



Integral University, Lucknow

Effective from Session:2015-2016							
Course Code	CA107	Title of the Course	Data Structure Using C	L	T	P	C
Year	I	Semester	II	3	1	0	4
Pre-Requisite	None	Co-requisite	None				
Course Objectives	<ul style="list-style-type: none"> To learn basic knowledge about data structure and arrays. To learn how to create and use linked list and its applications. To learn the importance of static and dynamic use of stack and queues. To learn the basic terminology of trees. To learn basics of sorting and searching techniques 						

Course Outcomes	
CO1	Able to understand basics of C programming language and arrays.
CO2	Able to understand basic concepts of linked list.
CO3	To understand the basic concepts of stack and queues through array and linked list.
CO4	To understand the basic knowledge of trees and graph.
CO5	Able to understand the concepts of sorting and searching techniques.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Introduction	Introduction to Data Structure, Efficient use of memory, Elementary Data Organization, Structure operations, Time and space complexity of algorithms and asymptotic notations. Array Definition and Representation, Single and Multidimensional Arrays, Address calculation, Application of arrays, Character String in C, Character string operation, Array as Parameters	8	CO1
2	Linked list	Representation and Implementation of Singly Linked List, Traversing and Searching of Linked List, Overflow and Underflow, Insertion and deletion to/from Linked Lists, Insertion and deletion Algorithms, doubly linked list and dynamic storage management, Circular Link List, Garbage Collection and Compaction.	8	CO2
3	Stacks & Queues	Introduction to Stack, Array Representation and Implementation of stack, Operations on Stacks: Push & Pop, Linked Representation of Stack, Application of stack: Postfix and Prefix conversions, Evaluation of expressions using stack. Introduction to Queue, Array and linked representation and implementation of queues, Operations on Queue: Create, Add, Delete, Full and Empty, Circular queues and De-queue, Priority Queues.	8	CO3
4	Trees & Graph Theory	Basic terminology, Binary Trees, Binary tree representation and Traversal, Algebraic Expressions, Complete Binary Tree, Threaded Binary trees, Binary Search Tree (BST), Height balanced tree and various Rotations. Graph Theory: Terminology & Representations, Traversal- BFS and DFS, Dijkstra's algorithm for shortest path, Prim's and Kruskal's Algorithm for Minimal Spanning tree	8	CO4
5	Searching & Sorting	Sequential search, Binary search, and Hash search, Comparison and analysis. Sorting: Insertion Sort, Selection Sort, Bubble Sort, Quick Sort, Two Way Merge Sort and Heap Sort.	8	CO5

Reference Books:	
1.	Horowitz and Sahani, "Fundamentals of data Structures", Galgotia Publication Pvt. Ltd., New Delhi
2.	M. Tenenbaum, "Data Structures using C & C++", Prentice-Hall of India Pvt. Ltd., New Delhi.
e-Learning Source:	
1.	https://archive.nptel.ac.in/courses/106/103/106103069/
2.	https://nptel.ac.in/courses/106105085

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																		
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
	CO1	3	1	1		1								2	1			
CO2	2	2	1		1		1						2	1				
CO3	2	1	2		2		1						3	1				
CO4	3	1	1	1		1	1						2	1				
CO5	2	1		1		2	1						2	1				

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation



Integral University, Lucknow

Effective from Session: 2020-21							
Course Code	CA113	Title of the Course	Cyber Crime and Cyber Law	L	T	P	C
Year	I	Semester	II	3	1	0	4
Pre-Requisite	None	Co-requisite	None				
Course Objectives	<ul style="list-style-type: none"> The course objective is to provide the fundamental skill to understand cyber laws. It enables to understand the legal frameworks It helps the student understand different cyber crimes It provides overview on Intellectual Property, copy rights, patents rights etc. 5. Given rapid changes in technology and the corresponding changes in crime and the law 						

