

Detailed Syllabus
Lecture-wise Breakup

Course Code	15B1NHS431	Semester:EVEN	Semester IV Session2023-24 Month: January 2024 to June 2024
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 (Project, Quiz and class participation)	
Total	100	

Project Based Learning:

The students will create a story out of a song in groups and analyse their own creativity applying Freitag's narrative technique, identify literary devices and interpret their work thematically highlighting language, cultural and moral learnings, one would get on reading their story. The created works will be exchanged and peer review will be undertaken and reports will be submitted as Part B of the project.

Recommended Reading material:	
1	John E. Eck, 'Writing with Sweet Clarity' 1st Edition. Routledge. 2022 https://doi.org/10.4324/9781003167532
2	M.H. Abrams, Geoffrey Harpham 'A Glossary of Literary Terms', 11 th Edition, Cengage Learning, 2014,
3	Mark William Roche, 'Why Literature matters in the 21 st Century', 1st Edition, Yale University Press, 2004.
4	E.R. Braithwaite, 'To Sir With Love', First Edition, Bodley Head, UK, 1959. Susie Thomas(Ed), "E. R. Braithwaite: 'To Sir, with Love' – 1959", Available at http://www.londonfictions.com
5	Khalid Hasan (Translator), 'Saadat Hasan Maanto : Toba Tek Singh' Reprint, Penguin Books, India, 2008.
6	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
7	Anon, (a.n.d.). <i>The Spectator Club. Sir Richard Steele.</i> 1909-14. Available at: https://www.bartleby.com/27/7.html
8	<i>All poems online: http://www.poetryfoundation.org</i>
9	Wolfgang Clemen, 'Shakespeare's Soliloquies', First Edition, Routledge, London, 1987.

Detailed syllabus
Lecture-wise Breakup

Subject Code	15BINHS432	Semester: Even	Semester IV Session 2023-2024 Months: from Jan. to June 2024
Subject Name	INTRODUCTION TO PSYCHOLOGY		
Credits	3	Contact Hours	(2-1-0)
Faculty (Names)	Coordinator(s)	Dr. Badri Bajaj Dr. Shweta Verma	
	Teacher(s) (Alphabetically)	Dr. Badri Bajaj Dr. Shweta Verma	

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, Quiz)
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 their 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, J. N. White and G. E. Meyer, Psychology, Pearson, 6 th Ed., 2022.
4.	C. Morgan, R. King, J. Weisz, J. Schopler, Introduction to Psychology, 7 th Ed., McGraw Hill Education, 2017.
5.	S. Pandit, Introduction to Psychology, 1 st Ed., SAGE Publications; 2022
6.	G. Feist and E. 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 2022 -2023 MonthJan2021- June2021
Course Name	INTRODUCTION TO SOCIOLOGY		
Credits	3(2-1-0)	Contact Hours	3

Faculty (Names)	Coordinator(s)	Prof Alka Sharma
	Teacher(s) (Alphabetically)	Ms.Shikha Kumari

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 in societies 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	Introduction to sociology as a discipline of social science, difference between common sense and sociology, Major sociological perspective and methods, the sociological imagination	5
2.	Basic Concepts of Sociology	Groups, sub-groups, society, characteristics of society, culture, institutions, Institutionalization, Conformity, Social Change	6
3.	Social stratification	Stratification-concept, theories and type. Basis of stratification caste, class, gender and race, status and Roles	5
4.	Sociology of Institutions	Kinship, Family ,Religion, Education &Economy in Society	6
5.	Process of Change and Mobility	Process of Social Change in Indian Society: Sanskritization, Westernization, Modernization, Urbanization	4
6.	Sociology of Collectivity	Collective Action and Social Movements	2
Total number of Lectures			28

Evaluation Criteria	
Components	Maximum Marks
T1	20
T2	20
End Semester Examination	35
TA	25 (Project basedpresentation, assignment and quiz)
Total	100

The students will find out which aspect of Organizational culture influences the employee' performance and formulate recommendations regarding organizational culture, which will help the organization to be

more inclusive of different cultural practices of the employees (tackle issues such as gender equity, respect for other languages, reduce racial identity crisis, reduce class and caste discrimination, promote respect for all religions etc) to increase their belongingness towards the organization.

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. <i>Sociology: a systematic introduction</i> . Routledge, 2013.
2	Rawat, H. K. <i>Sociology: basic concepts</i> . Rawat Publications, 2007.
3	Macionis, John J. <i>Society: the basics</i> . Pearson/Prentice Hall, 2009.
4	C. Wright. And Mills, <i>The Sociological Imagination</i> , Oxford: Oxford University Press, 1959.
5	Peter L Berger, <i>The Social Construction of Reality: a Treatise in the Sociology of Knowledge</i> . Garden City, New York: Anchor, 1966.
6	Conley and Dalton, <i>You May Ask Yourself: An Introduction to Thinking Like a Sociologist</i> , 2nd Ed, W. W. Norton & Company New York, 2011. ISBN: 0393935175 or 978-0393935172
7	Ballentine and Roberts, <i>Our Social World: Introduction to Sociology</i> , 4th Edition, Sage. 2013.
8	Robert Parkin and Linda Stone, (ed.). <i>Kinship and Family: An Anthropological Reader</i> , U.S.A.: Blackwell, 2000, selected chapters

Detailed Syllabus
Lecture-wise Breakup

Course Code	15B1NHS434	Semester: Even	Semester IV Session 2023 -2024 Month from Jan 2024 to June 2024
Course Name	Principles of Management		
Credits	3	Contact Hours	2-1-0

Faculty (Names)	Coordinator(s)	Dr. Aviral Mishra
	Teacher(s) (Alphabetically)	Dr. Aviral Mishra

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	Organizing ,Benefits and Limitations-De-Centralization and Delegation of Authority, Authority versus Power ,Mechanistic Versus Organic Organization ,Common Organizational Designs, Contemporary Organizational Designs and Contingency Factors, The Learning Organization 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 ,Human Resource	7

