

Faculty (Names)	**Coordinator(s)**	Prof Alka Sharma
	Teacher(s) (Alphabetically)	Prof Alka Sharma

COURSE OUTCOMES		**COGNITIVE LEVELS**
C206-7.1	Demonstrate an understanding of sociological perspectives and concepts.	Remembering (C1)
C206-7.2	Explain the concept of social stratification and types of stratification as class, caste and gender.	Understanding (C2)
C206-7.3	Apply the major sociological perspectives, social concepts and methods in the systematic study of society	Applying(C3)
C206-7.4	Analyze the relevance of various social Institutions and how it shapes and influences social interactions.	Analyzing (C4)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction	Emergence of Sociology- forces and historical background, nature and scope, relationship with other social sciences, difference between common sense and sociology, Major sociological perspective and methods, the sociological imagination	5
2.	Basic Concepts of Sociology	Society, Culture, Groups, sub-groups, Communities, Association, Organization, social interaction and social structure: status and role	4
3.	Social stratification	Stratification-concept, theories and type. Basis of stratification caste, class, gender and race, status and Roles	4
4.	Sociology of Institutions	Kinship, Family ,Religion, Education &Economy in Society	5
5.	Process of Change and Mobility	Concept, theories and Agents of Social Change, Process of Social Change in Indian Society: Sanskritization, Westernization, Modernization, Urbanization	6
6.	Politics and Society	Power, Elite, Bureaucracy, Pressure groups, Political parties, nation, state and civil society, protest, agitation and Social Movements	4
		Total number of Lectures	**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20 (Project based)
End Semester Examination	35
TA	25 (Presentation, assignment, quiz and tutorial participation)
Total	**100**

Each student will be assigned a project based on primary data collection through in-depth interviews with their parents, grandparents and other relatives

Topic of the project- the students will conduct a multidimensional analysis of their class with the Occupation, Education, Income, and Wealth variable, using their parents, grandparents, and themselves as examples to find out how do these variables relate to Social Class and social mobility? How has the Social Class of their family changed (or not) over the past three generations?

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	Johnson, Harry M. *Sociology: a systematic introduction*. Routledge, 2013.
2	Rawat, H. K. *Sociology: basic concepts*. Rawat Publications, 2007.
3	Macionis, John J. *Society: the basics*. Pearson/Prentice Hall, 2009.
4	C. Wright. And Mills, *The Sociological Imagination*, Oxford: Oxford University Press, 1959.
5	Peter L Berger, *The Social Construction of Reality: a Treatise in the Sociology of Knowledge. Garden City,* New York: Anchor, 1966.
6	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
7	Ballentine and Roberts, *Our Social World: Introduction to Sociology*, 4th Edition, Sage. 2013.
8	Robert Parkinand Linda Stone, (ed.). *Kinship and Family: An Anthropological Reader*, U.S.A.: Blackwell, 2000, selected chapters

Detailed Syllabus
Lecture-wise Breakup

Course Code	15B1NHS434	**Semester:** Even	**Semester** IV **Session** 2020 -2021 **Month from** Jan 2021 to June 2021
Course Name	Principles of Management		
Credits	**3**	**Contact Hours**	2-1-0

Faculty (Names)	**Coordinator(s)**	Dr. Shirin Alavi
	Teacher(s) (Alphabetically)	Dr. Shirin Alavi