Course Outcomes	
CO1	Understand the various types of traditional and contemporary crime related to World of Cyber Space.
CO2	Understand the threats and affect to information system security and different types of security issues.
CO3	Understand the technological and legal issues in electronic and digital signature and way of handling the same.
CO4	Understand to analyze and assess the fundamentals of Intellectual Property Rights (IPR) and Cyber Law.
CO5	Understand to IT Rules (Intermediaries Guidelines) , Legal Issues and Challenges Globally and find a way how investigate the crime as per law.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Nature and Scope of Cyber Crime	World of Cyber Space and Cyber Crime, Cybercrime and Jurisdiction, Cyber Crime Impact and International Action, Ethical Issues in Data and Software Privacy, Cyber Terrorism and Pornography, Documents Tampering, Data Privacy and Protection, Software Security Crime, Ethical Hacking. Internet Security Threats: Hacking, Cracking, Sneaking, Stalking with Case Study.	8	CO1
2	Information System Threats	Threats and Affect to Information System Security, Unauthorized Access: Spoofing and Sniffing, Denial of Services; Computer Virus: Trojan horse, Worms; Theft: Physical Theft, Data Theft, Identity Theft; Malicious Code and Logic Bombs, Sabotage, Vandalism, Accidents; Distinction between Cyber Crime and Conventional Crime.	8	CO2
3	Electronic and Digital Signatures	Types of Digital Signature and its Working, Technical Issues, Legal Issues, Electronic Records, Crime based on Biometric Security Digital Forensics: Concept of Digital Forensics, Digital Forensic Life Cycle: Preparation, Collection, Transporting, Investigation, Analysis and Interpretation, Reporting and Testifying.	8	CO3
4	Intellectual Property Rights and Law	Trade mark, Patent, Copyright, Neighboring Rights, Integrated Circuits, Industrial Design, Geographical Indication, Trade Secret and its Issues and Challenges; Copyright Law and Patent Law in India. Fundamentals of Cyber Law: Evolution of Law related to Cyber Crime, Genesis and Necessity of IT Act 2000, Object and Scope of the IT Act 2000, Various Authorities under IT Act and their powers; Penalties & Offences, Various Amendments.	8	CO4
5	IT Rules (Intermediary es Guidelines)	IT Rules 2011 Vs IT Rules 2021, Major Changes and Benefits in IT Rules 2021, Safety Enhancement to Woman and Children, Intermediaries Actions and its Time Frame, Case Study. Legal Issues and Challenges in India, USA and EU: Data Protection and Cyber Security, Legal recognition of Digital Evidence, Recognition of liability in the digital world, Jurisdiction Issues in Transnational Crimes.	8	CO5

Reference Books:

1. Dr. R.K. Chaubey, 'An Introduction to Cyber Crime and Cyber Law', Kamal Law House.
2. Dr. J.P. Mishra, An Introduction to Cyber Laws, Central Law Publications.
3. Harish Chander, 'Cyber Law and IT Protection', PHI Publication
4. Rohatgi and Karkare, 'Guide to Cyber Law & Crimes', 3rd edition. Whytes & Co.

e-Learning Source:

1. <https://www.youtube.com/playlist?list=PLf8YqCm9HoI6fb4LdoY2tfgJfM0PrgInS>
2. <https://nptel.ac.in/courses/106106129>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																		
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
	CO1	1	3	2	1	1	1	1	1					2	1			
CO2	3	2		1	1	2	1						2	1				
CO3	1	2	1	1	2	1	3						1	1				
CO4	1	1	1	2		2	1						1	2				
CO5	2	1	2	2	1	1	2	1					2	1				

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation



Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	CA115	Title of the Course	Computer Organization & Architecture	L	T	P	C
Year	I	Semester	II	3	1	0	4
Pre-Requisite	None	Co-requisite	CA116				
Course Objectives	<ul style="list-style-type: none"> ● To understand the concepts of number system, k maps and complements. ● To learn the importance of sequential logic phenomena in different circuit analysis with the help of architectures and protocols. ● To learn the concepts regarding microprocessor with 8 bits and 16 bits. ● To understand the basic concept of parallel computing and significance of pipelining and parallelism. ● To know about the I/O devices, interface and Handshaking phenomena, SIMD and FFT 						