		Inventory, Job Analysis , Job Description, Recruitment and Selection, Selection Tools Staffing, Managerial Effectiveness, Staffing, Training, Employee Performance Management, Compensation and Benefits, Contemporary Issues in Managing Human Resources .	
4.	Directing	Scope, Human Factors, Creativity and Innovation, Harmonizing Objectives, Leadership, Types of Leadership, Directing, Managers as leaders, Early Leadership Theories... Trait Theories, Behavioral Theories, Managerial Grid, Contingency Theories of Leadership, Directing ... Path Goal Theory, contemporary views of Leadership, Cross Cultural Leadership, Leadership Training, Substitutes of Leadership	4
5.	Controlling	Controlling, Introduction to Controlling System and process of Controlling, Requirements for effective control, The planning Control link, The process of control, types of control The Budget as Control Technique, Information Technology in Controlling, Productivity, Problems and Management, Control of Overall Performance, Direct and Preventive Control, Financial Controls , Tools for measuring organizational Performance , Contemporary issues in control Workplace concerns, employee theft, employee violence	5
Total number of Lectures			28

Evaluation Criteria

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

Project Based Learning: The project is to be done in group size of 4-5 members each. Student groups can choose an organization from one of the following themes- Staffing and Controlling in a virtual world, Staffing and controlling in the Banking Sector, Staffing and Controlling and the IT industry, Staffing and Controlling in Hospitality/Telecom/Airlines, Staffing and Controlling in Logistics, Staffing and Controlling in International Business and Staffing and Controlling in Consulting. Study the staffing and controlling processes of the chosen organization. Students were asked to submit their research analysis in the form of a project report. This adds to the management related employability skills in an organization as staffing and controlling are important aspects of overall management function.

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; 10 th Edition 2018.
2.	Tripathi PC. Principles of management. Tata McGraw-Hill Education; 6 th Edition 2017.
3.	Principles of Management Text and Cases, Pravin Durai , Pearson ,2015
4.	Robbins, S.P. & Decenzo, David A. Fundamentals of Management, 7 th 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 Session: 2023-24 Month from: Jan-June 2023
Course Name	Financial Accounting		
Credits	3	Contact Hours	3 (2-1-0)

Faculty (Names)	Coordinator(s)	Dr. Sakshi Varshney (Sec-128) &Dr. Purwa Srivastava (Sec 62)
	Teacher(s) (Alphabetically)	Dr. Purwa Srivastava & 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, Elements of the Cash Flow Statement, Methods of Cash Flow Statement, Limitations Of Cash Flow Statement	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, and background of independent directors. They are required to find out financing, investing and operating activities and examine 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., Maheshwari, S.K. Maheshwari, S.K., Financial Accounting, 6 th Ed., S. Chand & Sons Publication, 2018.
2.	Narayanswamy, R., Financial Accounting: A Managerial Perspective, 7 th Ed., Taxmann Publications, 2017
3.	Tulsian,P., Financial Accounting,2 nd Ed., Pearson Education India,2017
4.	Bhattacharya, A., Financial Accounting for Business Managers, 5 th Ed., Prentice Hall of India,2016
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
7.	Lal,J.,Srivastava,S., Financial Accounting : Principles and Practices, 1 st Edition., S. Chand & Sons Publication, 2006.

Detailed Syllabus
Lecture-wise Breakup

Subject Code	15B11CI411	Semester: Even (specify Odd/Even)	Semester IV Session 2023 -2024 Month from: Jan 2024 to June 2024
Subject Name	Algorithms and Problem Solving		
Credits	3	Contact Hours	3

Faculty (Names)	Coordinator(s)	Anita Sahoo (J62), Rajiv Mishra (J128)
	Teacher(s) (Alphabetically)	J62 – Anita Sahoo, Deepika Varshney, Manish Kumar Thakur, Sherry Garg, Tribhuvan Kumar Tewari, Vivek Kumar Singh J128–Krishna Asawa, Neeraj Jain, Prakhar Mishra, Pulkit Mehndiratta, Rajiv Mishra

COURSE OUTCOMES		COGNITIVE LEVELS
C214.1	Demonstrate a familiarity of complexity classes, the notion of algorithm, asymptotic analysis, and problem solving approaches.	Understand Level (Level 2)
C214.2	Apply a standard algorithm for solving fundamental problems such as sorting, searching, and graph based problems.	Apply Level (Level 3)
C214.3	Analyze and identify an appropriate data structure and/or algorithm design strategy for a given problem.	Analyze Level (Level 4)
C214.4	Design an efficient algorithm to solve a given problem.	Create Level (Level 6)

Module No.	Subtitle of the Module	Topics in the Module	No. of Lectures
1.	Introduction	Introduction to problem solving approach; Asymptotic Analysis: Growth of Functions and Solving Recurrences; Notations- Big O, big omega, big theta, little o; Empirical analysis of sorting and searching algorithms – Merge sort, Quick sort, Heap sort, Radix sort, Count sort, Binary search, and Median search	7
2.	Design Technique: Divide and Conquer	Fundamentals of Divide and Conquer (D&C) approach using Binary search, Quick sort, and Merge sort; Strassen’s matrix multiplication; and Closest pair, etc.	3
3.	Design Technique: Greedy Algorithms	Introduction to greedy based solution approach; Minimum Spanning Trees (Prim’s and Kruskal algorithms); Shortest Path using Dijkstra’s algorithm; Fractional and 0/1 Knapsack; Coinage problem; Bin packing; Job scheduling – Shortest job first, Shortest remaining job first, etc.; Graph coloring; and Text compression using Huffman coding and Shannon-Fanon coding, etc.	6
4.	Design Technique: Backtracking Algorithms	Review of backtracking based solution approach using N queen, and Rat in a maze; M-coloring problem; Hamiltonian Cycle detection; Travelling salesman problem; Network flow	6
5.	Dynamic Programming	Fundamentals of Dynamic programming-based solution approach; 0/1 Knapsack; Shortest path using Floyd Warshall; Coinage problem; Matrix Chain Multiplication; Longest common subsequence; Longest increasing sequence, String editing, etc.	7

6.	String Algorithms	Naïve String Matching, Finite Automata Matcher, Rabin Karp matching algorithm, Knuth Morris Pratt, Solving string problems using string data structures like Tries, Suffix Tree, and Suffix Array	6
7.	Problem Spaces and Problem solving by search	Problem Spaces: States, goals and operators, Factored representation (factoring state into variables) Uninformed search (BFS, DFS, DFS with iterative deepening), Heuristics and informed search (hill-climbing, generic best-first, A*)	5
8.	Tractable and Non-Tractable Problems	Efficiency and Tractability, P, NP, NP-Complete, NP-Hard problems	2
Total number of Lectures			42

Evaluation Criteria

T1	20 Marks
T2	20 Marks
End Semester Examination	35 Marks
TA	25 Marks(Attendance/Mini-project/Coding Contest/Hackathon)

Project based learning: Each student in a group of 3-4 will have to develop a mini project based on data structures algorithms. The students can opt any real-world application where these algorithms can be applied. The students have to implement the mini project using C/C++/Java language. Project development and its presentation will enhance coding skills, knowledge and employability of the students in IT sector.