COURSE OUTCOMES		**COGNITIVE LEVELS**
C303-1.1	Describe the functions, roles and skills of managers and illustrate how the manager's job is evolving.	Understanding Level (C2)
C303-1.2	Examine the relevance of the political, legal, ethical, economic and cultural environments in global business.	Analyzing Level (C4)
C303-1.3	Evaluate approaches to goal setting, planning and organizing in a variety of circumstances.	Evaluating Level (C5)
C303-1.4	Evaluate contemporary approaches for staffing and leading in an organization.	Evaluating Level (C5)
C303-1.5	Analyze contemporary issues in controlling for measuring organizational performance.	Analyzing Level (C4)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction to Managers and Management	Management an Overview: Introduction, Definition of Management, Role of Management, Functions of Managers, Levels of Management, Management Skills and Organizational Hierarchy, Social and Ethical Responsibilities of Management: Arguments for and against Social Responsibilities of Business, Social Stakeholders, Measuring Social Responsiveness and Managerial Ethics, Omnipotent and Symbolic View, Characteristics and importance of organizational culture, Relevance of political,legal,economic and Cultural environments to global business, Structures and techniques organizations use as they go international .	7
2.	Planning	Nature & Purpose, Steps involved in Planning, Objectives, Setting Objectives, Process of Managing by Objectives, Strategies, Policies & Planning Premises, Competitor Intelligence, Benchmarking, Forecasting, Decision-Making.	5
3.	Organizing	Nature and Purpose, Formal and Informal Organization, Organization Chart, Structure and Process, Departmentalization by difference strategies, Line and Staff authority- Benefits and Limitations-De-Centralization and Delegation of Authority Versus, Staffing, Managerial Effectiveness.	7
4.	Directing	Scope, Human Factors, Creativity and Innovation, Harmonizing Objectives, Leadership, Types of Leadership Motivation, Hierarchy of Needs, Motivation theories,	4

		Motivational Techniques, Job Enrichment, Communication, Process of Communication, Barriers and Breakdown, Effective Communication, Electronic media in Communication.	
5.	Controlling	System and process of Controlling, Requirements for effective control, The Budget as Control Technique, Information Technology in Controlling, Productivity, Problems and Management, Control of Overall Performance, Direct and Preventive Control, Reporting, The Global Environment, Globalization and Liberalization, International Management and Global theory of Management.	5
		Total number of Lectures	**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Project, Viva, Attendance)
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.	Koontz H, Weihrich H. Essentials of management: an international, innovation, and leadership perspective. McGraw-Hill Education; 10th Edition 2018.
2.	Tripathi PC. Principles of management. Tata McGraw-Hill Education; 6th Edition 2017.
3.	Principles of Management Text and Cases, Pravin Durai , Pearson ,2015
4.	Robbins, S.P. & Decenzo, David A. Fundamentals of Management,7th ed., Pearson, 2010
5.	Robbins, S.P. & Coulter, Mary Management; 14 ed.,Pearson , 2009

Detailed Syllabus
Lecture-wise Breakup

Course Code	**15B1NHS435**	**Semester: Even**	**Semester** IV **Session:**2020-21 **Month from: Jan-June**
Course Name	Financial Accounting		
Credits	3	**Contact Hours**	3 (2,1,0)

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

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 and cash flow statement 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	2
2.	Understanding Accounting Elements	Elements of Financial Statements- Assets, Current assets, Liabilities, Current liabilities, Equity, Income, Expenses, Accounting Equation	2
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)	2
4.	Journal Transactions	Journal, Rules of Debit and Credit, Compound Journal entry, Opening entry	2
5.	Ledger Posting and Trial Balance	Ledger, Posting, relationship between Journal and Ledger, Rules regarding Posting, Trial balance	3
6.	Rectification of Errors	Different types of errors, their effect on trial balance, rectification and preparation of suspense account	5

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	6
9.	Cash Flow Statement	Introduction of Cash Flow Statement,Classification of Cash inflows and Cash Outflows Activities,prepare the statement of cash flows using direct and Indirect method	4
		Total number of Lectures	**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Project+ Class test/Quiz+Class Participation)
Total	**100**

Project Based learning: Students form a group of 4-5 students. Each group is required to choose a company listed in Indian stock exchange and download its latest annual report. Students are required to describe the company,composition of board of directors, number of company's executives,independent directors,background of independent directors. They are required to find outfinancing, investing and operating activities and examines the change in total assets, sales and net profit of the company. As per auditor's report, company's position and future plans for growth of the company is also analyzed.