Course Outcomes	
CO1	With a new advancement in technology, a student shall be able to and analyze base concept of different number systems. A student can also understand the concept of logical design in K map along with combinational circuits.
CO2	Using sequential logic one can establish a strong circuit for parallel and serial addition using different combinational circuits. A student should understand the importance of Flip Flop registers and counters to design asynchronous and synchronous circuits using state diagrams.
CO3	For a microprocessor system, student should be able to deal with the internal architecture of 8 bits and 16 bit microprocessor to analyze the working operation and to know the pin configuration for the respective microprocessor. A student should be good enough to deal with interrupts internally or externally.
CO4	He/she should be able to know the concept of pipelining and parallelism in uniprocessor system for hazard detection. Understand the basic concept of Parallel computing .A student should have a basic idea of job levels that are governed by an organization on priority basis.
CO5	A student should gain knowledge of Asynchronous data transfer, serial and parallel communication. He/she should know the Pipeline scheduling theory. For good networking, a student should be able to draw SIMD interconnection along with DIT FFT.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Digital Logic Circuit	Number System: Decimal, Binary, Octal, Hexadecimal, Logic gates, Boolean Algebra, K-map simplification. Combinational logic design: Half adder, Half Subtractor, Full adder, Subtractor, Encoder, Multiplexer, De- multiplexer.	8	CO1
2	Sequential Circuits	Sequential Logic: Flip-Flops, Excitation tables, Flip-Flop input equation, State table, State diagram, Introduction: Counters (synchronous and asynchronous), Registers and Shift Registers.	8	CO2
3	Basic Internal Architecture	Instruction formats, Instruction cycle, Organization of Central Processing Unit, Introduction, Pin diagram and internal architecture of 8085 Microprocessor, Registers sets of 8085. Internal Architecture of 8086 Microprocessor, Status Flags, Data transfer instructions, Arithmetic operations, Logical operations, Branch operations, Looping counting.	8	CO3
4	Parallelism and Pipelining	Introduction to Parallel Processing mechanism, Principle of Linear Pipelining, Classification of Pipelined Processor, General Pipelined and reservation tables, Interleaved memory organizations, Arithmetic pipelines. Principles of designing pipelined processors: Pipeline instruction execution.	8	CO4
5	I/O Transmission	Peripheral devices, I/O interface, Synchronous data transfer, Asynchronous data transfer, Strobe control, Handshaking, Mode of Data transfer, Scheduling problem, Collision vector, State diagram, Introduction to SIMD, SIMD interconnection network, Classification of SIMD, FFT (2 Point and 4 Point, DIT FFT).	8	CO5

Reference Books:	
1.	M. Morris Mano, "Computer System Architecture", PHI.
2.	B. Ram, "Computer Fundamental Architectures Organization", New Age.
3.	Gaonkar, Ramesh S, "Microprocessor Architecture, Programming and Applications with 8085", Penram International Publishing.
4.	Hall D V, "Microprocessor Interfacing", TMH
5.	Liu and Gibson G A, " Microcomputer System: The 8086/8088 family", PHI.
e-Learning Source:	
1.	https://nptel.ac.in/courses/106105163
2.	https://www.javatpoint.com/computer-organization-and-architecture-tutorial
3.	https://nptel.ac.in/courses/106102062
4.	https://nptel.ac.in/courses/106105163

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																		
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
	CO1	3	2	1	1		1							2	2			
CO2	1	3	1		1		1						2	1				
CO3	2	1		1	1	1							2	1				
CO4	2	1	2			2	1						3	1				
CO5		2	3	1	1	1	2						2	1				

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Integral University, Lucknow

Effective from Session: 2023-2024							
Course Code	LN131	Title of the Course	Effective Communication and Media Studies in English	L	T	P	C
Year	I	Semester	II	3	1	0	4
Pre-Requisite	None	Co-requisite	None				
Course Objectives	<ul style="list-style-type: none"> Developing the art of communication and learning basic skills of conversation. Knowledge of Professional and Media Skill Development, Career enhancement tips and goal oriented learning. Basic concept of Phonetics, Voice and Accent. Students will learn academic learning and descriptive writing. 						