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

1.	Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, Introduction to Algorithms, MIT Press, 3rd Edition, 2009
2.	Steven Skiena, The Algorithm Design Manual, Springer; 2nd edition, 2008
3.	Knuth, The art of Computer Programming Volume 1, Fundamental Algorithms, Addison-Wesley Professional; 3 rd edition, 1997
4.	Horowitz and Sahni, Fundamentals of Computer Algorithms, Computer Science Press, 2008
5.	Sedgewick, Algorithms in C, 3rd edition. Addison Wesley, 2002
6.	Alfred V. Aho, J.E. Hopcroft, Jeffrey D. Ullman, Data Structures and Algorithms, Addison-Wesley Series in Computer Science and Information Processing, 1983
7.	ACM Transactions on Algorithms (TALG)
8.	Algorithmica Journal, Springer
9.	Graphs and Combinatorics, Journal, Springer
10.	The ACM Journal of Experimental Algorithmics
11.	https://online.stanford.edu/courses/soe-ycaalgorithms1-algorithms-design-and-analysis-part-1 https://online.stanford.edu/courses/soe-yca0001-algorithms-design-and-analysis-part-2 https://in.coursera.org/specializations/algorithms

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books)

1.	Tim Roughgarden, Algorithms Illuminated: Part 1: The Basics, Soundlikeyourself Publishing, September 27, 2017
2.	Tim Roughgarden, Algorithms Illuminated: Part 2: Graph Algorithms and Data Structures, Soundlike yourself Publishing, First Edition, 2018.
3.	Tim Roughgarden, Algorithms Illuminated: Part 3: Greedy Algorithms and Dynamic Programming, Soundlikeyourself Publishing, First Edition, 2019.
4.	Weiss, Data Structures and Algorithm Analysis in C++, 4th Edition, Pearson, 2014

Detailed Syllabus
Lab Session-wise Breakup

Subject Code	15B17CI471	Semester Even (specify Odd/Even)	Semester IV Session 2023-2024 Month from: Jan to June 2024
Subject Name	Algorithms and Problem Solving Lab		
Credits	1	Contact Hours	2

Faculty (Names)	Coordinator(s)	Dr. Sherry Garg (62), Dr. Neeraj Jain (128)
	Teacher(s) (Alphabetically)	J62: Anita Sahu, Deepika Varshney, Jyoti Chouhan, Manish K Thakur, Prantik Biswas, Sherry Garg, Shikha Jain, Taj Alam, Tribhuwan K Tewari, Vivek K Singh J128: Aditi Sharma, Arti Jain, Devpriya Soni, Himani Bansal, Janardan kumar Verma, Krishna Asawa, Neeraj Jain, Prakhara Mishra, Pulkit Mehndiratta, Rajiv kumar Mishra, Rashmi Kushwaha

COURSE OUTCOMES		COGNITIVE LEVELS
C274.1	Understand and define appropriate data structure to a given problem	Understand Level (Level 2)
C274.2	Understand complexity using asymptotic and experimental analysis for various algorithmic design techniques.	Understand Level (Level 2)
C274.3	Apply and build various algorithms and design techniques to solve the given problem.	Apply Level (Level 3)
C274.4	Formulate, elaborate and design an efficient solution to a given problem using appropriate data structure and algorithm design technique	Evaluation Level (Level 6)

Module No.	Title of the Module	List of Experiments	No. of Lectures for the module
1.	Analysis of algorithms, Searching and sorting based problems	Introduction to problem solving approach; Asymptotic Analysis; Solving Recurrences; Empirical analysis of sorting and searching algorithms – Merge sort, Quick sort, Heap sort, Radix sort, Count sort, Binary search, and Median search	01
2.	Design Technique: Divide and Conquer	Problems based on Divide and Conquer (D&C) approach such as Binary search, Quick sort, and Merge sort; and Closest pair, etc.	01
3.	Design Technique: Backtracking Algorithms	Review of backtracking based solution approach using N queen, and Rat in a maze; M-coloring problem; Hamiltonian Cycle detection; Travelling salesman problem; Network flow	02
4.	Design Technique: Greedy Algorithms	Introduction to greedy based solution approach; Minimum Spanning Trees (Prim's and Kruskal algorithms); Shortest Path using Dijkstra's algorithm;	03

		Fractional and 0/1 Knapsack; Coinage problem; Bin packing; Job scheduling – Shortest job first, Shortest remaining job first, etc.; Graph coloring; and Text compression using Hamming coding and Shannon-Fano coding, etc.	
5.	Dynamic Programming	Fundamentals of Dynamic programming based solution approach; 0/1 Knapsack; Shortest path using Floyd Warshall; Coinage problem; Matrix Chain Multiplication; Longest common subsequence; Longest increasing sequence, String editing	02
6.	String Algorithms	Naïve String Matching, Finite Automata Matcher, Rabin Karp matching algorithm, Knuth Morris Pratt, Tries; Suffix Tree; and Suffix Array	02
7.	Problem Spaces and Problem solving by search	Problem Spaces: States, goals and operators, Factored representation (factoring state into variables) Uninformed search (BFS, DFS, DFS with iterative deepening), Heuristics and informed search (hill-climbing, generic best-first, A*)	02
8.	Case-study / Assignment / Mini-Project	Designing an efficient solution to a given problem using appropriate data structure and algorithm design technique	01
Total number of Labs			14

Evaluation Criteria

Components	Maximum Marks
V1	20
V2	20
Eval1/Eval2	20
Day-to-Day	10
TA	30 Attendance (15), Assignment/Quiz/Mini-Project (15)
Total	100

Project based learning: Students in a group of 4-5 will be designing an efficient solution to a given problem / case-studies using appropriate data structure and algorithm design technique studies in the course. The students have to implement the mini project using C/C++/Java language. Project development and its presentation will enhance coding skills, knowledge and employability of the students in IT sector.