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.	Maheshwari S. N., Financial and Management Accounting, 5th Ed., S. Chand & Sons Publication, 2014. ISBN No.: 978-81-8054-529-0
2.	Ghosh, T.P., Financial Accounting for Managers, 4th Ed., Taxmann Publications, 2009
3.	Tulsian,P., Financial Accounting,1st Ed., Pearson Education India,2002
4.	Bhattacharya, A., Financial Accounting for Business Managers, 4th Ed., Prentice Hall of India,2012
5.	Weygandt.J., Kimmel, P., Kieso,D., Accounting Principles, 12th Edition, John Wiley & Sons,2015
6.	Barton,M., Bhutta, P.,S. O'Rourke,J.,Satyam Computer Services Ltd: Accounting fraud in India,London,SAGE Publications Ltd, 2017,

Detailed Syllabus
Lecture-wise Breakup

Subject Code	**15B11HS111**	**Semester: EVEN**	**Semester IV Session 2020-2021 Month from Jan to June**
Subject Name	**LIFE SKILLS**		
Credits	**2**	**Contact Hours**	**2 (1 1 0)**
Faculty (Names)	**Coordinator(s)**	Dr. Praveen Sharma & Dr. Deepak Verma	
	Teacher(s) (Alphabetically)	Dr.Akarsh Arora,Dr. Amandeep Kaur, Dr. Badri Bajaj, Dr. Kanupriya Bakhru, Dr Praveen Sharma, Dr. Anshu Banwari, Dr. Deepak Verma, Dr. Ekta Shrivastava, Dr. Nilu Choudhary	

COURSE OUTCOMES		**COGNITIVE LEVELS**
C209.1	Understand Life Skill required to manage self and one's environment	Understand (C2)
C209.2	Apply comprehensive set of skills for life success for self and others	Apply (C3)
C209.3	Analyze group dynamics for its effective functioning	Analysing (C4)
C209.4	Evaluate the role of women leadership and gender issues	Evaluate (C5)

Module No.	**Subtitle of the Module**	**Topics in the module**	**No. of Lectures for the module**
1.	Introduction	Introduction to Life Skills; basic Concepts and Relevance for Engineers	1
2.	Individual-1	Emotional Intelligence, Stress Management, Goal Setting	4
3.	Individual-II	Dimensions of Personality, Values and Attitudes, Assertiveness, Well being,	3
4.	Group Dynamics	Group, Group types, Group Relationship, Social Loafing, Social Facilitation	3
5.	Women Leadership	Gender Sensitization, Women Leadership.	3
Total number of Hours			14

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Assignment & Project)
Total	**100**

Project Based Learning: Students are supposed to form a group (Maximum 5 students in each group) and identify a Women leader of their choice. They are supposed to do the in-depth study on the leadership style of their identified leader and explain it. They are also supposed to explain identified women leader's personality traits by referring the Big five personality traits model. The project provides understanding to students on Women leadership and personality traits.

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.	Stephen P. Robbins, Organizational Behaviour, 9th Edition, Prentice-Hall India 2001
2.	Smith, E., Hoeksema, S., Fredrickson, B., & Loftus, G. Introduction to Psychology. Thompsons and Wadsworth Co, 2003
3.	Daniel Goleman, Working With Emotional Intelligence, Bantom Books 1998
4.	Sue Bishop, Assertiveness Skills Training, Viva Books, New Delhi, 2004
5.	Adele B. Lynn 50 Activities for Developing Emotional Intelligence, Ane Books, 2003
6.	Sivasailam Thiagarajan, Glenn M. Parker; Teamwork and Teamplay, Games and Activities for Building and Training Teams., Jossey-Bass, 1999
7.	Kaul A.& Singh M., *"New Paradigms for Gender Inclusivity*", PHI Pvt Ltd 2012

Detailed Syllabus
Lecture-wise Breakup

Course Code	16B1NHS332	**Semester: Even (specify Odd/Even)**	**Semester:** IV **Session** 2020-21 **Month from:** Jan-June
Course Name	Quantitative Methods for Social Sciences		
Credits	**03**	**Contact Hours**	**2-1-0**
Faculty (Names)	**Coordinator(s)**	Manas Ranjan Behera	
	Teacher(s) (Alphabetically)	Manas Ranjan Behera	

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 to perform 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 Concepts	Mathematical basis of Managerial Decision-Concepts, Frequency Distribution and their Analysis	3
3.	Statistical Concepts	Measures of Central Tendency, Measures of Dispersion, Measures of Association, Sampling and sample size estimation, Point estimation, Statistical Intervals based on	4

		Single sample.	
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+ Project+Viva-voce)
Total	**100**

Project based Learning: Students have to form a group (maximum 5 students in each group) and have to do a project on quantitative research techniques and strategies. The project emphasizes on objective measurement and the statistical analysis of data collected through surveys, questionnaires and polls. The students will gain a first-hand experience of data analysis which will help them in entering an analytical or research career.