Course Outcomes	
CO1	Students will be able to develop Formal and Informal Spoken skills, learn career development skills and learn to have clear idea of goal setting.
CO2	Students will learn about the importance and usage of mass media and ways to develop their media skills.
CO3	Academic Writing will help students to format and structure the content they create which will help them to be professional writers and bloggers.
CO4	The unit will help students to learn and develop better conversation skills in formal and informal setup. They will learn the proper usage and pronunciation in various accent enabling them to converse in competitive environment.
CO5	The unit enables students to put all the theoretical knowledge to practice, assuring complete learning and implementation.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Communication in Practice	Do's and Don'ts of Formal and Informal Communication Tips on Career Management- Setting Clear Goals, Skill Development, Network Building and Professional Relationship Etiquette, Knowing Aptitude and Values. Classroom Practice JAM (Just A Minute) Extempore, Rebuttal, Forum, Role Play.	8	CO1
2	Mass Communication and Journalism	Introduction to Mass Communication. Types of Mass Communication/ Mass Media Impact of Globalization on Mass Media Socio Political Impact of Digital Media Advertisement- Ethical and Unethical Advertisement, Jingles Tag Lines, Punch Lines, Media Writing	8	CO2
3	Fundamentals of Academic Writing	The four main types of academic writing- Descriptive, Analytical, Persuasive and Critical. Writing Book Review, Introduction to Descriptive Writing Techniques and Features of Descriptive Writing - Character, Place and Travel Description, Event, Movie and Food description.	8	CO3
4	Conversation Skills	Phonetics- Learning Speech Mechanism (Voice and Accent) Introduction- Self and Other-Guest Speaker / Colleague Polite Conversational Etiquette Varieties of English Language; their difference in terms of Pronunciation, Vocabulary and Spelling: British, American	8	CO4
5	Academic Project	Creating News Bytes Writing News Report Creating Jingles and Tag Lines for Famous Brands. Writing Editorial on a Topical Subject Writing Film Reviews Travelogue	8	CO5

Reference Books:

1. Kumar, Sanjay and Pushp Lata. Communication Skills. Oxford University Press, Oxford 2011.
2. Raman, Meenakshi, and Sangeeta Sharma. Technical Communication: Principles and Practice. Second Edition, Oxford University Press, 2012. Raina, Roshan Lal, Ifikhar Alam, and Faizia Siddiqui. Professional Communication. Himalaya Publication House 2012.
3. Agarwal, Malti. Professional Communication. Krishna's Educational Publishers. 2016.
4. Carnegie, Dale. How to Win Friends and Influence People in the Digital Age. Simon and Schuster. 2012.
5. Covey, Stephen R. The Seven Habits of Highly Successful People. Free Press. 1989.
6. Verma, KC. The Art of Communication. Kalpaz. 2013.

e-Learning Source:

1. <http://www.uptunotes.com/notes-professional-communication-unit-i-nas-104...>
2. <https://www.docsity.com/en/subjects/professional-communication/>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																		
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO1	3	1	1	2	2	1	2	3	3	1	2	2	3	2	2	3	2	3
CO2	3	3	2	2	2	2	2	1	2	2	2	3	2	2	3	3	3	3
CO3	3	2	2	3	2	3	3	2	2	3	2	3	2	3	3	3	3	3
CO4	2	3	1	2	3	1	2	2	3	3	3	3	3	3	2	2	2	2
CO5	3	2	2	1	2	3	3	3	2	3	2	2	3	2	2	3	3	2

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation



Integral University, Lucknow

Effective from Session: 2020-21							
Course Code	MT152	Title of the Course	Numerical and Statistical Methods	L	T	P	C
Year	I	Semester	II	3	1	0	4
Pre-Requisite	None	Co-requisite	None				
Course Objectives	The course is aimed to develop the skills in mathematics and statistics which is necessary for grooming them into successful graduate. The topics introduced will serve as basic tools for specialized studies in science field.						