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text Books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)	
Text Book(s):	
1.	Tim Rough garden, Algorithms Illuminated: Part 1: The Basics, Sound like yourself Publishing, September 27, 2017
2.	Tim Rough garden, Algorithms Illuminated: Part 2: Graph Algorithms and Data Structures, Sound like yourself Publishing, First Edition, 2018.
3.	Tim Rough garden, Algorithms Illuminated: Part3:Greedy Algorithms and Dynamic Programming, Sound like yourself Publishing, First Edition, 2019.
4.	Weiss, Data Structures and Algorithm Analysis in C++, 4th Edition, Pearson, 2014
Reference Book(s):	
5.	Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, Introduction to Algorithms, MIT Press, 3rd Edition, 2009
6.	Steven Skiena ,The Algorithm Design Manual, Springer; 2nd edition , 2008

7.	Knuth, The art of Computer Programming Volume 1, Fundamental Algorithms, Addison-Wesley Professional; 3 edition,1997
8.	Horowitz and Sahni, Fundamentals of Computer Algorithms, Computer Science Press, 2008
9.	Sedgewick, Algorithms in C, 3rd edition. Addison Wesley, 2002
10.	Alfred V. Aho, J.E. Hopcroft, Jeffrey D. Ullman, Data Structures and Algorithms, Addison-Wesley Series in Computer Science and Information Processing, 1983

Detailed Syllabus
Lecture-wise Breakup

Course Code	16B1NHS431	Semester Even (specify Odd/Even)	Semester IV Session 2023-24 Month from Jan-June
Course Name	HUMAN RESOURCE MANAGEMENT		
Credits	3	Contact Hours	(LTP: 2-1-0)

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

Revised-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	Determine the impact of technology and the market on industrial relations.	Apply level (C3)
C206-1.4	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)
C206-1.5	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, assignment, class participation, attendance)
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 and compensation.

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, <i>Human Resource Management, 15e</i> . Pearson Education India, 2005.
2.	V. S. P. Rao and V. H. Krishna, <i>Management: Text and cases</i> . Excel Books India, 2009.
3.	K. Aswathappa, <i>Human resource management: Text and cases</i> . Tata McGraw-Hill Education, 2013.
4.	P. M. Noe, R. A., Hollenbeck, J. R., Gerhart, B. A., & Wright, <i>Fundamentals of Human Resource Management</i> . 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, <i>Fundamentals of human resource management</i> . John Wiley & Sons, 2016.

Detailed Syllabus
Lecture-wise Breakup

Course Code	18B11EC213	Semester Even	Semester IV Session 2023-24 Month from Jan-June
Course Name	DIGITAL SYSTEMS		
Credits	4	Contact Hours	3+1

Faculty (Names)	Coordinator(s)	Dr. Priyanka Kwatra, Dr. Vishal Narain Saxena
	Teacher(s) (Alphabetically)	Dr. Mandeep Narula, Dr. Megha Agarwal, Mr. Prabhanshu Yadav, Dr. Priyanka Kwatra, Dr. Shradha Saxena, Dr. Vimal Kumar Mishra, Dr. Vishal Narain Saxena

COURSE OUTCOMES		COGNITIVE LEVELS
CO1	Understand the fundamentals of number system, Boolean algebra and Boolean function minimization techniques.	Understanding Level (C2)
CO2	Applying the concepts of Boolean algebra to implement combinational circuits and flip flops using logic gates.	Applying Level (C3)
CO3	Analyze state diagram and construct sequential logic circuits using flip flops. Also, classify the signals & systems and analyse the signals using Fourier transform.	Analyzing Level (C4)
CO4	Determine the various steps involved in the digitization and transmission of signals and evaluate their performance parameters.	Evaluating Level (C5)

Module No.	Title of the Module	Topics in the Module	No. of Lectures for the module
1.	Number systems and Combinational Circuits	Number systems (Binary, Octal, Hexadecimal) conversion, BCD numbers, gray code, excess-3 code. Binary addition and subtraction, signed and unsigned binary numbers, 1's and 2's complement representation. Boolean Theorem, Canonical Forms: SOP & POS Karnaugh Map, Quine-McCluskey method, Prime Implicants, Essential Prime implicants Introductions to Logic gates, Adder, Subtractor, Multiplexer, Demultiplexer, Encoder, Decimal to BCD Encoder, Decoder, Comparator	12
2.	Flip Flops	SR, JK, Master Slave JK, T And D; Excitation Tables, Conversion of Flip-Flops	3
3.	Counters	Synchronous and Asynchronous Counters, Design of Counters Using Flip- Flops, Registers, Shift Registers, Counters Using Shift Registers; State Diagram Design, Analysis of Sequential Circuits Using Flip-Flops	9
4.	Signals and systems	Signals and classification of signals: Continuous time and discrete time, Even and odd, periodic and non-periodic, Energy and Power signals, Basic signals: unit impulse, unit step and unit ramp. Basic operations of signals: time scaling, time-shifting, etc. Systems and classification of systems: continuous and discrete, Linear and non-linear, causal and non-causal.	5
5.	Fourier Analysis	Fourier Series, Fourier Transform Fourier Transform pair of standard signals and properties of Fourier transform.	3
6.	Sampling and Pulse code modulation	Introduction to Modulation, Need of Modulation, Analogue Modulation techniques, Sampling theorem, Nyquist rate and Nyquist interval. Quantization (Mid-rise and Mid-tread)	7
7.	Digital modulation techniques and	PCM (modulator and demodulator), Transmission bandwidth in PCM, Signal to quantization noise ratio of PCM. ASK, FSK and	3

	Line coding	PSK modulation techniques.	
		Total number of Lectures	42

Evaluation Criteria

Components	Maximum Marks
T1	20
T2	20
End Semester Examination	35
TA	25 (Assignment = 10, Quiz = 5, Attendance = 10)
Total	100

Program Based Learning: Students will be able to design and implement the projects using decoders, comparators and multiplexers. Designing of new flip flops, counters and shift registers enhance the application ability in students. Analog to digital signal transmission techniques and several digital communication techniques develop latest knowledge for wireless communication based Industries.