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.
4.	Stockemer, D.Quantitative Methods for Social Sciences: A Practical Introduction with examples in SPSS and STATA 1st ed., Springer International Publishing, 2019
5.	Kaplan, DW. The SAGE Handbook of Quantitative Methodology for the Social Sciences. 1st ed. SAGE Publications Inc,2004

Detailed Syllabus
Lecture-wise Breakup

Course Code	16B1NHS431	Semester **Even** (specify Odd/Even)	**Semester IV Session 2020-21** Month from **Jan-June**
Course Name	HUMAN RESOURCE MANAGEMENT		
Credits	3	**Contact Hours**	3(2-1-0)

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

COURSE OUTCOMES		**COGNITIVE LEVELS**
C206-1.1	Demonstrate a basic understanding of different functions of human resource management: Employer Selection, Training and Learning, Performance Appraisal and Remuneration, Human Relations and Industrial Relations.	Understand Level (C2)
C206-1.2	Apply various tools and techniques in making sound human resource decisions.	Apply level (C3)
C206-1.3	Analyze the key issues related to administering the human resource management activities such as recruitment, selection, training, development, performance appraisal, compensation and industrial relation.	Analyze Level (C4)
C206-1.4	Critically assess and evaluate different human resource & industrial relation practices and techniques and recommend solutions to be followed by the organization	Evaluate Level (C5)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction	Introduction to Human Resource Management and its definition, HRM functions and its relation to other managerial functions, Nature, Scope and Importance of Human Resource Management in Industry, Role & position of Personnel function in the organization. Human Resource Planning	3
2.	Employer Selection	Recruitment Process; Selection Process - Job and Worker Analyses, Matching Job with the Person; Selection Methods - Application Blank, Biographical Inventories, References and Recommendation Letters, Interviews	8
3.	Training and Learning	Need Identification; Psychological Factors in Learning; Training Methods in the Workplace; Effective Training Programme	6
4.	Performance Appraisal and Remuneration	Different methods of Performance Appraisal, Basic concepts in wage administration, company's wage policy, Job Evaluation, Issues in wage administration, Bonus & Incentives	6

5.	Human Relations and Industrial Relations, Trends in Human Resource Management	Factors influencing industrial relations - State Interventions and Legal Framework - Role of Trade unions - Collective Bargaining - Workers' participation in management. Trends in Human Resource Management: Analytics, Artificial Intelligence	5
		Total number of Lectures	**28**

Evaluation Criteria

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

Project-based learning: Each student in a group 4 to 5 will select a company which is registered in India. To make subject application based, the student will analyze Human Resource management policies and employed performing different functions at various levels related to recruitment, training, development, performance appraisal, compensation and industry relation.

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.	G. Dessler and B. Varrkey, *Human Resource Management, 15e*. Pearson Education India, 2005.
2.	V. S. P. Rao and V. H. Krishna, *Management: Text and cases*. Excel Books India, 2009.
3.	K. Aswathappa, *Human resource management: Text and cases*. Tata McGraw-Hill Education, 2013.
4.	P. M. Noe, R. A., Hollenbeck, J. R., Gerhart, B. A., & Wright, *Fundamentals of Human Resource Management*. Tata McGraw-Hill Education, 2019.
5.	B. Pattanayak, "Human Resource Management, PHI Learning Pvt," *Ltd., New Delhi*, vol. 2, 2018.
6.	D. A. DeCenzo, S. P. Robbins, and S. L. Verhulst, *Fundamentals of human resource management*. John Wiley & Sons, 2016.