Course Outcomes	
CO1	Recognize the error in the number generated by the solution and Compute solution of algebraic and transcendental equation by numerical methods like Bisection method, Newton Raphson method and other method.
CO2	Apply method of interpolation for equal and unequal interval.
CO3	Apply and Solve Numerical Differentiation & Integration method like Trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8 rule etc.
CO4	Apply numerical methods to such as Taylors's series, Euler's method, Modified Euler's Method and Runge-Kutta Methods to find the solution of differential equations.
CO5	Find the line of best fit by applying method of least squares. Understand Statistical Methods for Data Analysis and sampling techniques like Test of significance, t-test, F-test, Chi-square test.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Error, Normalized Floating point arithmetic. Solution of Algebraic and Transcendental equations	Bisection method, Iteration method, False position method, Newton-Raphson method, Rate of convergence of methods. Solutions of simultaneous equations by Gauss Seidel method.	8	CO 1
2	Finite Differences	Difference operators, Difference tables. Interpolation for Equal Intervals: Newton's forward and backward formula, Gauss forward and backward formula. Interpolation for Unequal Intervals: Divided difference, Newton's divided difference formula, Lagrange's Interpolation formula	8	CO 2
3	Numerical Differentiation and Integration	Numerical differentiation, Numerical integration by Trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8 rule, Boole's rule, Weddle's rule.	8	CO 3
4	Solution of Differential Equations	Taylor's series method, Euler's method, Modified Euler's method, Runge-Kutta Methods.	8	CO 4
5	Curve Fitting	Method of least squares, Fitting of straight lines, second degree parabola. Testing of Hypothesis: Test of significance, t-test, F-test, Chi-square test.	8	CO 5

Reference Books:

Q.S. Ahmad, Zubair Khan and S.A. Khan, "Numerical and Statistical Techniques", Ane Books Pvt. Ltd., New Delhi.

S.S. Sastry, "Introductory Method of Numerical Analysis", PHI, New Delhi.

P. Kandasamy, "Numerical Methods", S. Chand and Company, New Delhi.

Balaguruswamy, "Numerical Methods", T.M.H., New Delhi.

e-Learning Source:

https://nptel.ac.in/content/storage2/nptel_data3/html/mhrd/ict/text/106102157/lec22.pdf

https://nptel.ac.in/content/storage2/nptel_data3/html/mhrd/ict/text/111107105/lec16.pdf

<https://nptel.ac.in/courses/122102009/>

https://www.whitman.edu/mathematics/multivariable/multivariable_17_Differential_Equations.pdf

https://nptel.ac.in/content/storage2/nptel_data3/html/mhrd/ict/text/103106120/lec12.pdf

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																		
PO-PSO CO	PO-	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
	CO1		3	2	2	3	-	3	3	3					3	3		
CO2		3	2	2	2	-	-	3	2					2	2			
CO3		3	2	3	3	-	2	3	3					3	3			
CO4		3	2	3	2	-	2	3	2					2	1			
CO5		3	2	2	2	-	1	3	2					2	2			

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation



Integral University, Lucknow

Effective from Session: 2015-2016							
Course Code	CA108	Title of the Course	Data Structure Lab	L	T	P	C
Year	I	Semester	II	0	0	3	2
Pre-Requisite	None	Co-requisite	None				
Course Objectives	<ul style="list-style-type: none"> To impart the basic concepts of data structures and algorithms. To understand concepts about searching and sorting techniques. To understand basic concepts about stacks, queues, lists trees and graphs. To understand the algorithms and step by step approach in solving problems with the help of fundamental data structures. To strengthen the ability to identify and apply the suitable data structure for the given real-world problem. 						

Course Outcomes	
CO1	Able to analyze the time and space efficiency of the data structure and Identity the appropriate data structure for given problem.
CO2	Able to understand basic concepts of linked list and Implement operations like searching, insertion, and deletion, traversing mechanism etc. on various data structures.
CO3	Able to understand the basic concepts of stack and queues through array and linked list.
CO4	Able to understand the basic knowledge of trees and graph.
CO5	Implement appropriate sorting/searching technique for given problem.