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.	S. Salivahanan, and S. Arivazhagan, "Digital circuits and design", Vikas publishing house PVT Limited.Fifth edition (March 2018)
2.	Oppenheim, Alan V., Alan S. Willsky, and Syed Hamid Nawab. "Signals and Systems," Prentice-HallEnglewood Cliffs 2 edition (2015)
3.	S. Haykin, "Digital Communications Systems", John Wiley & Sons, 1 edition, 2013
4.	H. Taub & D. L. Schilling, "Principles of Communication Systems", 2nd edition, McGraw-Hill HigherEducation. 3 edition (September 2007)

Course Description

Course Code	18B15EC213	Semester -: Even (specify Odd/Even)	Semester-:IV, Session 2023 -2024 Month- : Jan-June
Course Name	Digital Systems Lab		
Credits	1	Contact Hours	2
Faculty (Names)	Coordinator(s)	Dr. Shradha Saxena, Dr. Bajrang Bansal	
	Teacher(s)		

COURSE OUTCOMES (New)		COGNITIVE LEVELS
CO1	Recall the basics concepts of digital electronics with implementation of basic logic gates.	Remembering Level (C1)
CO2	Classify and explain different combinational and sequential digital circuits with their MATLAB implementation.	Understanding Level (C2)
CO3	Apply the coding skills of MATLAB and develop different concepts of signals & systems and digital signal processing.	Applying Level (C3)
CO4	Analyze the performance of basic digital modulation techniques.	Analyzing Level (C4)

Module No.	Title of the Module	List of Experiments	COs
1.	Introduction to basic logic gates	Verification of truth tables of basic logic gates and their realization using universal logic gates using Matlab	CO1
2.	Basics of adder and subtractor circuits	Design and simulate half adder, half subtractor, full adder, and full subtractor using Matlab	CO2
3.	Decoder logic circuits	Design and simulation of 2:4 decoder and 3:8 decoder using Matlab.	CO2
4.	Multiplexer logic circuits	Design and simulation of 2-to-1, 4-to-1, and 8-to-1 multiplexers using Matlab	CO2
5.	Introduction to sequential circuit: SR-Latch, D and JK Flip Flop	(a) Realization of SR Latch using Matlab. (b) Realization of D flip flop using Matlab. (c) Realization of JK flip flop using Matlab	CO2
6.	Continuous time and discrete time signals	Write Matlab programs for the generation of elementary continuous time signals and discrete time signals.	CO3
7.	Sampling and reconstruction process	Write Matlab program to study the sampling and reconstruction process.	CO3

8.	Quantization process of the signals.	Write Matlab program to study the quantization process of sinusoid signals.	CO3
9.	Introduction to Discrete Fourier Transform (DFT) and Inverse Discrete Fourier Transform (IDFT)	Write Matlab programs to compute Discrete Fourier Transform (DFT) and Inverse Discrete Fourier Transform (IDFT) for the spectral analysis of signals.	CO4
10.	Digital Modulation Techniques	Write Matlab programs to study the binary phase shift keying and frequency shift keying modulation process	CO4
11	Virtual Experiment1	Design and Simulate Various Code Converters https://he-coep.vlabs.ac.in/exp/various-code-converters/index.html	CO1
12	Virtual Experiment2	Design and simulation of Decoders, Encoders, Multiplexer and Demultiplexer. https://he-coep.vlabs.ac.in/exp/decoders-encodersmultiplexer-demultiplexer/index.html	CO2

Evaluation Criteria

Components	Maximum Marks
Mid Term Viva	20
End Term Viva	20
Report file, Attendance, and D2D	60
Total	100

Project based learning: Students will learn about Combinational and Sequential logic circuits and design them using open source software Matlab. Additionally, students in group sizes of two-three will realize various applications of Digital Systems employing these circuits.

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.	Salivahanan, S., and S. Arivazhagan. Digital circuits and design. Vikas publishing house PVT Limited. Fifth edition (March 2018)
2.	Oppenheim, Alan V., Alan S. Willsky, and Syed Hamid Nawab. "Signals and Systems", Prentice-Hall Englewood Cliffs 2 edition (2015)
3.	S. Haykin Digital Communications Systems John Wiley & Sons, 1 edition,2013
4.	H. Taub & D. L. Schilling, Principles of Communication Systems, 2nd edition, McGraw-Hill Higher Education. 4th edition (2012)

Detailed Syllabus

Course Code	19B12HS412	Semester: Even	Semester IVth Session 2023-24 Month from January to June
Course Name	Industrial Economics		
Credits	03	Contact Hours	2-1-0

Faculty(N ames)	Coordinat or(s)	Dr. Amba Agarwal, & Dr. Neha Singh	
	Teacher(s) (Alphabetic ally)	Dr. Amba Agarwal, & Dr. Neha Singh	

COURSE OUTCOMES		COGNITIVE LEVELS
After pursuing the above mentioned course, the students will be able to:		
CO1	Understand the basic framework of Industrial economics.	Understanding level (C2)
CO2	Identify the strategic actions of producers in terms of production and cost in a competitive market structure.	Applying level (C3)
CO3	Examine the Industrial location, productivity, efficiency, industrial profile and environmental preservation.	Analyzing level (C4)
CO4	Analyze the role and types of institutional finance, Regional industrial imbalance & Social Security.	Analyzing level (C4)

Module No.	Title of the Module	Topics in the Module	No. of Lectures for the module
1.	Introduction	Introduction of Industrial Economics, Framework & Problems; SCP (Structure-Conduct-Performance) Sellers' concentration; Hrfindahl- Hirschman Index.	3
2.	Industrial Organization and Market Structure	Consumer & Producer Surplus; Economies of scale; Cost conditions, Market structure and profitability; Oligopoly theory versus the SCP paradigm Game theory	5
3.	Industrial location and Industrial Productivity	Factors influencing Industrial location and Weber, Florence and Losch theory of industrial location. Measuring Industrial Productivity and Factors influencing Industrial Productivity.	5
4.	Industrial Efficiency	Factors influencing Industrial efficiency & profitability: Internal & External factors, Rostow Stages of Economic Development and Inter-relationship between Industrial Development and Economic Development.	4
5.	Indian Industrial Growth and Pattern	Classification of industries; Industrial policy in India, Issues in industrial proliferation and environmental preservation; Pollution control policies.	3
6.	Industrial Profile and Problems	Structure and Organization of Large Industries in India. Public & Private Sector Enterprises. MSME Role & Problems.	3
7.	Industrial Finance	Role, nature and types of Institutional Finance for industrial development.	2

8.	Industrial Imbalance & Social Security	Regional Industrial Imbalance: Causes and effects of Industrial Imbalances: Measures adopted by Government to reduce regional imbalance & Social Security system Provided by Government of India for various industries.	3
Total number of Lectures			28
Evaluation Criteria			
Components		Maximum Marks	
T1		20	
T2		20	
End Semester Examination		35	
TA		25(Assignment, Test, Quiz)	
Total		100	

Project based Learning: Each student in a group of 4-5 will opt a topic related to a particular industry and submit a report related to growth, pattern, finance and challenges faced by the specific industries.

Recommended Reading material:	
1.	Singh,A.andA.N.Sadhu ,IndustrialEconomics,HimalayaPublishingHouse,Bombay,1988
2.	Barthwal,R.R. ,IndustrialEconomics,WileyEasternLtd.,NewDelhi,1985
3.	Cherunilam, F. , Industrial Economics: Indian Perspective (3rdEdition),Himalaya Publishing House, Mumbai, 1994
4.	Ahluwalia,I.J. ,IndustrialGrowthinIndia,OxfordUniversityPress,NewDelhi,1985
5.	Hay,D. and D.J. Morris , Industrial Economics : Theory and Evidence, Oxford University Press, New Delhi, 1979
6.	Kuchhal,S.C. ,IndustrialEconomyofIndia(5thEdition),ChaitanyaPublishingHouse,Allahabad,1980

Detailed Syllabus
Lecture-wise Breakup

Course Code	23B12HS211	Semester: Even	Semester IV Session 2023-2024	
			Months: from Jan. to June 2024	
Course Name	Introduction to Political Science			
Credits	3 (2-1-0)	Contact Hours	3	

Faculty (Names)	Coordinator(s)	Dr. Namreeta Kumari
	Teacher(s) (Alphabetically)	Dr. Namreeta Kumari

COURSE OUTCOMES		COGNITIVE LEVELS
C206-9.1	Demonstrate an understanding concept of Political Science.	Understand (Level 2)
C206-9.2	Assess the different political ideologies.	Evaluate (Level 5)
C206-9.3	Assess the concept of state and different theories of state.	Evaluate (Level 5)
C206-9.4	Demonstrate an understanding of democracy and models of democracy.	Understand (Level 2)

Module No.	Title of the Module	Topics in the Module	No. of Lectures for the module
1.	Understanding Political Science	<ul style="list-style-type: none"> ● Evolution ● Nature and Scope ● Is Political Science a Science?- Political Science as an art, Political Science as a Science ● Importance of Studying Political Science 	6
2.	Analyzing the Ideological Discourse	<ul style="list-style-type: none"> ● Liberalism: Individualism, Justice, Equality, & Reason ● Conservatism: Authoritarian Conservatism, Paternalistic Conservatism, Libertarian Conservatism ● Socialism: Classical Marxism, Orthodox 	8

		Communism, Ethical Socialism, Revisionist Socialism, Neo revisionism & the third way <ul style="list-style-type: none"> ● Anarchism: Collectivist Anarchism, Individual Anarchism, Anarcho-Capitalism. ● Nationalism: Liberal nationalism, Conservative Nationalism Expansionist Nationalism, Anti Colonial post-colonial nationalism. ● Feminism: Redefining Political, Waves of Feminism, Strands of Feminism ● Multiculturalism: Politics of Recognition, Liberal multiculturalism, Pluralist Multiculturalism, Cosmopolitan Multiculturalism, Critiques of Multiculturalism 	
3.	State	<ul style="list-style-type: none"> ● What is State: Idea of state ● Theories of State: Evolutionary theory of state, Marxist theory of state, Liberal Theory of State ● Role of State 	8
4.	Democracy	<ul style="list-style-type: none"> ● Defining Democracy ● Models of Democracy- David Held's Model ● Rival Theories of Democracy 	6
Total number of Lectures			28
Evaluation Criteria			
Components		Maximum Marks	
T1		20	
T2		20	
T3		35	
TA		25 (Attendance, Quiz, Project)	
Total		100	
<p>Project Based learning: Each student would form a group of 3-4 students and to make projects on issues related with Indian Political System. The project will facilitate students to comprehend the everyday politics of the country.</p>			

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.	A. Heywood, Political Ideologies: An Introduction, New York: Palgrave Macmillan, 2017.
2.	D. Held, Models of Democracy, Stanford: Stanford University Press, 2006
3.	B. O'Leary and P. Dunleavy, Theories of the State: The Politics of Liberal Democracy, London: Macmillan

	Education Ltd., 1987.
4.	S. De. Beauviour, Second Sex, NewYork: Vintage Books, 1949
5.	A Y. Davis, Abolition Democracy: Beyond Empire, Prisons, and Torture, New York : Seven Stories Press. 2005

Detailed Syllabus Lecture wise Breakup

Course Code	24B11CS242	Semester: EVEN	Semester IV Session 2023-2024 Month from Jan to Jun
Course Name	Artificial Intelligence and Machine Learning: Theory & Practice		
Credits	2	Contact Hours	2-0-0
NBA Code	216		

Faculty (Names)	Coordinator(s)	Dr. Deepika Varshney & Dr. Mukesh Saraswat
	Teacher(s)(Alphabetically)	Deepika Varshney, Mukesh Saraswat

COURSE OUTCOMES		COGNITIVE LEVELS
C216.1	Understand the basics of artificial intelligence, problem solving strategies, and machine learning methods	Understand (Level 2)
C216.2	Apply intelligent searching techniques and learning algorithms to solve a given problem	Apply (Level 3)
C216.3	Analyze the different models of learning and classification algorithm.	Analyze (Level 4)
C216.4	Assess the suitability of algorithms in different application scenarios.	Evaluate (Level 5)
C216.5	Implement searching and learning algorithms for solving real world problems	Create (Level 6)

Module No.	Title of Module	Topics in the Module	No. of Lectures
1.	Fundamentals of AI	Introduction to AI, Problems of AI, AI technique, Tic – Tac – Toe Problem. Intelligent Agents, Agents & Environment, Nature of Environment, Structure of Agents, Goal-based agents, Utility-based agents, Learning agents.	4
2.	Search Techniques	Problem solving agents, searching for solutions; uniform search strategies: breadth first search, depth first search. Heuristic search strategies Greedy best - first search, A* search, AO* search.	6
3.	Introduction to Machine learning	Fundamentals of Machine learning, Types of Machine Learning: Supervised, unsupervised, reinforcement, Machine perception - feature extraction - classification, clustering, linear and logistic regression.	6

4.	Classification Algorithms	Concept of ANN (Artificial Neural Network): Perceptron and backpropagation neural network - k-nearest neighbor rule. Support vector machine: Decision trees: and random forest.	6
5.	Deep Neural Network	Introduction to Deep learning, Convolutional neural networks, CNN Architectures LeNet, AlexNet, GooleNet, VGG Net, ResNet: Comparative analysis	6
Total number of Lectures			28

Project based learning: Each student in a group of 3-4 has to work on a mini-project, in which they will identify a real-life problem and develop the solution by utilizing skills learned throughout the course. The project implementation should be in python or R preferably along with well documentation on different aspects of the software. This enhances the understanding of students towards different concepts of data analytics and also helps them during their employability as data engineer or data analyst.

Evaluation Criteria	
Components	Maximum Marks
T1	20
T2	20
End Term	35
TA	25 (Attendance (10), Assignment (5), Mini-Project (10))
Total	100

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Textbooks, Reference Books, Journals, Reports, Websites etc. in the IEEE format)	
Textbook(s)	
1.	R. O. Duda, E. Hart, and D.G. Stork, "Pattern Classification", Second Edition, John Wiley & Sons, Singapore, 2012.
2.	Francois Chollet, "Deep Learning with Python", Manning Publications, Shelter Island, New York, 2018
3.	Satish Kumar, "Neural Networks A Classroom Approach", McGraw Hill Education (India) Pvt. Ltd, 2010
4.	S. Russell and P. Norvig, "Artificial Intelligence: A Modern Approach", Prentice Hall, Third Edition, 2015.
5.	Nils J. Nilsson, "Artificial Intelligence: A New Synthesis", 1st Edition, Morgan-Kaufmann, 1998
Reference Books	
1.	Ethem Alpaydin, "Introduction to Machine Learning", 3rd Edition, MIT Press, 2014.
2.	C. M. Bishop, "Pattern Recognition and Machine Learning", Springer, 2006.
3.	Kevin P. Murphy, "Machine Learning: A Probabilistic Perspective", MIT Press, 2012
4.	Elaine Rich, Kevin Knight, & Shivashankar B Nair, "Artificial Intelligence", McGraw Hill, 3rd ed., 2017.
5.	Patterson, "Introduction to Artificial Intelligence & Expert Systems", Pearson, 1st ed. 2015.

Detailed Syllabus

Course Code	24B15CS244	Semester: Even	Semester: IV Session 2023 -2024 Month from January to June
Course Name	Artificial Intelligence and Machine Learning workshop		
Credits	01	Contact Hours	0- 0 - 2
NBA Code	276		

Faculty (Names)	Coordinator(s)	Dr. Deepika Varshney & Dr. Mukesh Saraswat
	Teacher(s) (Alphabetically)	Dr. Deepika Varshney & Dr. Mukesh Saraswat

COURSE OUTCOMES		COGNITIVE LEVELS
At the completion of the course, Students will be able to		
C276.1	Understanding the basic syntax used for data manipulation in Python.	Understand (Level 2)
C276.2	Apply different python libraries for AI and Machine Learning applications.	Apply (Level 3)
C276.3	Analyze the real world applications related to AI and Machine learning	Analyze (Level 4)
C276.4	Analyze the performance of Machine learning algorithms using python	Analyze(Level 4)
C276.5	Create a model to solve a real-world problem of classification or clustering.	Create (Level 6)

Module No.	Title of the Module	Topics in the Module	No. of Labs (2H) for the module
1.	Python fundamentals	Data Types, Basic programming, Conditional Statements, List, Tuples, Sets, Dictionary, Loops, String Manipulation, Functions, Strings	3
2.	Python Libraries	Python Libraries: Array and matrix processing using Numpy, Data Analysis using Pandas, Image manipulation using Scipy, Deep learning implementation using TensorFlow, Designing Neural Network using Keras, Matplotlib	5
3.	Machine Learning using Python	Data preparation, creating training and testing sets, building a model, Model evaluation, Supervised learning: Decision trees, Linear regression, Logistic regression, SVM, Random Forest, ANN. Unsupervised learning: k-means clustering	4
4.	Mini Project	1. Identify the broad topic of your mini project based on the AI&ML.	2

		2. Study minimum 8 quality research papers based on the selected topic. 3. Identify the research problem. 4. Design the architecture for the proposed problem. 5. Implement and propose your novelty/improvement in terms of algorithm/new feature. 6. Perform the experimental analysis (in Python language only).	
			14
Evaluation Criteria			
Components		Maximum Marks	
Lab Test 1		20	
Lab Test 2		20	
D2D Attendance (10))		60 (Evaluation 1 (10), Evaluation 2(10), Mini Project (15), Assignment (15),	
Total		100	
<p>Project Based Learning: Each student in a group of 3-4 has to work on a mini-project, in which they will identify a real-life problem and develop the solution by utilizing skills learned throughout the course. Each group will evaluate the performance of the models applied and present the interpretation of the results. The project will be done in Python.</p>			
<p>Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Textbooks, Reference Books, Journals, Reports, Websites etc. in the IEEE format)</p>			
Text Book(s)			
1.	R. O. Duda, E. Hart, and D.G. Stork, "Pattern Classification", Second Edition, John Wiley & Sons, Singapore, 2012.		
2.	Francois Chollet, "Deep Learning with Python", Manning Publications, Shelter Island, New York, 2018		
3.	Satish Kumar, "Neural Networks A Classroom Approach", McGraw Hill Education (India) Pvt. Ltd, 2010		
4.	S. Russell and P. Norvig, "Artificial Intelligence: A Modern Approach", Prentice Hall, Third Edition, 2015.		
5.	Nils J. Nilsson, "Artificial Intelligence: A New Synthesis", 1st Edition, Morgan-Kaufmann, 1998		
References			
1.	Ethem Alpaydin, "Introduction to Machine Learning", 3rd Edition, MIT Press, 2014.		
2.	C. M. Bishop, "Pattern Recognition and Machine Learning", Springer, 2006.		
3.	Kevin P. Murphy, "Machine Learning: A Probabilistic Perspective", MIT Press, 2012		

Detailed Syllabus
Lecture-wise Breakup

Subject Code	24B12HS211	Semester:Even	Semester: IV Session: 2023-24 Month: Jan 2024 to June 2024
Subject Name	Media, Culture and Society		
Credits	3	Contact Hours	(2-1-0)

Faculty (Names)	Coordinator(s)	Dr Nibha Sinha
	Teacher(s) (Alphabetically)	Dr Nibha Sinha

CO Code	COURSE OUTCOMES	COGNITIVE LEVELS
C206-10.1	Understanding of basic concepts, theories and methods to critically evaluate and adjudge the role of media and social media to shape contemporary culture and society	Understanding Level-(C2)
C206-10.2	Analyzing the importance of media strategy and media literacy in social transformation	Analyzing Level-(C4)
C206-10.3	Analysis of New Media emergence, production, convergence and its challenges	Analyzing Level-(C4)
C206-10.4	Critical evaluation of media content, and the ways in which media is used by state and non- state actors in social life, cultural production, politics, and governance.	Evaluating Level-(C5)
C206-10.5	Creating constructive and analytical approach towards Social, cultural and political prospects of media	Creating Level- (C6)

Module No.	Title of the Module	Topics in the Module	No. of Lectures for the module
1.	Introduction	Orientation of the Course	1
2.	Introduction to Media Studies: Basic Theories and Concepts	Theorizing Media, Culture and Society; Identity and Culture, Media and the changing of Social Character, representation and emergence of consumerism and media cultures.	6
3	Mass Media and Development Communication	Gender, Race and Ethnicity, Media Literacy and Development, Media and Social Change, Communication Strategies for Development, influence of media on attitudes and behaviors, media impact on social transformations.	6
4.	Media in/as social worlds: Challenges	Emergence of New media, and its production: (ownership patterns and control, advertising), Convergence, social media: social significance and challenges	5
5	Visual Media: Images and Implications	Semiotics and Visual Analysis, Advertising and Visual Persuasion, Visual Storytelling in Film and Television and its impact, Myths and stereotypes in Media Representation, Power of Images in Shaping Public Opinion	6
6	Media and State, democracy and the publics	Mediated Politics: Opinion political campaigns and polls, Media as public sphere: virtual citizenship, Deconstructing Orientalism in Media.	4

Total number of Lectures		28
Evaluation Criteria		
Components	Maximum Marks	
T1	20	
T2	20	
End Semester Examination	35	
TA	25 (Project, Presentation and 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.	Paul Dodkinson, Media, Culture and Society: An Introduction, Sage, 2016.
2.	Douglas Kellner, Media Culture: Cultural Studies, Identity and Politics between the modern and the Post Modern, 2016
3.	Stig Hjarvard, The Mediatization of Culture and Society, Routledge, 2013
4.	Tonny Bennett, James Curran, Michael Gurevitch, Janet Wollacott, Culture, Society and The Media, Routledge, 1982

Detailed Syllabus

Lecture-wise Breakup

Subject Code	19B13BT211	Semester: Even	Semester: IV Session: 2023-24 Month from: January to June
Subject Name	Environmental Studies		
Credits	0	Contact Hours	3
Faculty (Names)	Coordinator(s)	1. Prof. Neeraj Wadhwa	
	Teacher(s) (Alphabetically)	1. Prof. Neeraj Wadhwa 2. Dr. Garima Mathur 3. Dr. Ekta Bhatt 4. Dr. Ankisha Vijay	

Cos (NBA code)	Description	Cognitive levels
C205.1	Explain diversity of environment, ecosystem resources, resource mismanagement and measures for conservation	Understand Level (C2)
C205.2	Identify hazards related to environmental pollution, associated laws, policies and safe practices	Apply Level(C3)
C205.3	Apply modern techniques for sustainable planning to meet Sustainable development goals (SDGs)	Apply Level(C3)
C205.4	Survey regional environmental issues, examine risks involved and make a field report and present the findings	Analyze Level(C4)

Module No.	Subtitle of the Module	Topics in the module	No. of Lectures for the module
1.	The Multidisciplinary nature of environment, Biodiversity	Definition, scope and importance, Need for public awareness, Types of Ecosystems, World Biomes, Ecosystem functioning, Diversity of flora and fauna, species and wild life diversity, Biodiversity hotspots, threats to biodiversity, Case studies.	8
2.	Natural resources, Energy consumption & conservation	Water, Land, Energy (Renewable, non-renewable, wind, solar, hydro, Biomass), Mineral, Forest, & Food resources, Global Conventions on Energy, Kyoto protocol, Case studies.	8
3.	Pollution, hazardous waste management	Air, Water & Land, chemical, noise pollution, sources & causes, effects, Electronic waste, nuclear hazards, Case studies.	8
4.	Urban planning, human communities, Disaster management	Sustainable building, Disaster Management and Contingency Planning, human population, resettlement, rehabilitation environmental movements, environmental ethics, Critical issues concerning Global environment Urbanization, population growth, global warming, climate change, acid rain, ozone depletion etc Case studies.	8
5.	Environmental Policies, Laws, Regulations & ethics	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, Case studies.	4
6	Field Work/	Explore the current environment related	6

		occurrences at national and international level, Study of successful sustainable measures, a know-how 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.	
Total number of Lectures			42

EVALUATION:

Mid Semester Examination - 30 marks (To be held along with T-2 Exam)

End Semester Examination - 40 marks

Teachers Assessment (TA) - 30 marks; PROJECT BASED COMPONENT: FIELD ACTIVITY

Structure of Grading Academic Performance: Mandatory to Pass, grade will be awarded

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. 6 th ed. Jones & Barlett Publishers.
2.	Joseph, B., 2005, Environmental Studies, Tata McGraw Hill, India
3.	Textbook of Environmental Studies for UG Courses - Erach Bharucha, University Press
4.	Issues of the Journal: Down to Earth, published by Centre for Science and Environment