Experiment	Title of the Experiment	Content of Unit	Contact Hrs.	Mapped CO
1	Array	Find the Maximum and Minimum value in an array, concatenate two strings, without using library function	2	CO1
2	Stack	Array implementation of Stack and perform Push and Pop operations, Evaluation of a Postfix expression	2	CO2
3	Queue	Array implementation of Linear Queue and perform Insertion and Deletion, Circular Queue and perform Insertion and Deletion, Singly Link List and perform Insertion, Deletion and Traversal	2	CO3
4	Doubly Link List	Implementation of Doubly Link List and perform Insertion, Deletion and Traversal operations, Binary Tree and perform In order, Preorder, and Post order Traversals	2	CO4
5	Searching and sorting	Searching of element in array using Linear Search, Binary Search and Sorting of elements in array using Bubble Sort	2	CO5

Reference Books:	
1.	Horowitz and Sahani, "Fundamentals of data Structures", Galgotia Publication Pvt. Ltd., New Delhi. 2. M. Tenenbaum, "Data Structures using C & C++", Prentice-Hall of India Pvt. Ltd., New Delhi.
2.	Horowitz and Sahani, "Fundamentals of data Structures", Galgotia Publication Pvt. Ltd., New Delhi. 2. M. Tenenbaum, "Data Structures using C & C++", Prentice-Hall of India Pvt. Ltd., New Delhi.
e-Learning Source:	
1.	https://archive.nptel.ac.in/courses/106/103/106103069/
2.	https://nptel.ac.in/courses/106105085

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	CO1	2	3	1	2	1		1						1	2			
CO2	3	1	2		1	1							2	1				
CO3	2	1	2		1		1						1	1				
CO4	3	1	1	1		1							2	1				
CO5	1	1	3	1		2	1						2	2				

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Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	CA116	Title of the Course	Computer Organization & Architecture Lab	L	T	P	C
Year	I	Semester	II	0	0	2	2
Pre-Requisite	None	Co-requisite	CA115				
Course Objectives	<ul style="list-style-type: none"> ● Understanding the behavior of Logic Gates, Adders, Decoders, Multiplexers and Flip-Flops. ● Understanding the behavior of ALU, RAM, STACK and PROCESSOR from Working modules and the modules designed by the student as part of the experiment. ● To enable the students to understand the functionality and implementation of computer system. ● To familiarize with the various instruction codes and formats of different CPUs. ● Knowledge of the internal working of main memory, cache memory, associative memory and various modes of data transfer. 						

Course Outcomes	
CO1	Analyze the behavior of logic gates
CO2	Design combinational circuits for basic components of computer system and Applications.
CO3	Analyze the operational behavior and applications of various flip-flop
CO4	Design Arithmetic logic units and different types of memory blocks.
CO5	Ability to understand the functionality, organization and implementation of computer system and Microprocessor

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Unit-1	Study and Bread Realization of Logic Gates, K-Map, Flip-Flop equation, Realization of characteristic and excitation table of various Flip Flops	3	CO1
2	Unit-2	Implementation of Half Adder, Full Adder and Subtractor.	3	CO2
3	Unit-3	Implementation of Ripple Counters and Registers.	3	CO3
4	Unit-4	Implementation of Decoder and Encoder circuits.	3	CO4
5	Unit-5	Implementation of Multiplexer and De-Multiplexer circuits.	3	CO4
6	Unit-6	Study of 8086 Microprocessor	3	CO5
7	Unit-7	Addition of two 16-bit hexadecimal numbers without carry using 8086 microprocessor kit	3	CO5
8	Unit-8	Addition of two 16-bit hexadecimal numbers with carry using 8086 microprocessor kit	3	CO5
9	Unit-9	Using 8086 Microprocessor kit, find the greatest number from the input numbers.	3	CO5
10	Unit-10	Using 8086 Microprocessor kit, find the factorial of a given number.	3	CO5

Reference Books:	
1.	M. Morris Mano, "Computer System Architecture" PHI.
2.	B. Ram, "Computer Fundamental Architectures Organization", New Age.
3.	Tannenbaum, "Structured Computer Organization", PHI.
4.	Willam Stelling, "Computer Organizations Architecture" Pearson Education.
e-Learning Source:	
1.	https://nptel.ac.in/courses/106106166
2.	https://nptel.ac.in/courses/106105163

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																		
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
	CO1	2	3	2	2	3	2	1	3					2	3			
CO2	2	3	2	2	3	2	1	3					2	2				
CO3	2	3	2	2	3	2	2	1					2	3				
CO4	2	3	2	2	3	2	2	1					2	2				
CO5	2	3	2	2	3	2	1	2					2	1				

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Integral University, Lucknow

Effective from Session: 2020-21							
Course Code	LN153	Title of the Course	Advanced Professional Communication Lab II	L	T	P	C
Year	I	Semester	II	0	0	2	1
Pre-Requisite	None	Co-requisite	None				
Course Objectives	<ul style="list-style-type: none"> The course aims to educate the students in both the artistry and utility of the English language for professional purposes through the study of language and literature. The key component of the various types of professional communication is basically communication in the English language which is now a global language. The Department of Languages caters to the needs of the students aspiring for training, expertise and excellence in professional communication with a marked emphasis on English for Specific/Special Purposes (ESP). Students will be given new insights into the concepts of soft skills & professional communication to boost their confidence which will help them choose and build a better career which depends not only on the hard skills, but on one's soft skills & professional ethics also. The course will help them overcome their fear & anxiety of public speaking & guide them to be a good & effective communicator whom people love to hear. 						

Course Outcomes	
CO1	Students will be introduced to the basic understanding of communication and Professional Communication. Knowledge of Professional, cultural and cross-cultural communication will be imparted. Meaning and process of Question Formation will be taught. Basic Understanding of questions will be provided. They will also learn & practice how to introduce oneself in professional setting & how to manage speaking anxiety.
CO2	Understanding of basics of Group Discussion and Presentation. The activities will be practiced by various Listening exercises & word games to help them become better presenter.
CO3	Basic tools of communication and improvement in communicative competence. Improvement in communicative competence will be done by using various software applications, showing them cultural movies & involving them in exercises like small & situational talk.
CO4	Negotiation and art of negotiation will be taught & practiced to improve vocal clarity & pronunciation. Understanding the structural and functional grammar and basic structure of language.
CO5	Interview skills will be practiced to make them learn how paralinguistic features dramatically affect meaning & how it can help one in becoming a persuasive & engaging speaker.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Framing Questions	Yes/No Questions, Why-Questions, Question tags, Rhetorical Questions	2	CO 1
2	Group Discussion and Group Presentation	Theory and practice sessions, visual aids When does the GD take place What does the GD test? Difference between GD and Debate Some Do's and Don'ts of GD	2	CO 2
3	Situational Conversation	Social language, Emergency situation, seeking help, Inquiries and Communicating Bad News	2	CO 3
4	Negotiation	Common fears about negotiations, Building Momentum, bargaining with more powerful opponents, Opening Tactics, Countering your opponent's moves	2	CO 4
5	Mock Interview Exercises	Mock Interview Exercises	2	CO 5

Reference Books:

1. Gerson, Sharon J. Technical Writing: Process and Product (5th edition). Prentice Hall, 2005.
2. K. Floyd, Interpersonal Communication: The Whole Story. McGraw Hill, 2009.
3. Greenbaum, Sidney and Nelson Gerald, An Introduction to English Grammar. Routledge, 2009.
4. Swan, Michael, Practical English Usage. OUP, 2005.

e-Learning Source:

1. <https://ndl.iitkgp.ac.in/>
2. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=9RA537jM1m7VD3VCoav4IQ==>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																		
PO-PSO	PO-	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3	3	3							3	3			
CO2	3	3	3	3	3	3	3							3	3			
CO3	3	3	2	3	3	3	3							3	3			
CO4	3	3	2	3	3	3	3							3	3			
CO5	3	3	3	3	3	3	3							3	3			

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation