1ST SEMESTER:-

Subject Code: IVC101	Category: Mandatory& Industry Value Added Course
Subject Name: MENTAL MATHS FOR PROFESSIONALS-I	Semester : 1st
L-T-P : 2-0-0 (Total Contact Hrs. 2)	Credit:0
Pre-Requisites: Basic & fundamental knowledge of mathematics up to class 10th standard, Logical & Analytical skill.	

Course Objective:

1. To learn aptitude and multiple tricky approaches.
2. To enhance the analytical skill and quick decision-making skill of the students. Good analytical skill and sound knowledge in analogies will also enhance student's interview facing skill.
3. To make them prepare for the various competitive exams and different placement aptitude test as well.
4. To enhance student's skill to appear in various aptitude test within limited time constrain.

Course Outcome:

1. Students will learn advance tricky approach for solving Quantitative Aptitude questions.
2. It will enhance students skill to appear in various aptitude test within limited time constrain.
3. This module will enhance students Analytical skill & will also improve quick decision making skill.
4. Students can prepare various competitive exams and different placement aptitude test as well.
5. Good analytical skill and sound knowledge in analogies will also enhance student's interview facing skill.

Course Content:

Module No.	Description	Hours	Blooms Level	PO (1..12) Mapping
1.	**Quantitative Aptitude:** 1) Quant foundation 2) Basic Multiplication 3) Division 4) Squaring numbers 5) Percentage 6) Ratio 7) Simple equation 8) Variation 9) Partnership 10) Profit & Loss	30	L1 (Remember) L2 (Understand) L3 (Apply)	PO6, PO7, PO8

2.	**Logical Mental ability -1:** 1) Coding and Decoding & Direction Sense 2) Series & Numbers 3) Blood Relations 4) Analogy	18	L1 (Remember) L2 (Understand) L3 (Apply)	PO6, PO7, PO8

Learning Resources:

Text Books:

1. Fast Track Arithmetic- Rajesh Verma
2. Verbal & non-verbal reasoning- R.S Agarwal
3. Quantitative Aptitude- R.S Agarwal
4. Analytical Reasoning –Peeyush Bhardwaj

Subject Code : IVC201	**Category** : Mandatory& Industry Value Added Course
Subject Name : General Studies and CA-II	**Semester** : 2nd
L-T-P : 2-0-0 (Total Contact Hrs. 2)	**Credit:** 0
Pre-Requisites: Fundamental knowledge of humanities & social science subjects till class 10th standard and knowledge of Economics up to class11th standard.	

Course Objective:

1. To learn aptitude and multiple tricky approaches.
2. To enhance the analytical skill and quick decision-making skill of the students. Good analytical skill and sound knowledge in analogies will also enhance student's interview facing skill.
3. To make them prepare for the various competitive exams and different placement aptitude test as well.
4. To enhance student's skill to appear in various aptitude test within limited time constrain.

Course Outcome:

1. This part of the syllabus will create base of general knowledge among students which is required to appear in various competitive exams in public sector jobs.
2. It will inculcate their rights & duties to the society, it will help them to act according to law in society.
3. It will also improve basic banking knowledge among students.
4. This part of the syllabus will enhance knowledge on National & International Current Affairs among students.

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Laws of Society:** History of Constitution, Preamble, Fundamental Rights, Directive Principle of State Policy and Fundamental Duties	8	L1 (Remember) L2 (Understand) L3 (Apply)	PO6, PO 7, PO8
2.	**Our Ancient Past:** Indus Valley Civilization, Vedic Civilization, 16 Mahajanapadas, Mauryan Dynasty.	10	L1 (Remember) L2 (Understand) L3 (Apply)	PO6, PO 7, PO8
3.	**Know Our Country:** Physiographic Division of India- Geological history of India, Northern Mountain, Mineral Resources of India.	8	L1 (Remember) L2 (Understand) L3 (Apply)	PO6, PO 7, PO8
4.	**Financial Planning and Market Laws:** Basic Concept of Economics, National	8	L1 (Remember) L2 (Understand) L3 (Apply)	PO6, PO 7, PO8

	Income, Unemployment and Poverty			
5.	**India and World:** Monthly Current Affairs Magazine	8	L1 (Remember) L2 (Understand) L3 (Apply)	PO6, PO 7, PO8
6.	**Universal Human Values:** Understanding Value Education, Method to fulfill the Basic Human Aspiration, Continuous happiness and Prosperity- the Basic Human Aspiration	6	L1 (Remember) L2 (Understand) L3 (Apply)	PO6, PO 7, PO8

Learning Resources:

Text Books:
- Indian Constitution- M.Laxmikant
- Indian Economy-Ramesh Singh
- India's Ancient Past- R.S.Sharma
- Geography of India- Majid Hussain

Reference Books:
- Current Affairs Magazine of IEM-UEM

3ᴿᴰ SEMESTER:-

Subject Code : IVC301	**Category**: Mandatory& Industry Value Added Course
Subject Name : General Studies and CA- III	**Semester** : 3rd
L-T-P : 2-0-0 (Total Contact Hrs. 2)	**Credit:** 0
Pre-Requisites: Basic Social Science from primary to high school, NCERTs	

Course Objective:
1. To learn about basic of History to know about our past and to implement it in our daily life.
2. To learn about the Political System of Our Country.
3. To learn the concepts of Basics of Geography and Economics from which Students will acquire knowledge for Competitive exams.

Course Outcome:

At the end of the course the students will be able
1. To inculcate human values and ethical thinking among students.
2. To prepare the stage for facing different levels of civil service and other competitive examinations.
3. To prepare the ground for making them aware of the happenings, cultural historical and developmental aspects of the country as well as global affairs
4. Learning current affairs with technique.

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Laws of Society :**Union Executive-President, Vice President, PM and Council of Ministers, Attorney General	6	L1 (Remember) L2 (Understand) L4 (Analyse)	PO6,PO7, PO8
2.	**Our Freedom Struggle**: Arrival of the Europeans- Portuguese, Dutch, English, French; Land Revenue System, Economic Exploitation of British Rule, Socio-religious Reforms Movement.	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO6,PO7, PO8
3.	**Know Our Country:** Physical Geography of India- Peninsular Plateau, Northern Great Plains, Coastal Plains, Soil of India.	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO6,PO7, PO8

4.	**RBI and Banking, India and World and Universal Human Values:** Banking System of India with reference to RBI, Capital Market Monthly Current Affairs Magazine and Understanding Human Beings as the co- existence of the self and the body, Program to ensure self-regulation and health, Understanding harmony in the nature.	6	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO6,PO7, PO8

Learning Resources:
Text Books:
 1. NCERT Books from class 8-12.
Reference Books:

1. Indian Constitution-M.Laxmikant
2. Indian Economy-Ramesh Singh
3. History of Modern India- Bepan Chandra
4. Geography of India- Majid Hussain
5. Current Affairs Magazine of IEM-UEM

Subject Code : IVC401	Category : Mandatory& Industry Value Added Course
Subject Name : GENERAL STUDIES & CURRENT AFFAIRS-IV	Semester : 4th
L-T-P : 2-0-0 (Total Contact Hrs. 2)	Credit: 0
Pre-Requisites: Basic Social Science from primary to high school, NCERTs	

Course Objective:
1. To learn about basic of History to know about our past and to implement it in our daily life.
2. To learn about the Political System of Our Country.
3. To learn the concepts of Basics of Geography and Economics from which Students will acquire knowledge for Competitive exams.

Course Outcome:

At the end of the course the students will be able
1. To inculcate human values and ethical thinking among students.
2. To prepare the stage for facing different levels of civil service and other competitive examinations.
3. To prepare the ground for making them aware of the happenings, cultural historical and developmental aspects of the country as well as global affairs
4. Learning current affairs with technique.

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Laws of Society:** Central Legislative System of India, State Legislative System of India, Indian Judiciary	6	L1 (Remember) L2 (Understand) L4 (Analyse)	PO6,PO7, PO8
2.	**Heritage of India:** Islam and Early Muslim Invaders, Delhi Sultanate, Bhakti and Sufi Movement.	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO6,PO7, PO8
3.	**Know Our Country**: Rivers of India, Vegetation of India, Climate of India, Transport of India.	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO6,PO7, PO8
4.	**Revenue and Expenditure of India, India and World and Universal Human Values:** Tax System of India, Balance of Payment, Industrial Reforms, Monthly Current Affairs Magazine, Realising existence and co- existence at all levels, Holistic perception of Harmony in existence.	6	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO6,PO7, PO8

Learning Resources:

Text Books:

1. NCERT Books from class 8-12.

Reference Books:

1. Indian Constitution-M. Laxmikant
2. Indian Economy-Ramesh Singh
3. History of Modern India- Bepan Chandra
4. Geography of India- Majid Hussain
5. Current Affairs Magazine of IEM-UEM

Subject Code : IVC(IT)501	Category: Mandatory& Industry Value Added Course
Subject Name : ADVANCED TECHNICAL KNOWLEDGE-V	Semester : 5th
L-T-P : 2-0-0 (Total Contact Hrs. 2)	Credit: 0
Pre-Requisites: Basics of Digital Electronic, Programming, Discrete Mathematics and Computer Organization	

Course Objective:
1. To learn about basic of digital circuits for professional exams
2. To learn about fundamentals of computer programming for various exams
3. To learn about basic of discrete mathematics for professional exams
4. To learn about fundamentals of computer organizations for various exams

Course Outcome:

At the end of the course the students will be able
1. To develop an understanding of Digital electronic circuit components and their working principles.
2. To learn all types of linear, non-linear data structures and calculate time complexity and space complexity of any given algorithm.
3. To understand memory technology and communication among processing elements.
4. To use logical notation & Perform logical proofs, recursive functions and solve recurrence relations and principles of counting

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Digital Logic:** Digital Logic Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point).	6	L1 (Remember) L2 (Understand) L4 (Analyse)	PO1,PO2, PO3
2.	**Programming and Data Structures** Programming and Data Structures Programming in C. Recursion. Arrays,stacks.	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3
3.	**Computer Organization and Architecture:** Machine instructions and addressing modes. ALU, data path and control unit. Instruction pipelining.	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3

4.	**Discrete Mathematics:** Propositional and first order logic. Sets, relations, functions, partial orders and lattices. Groups. Graphs: connectivity, matching, coloring. Combinatorics: counting, recurrence relations, generating functions.	6	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3

Learning Resources:
Text Books:
1. G.K publishers GATE Computer Science Engineering,
2. McGraw hill GATE 2020 Computer Science Engineering,
3. Wiley GATE 2020 Computer Science Engineering,

Subject Code : IVC(IT)601	Category: Mandatory& Industry Value Added Course
Subject Name : ADVANCED TECHNICAL KNOWLEDGE-VI	Semester : 6th
L-T-P : 2-0-0 (Total Contact Hrs. 2)	Credit: 0
Pre-Requisites: Basics of Data structure, Architecture, Theory of computation and Algorithms	

Course Objective:
1. To learn about the Programming and Data Structures for professional exams
2. To learn about fundamentals of Computer Organization and Architecture for various exams
3. To learn about Theory of computation for professional exams
4. To learn about fundamentals of Algorithms and Database management systems for various exams

Course Outcome:

At the end of the course the students will be able
1. To develop an understanding of Programming and Data Structures.
2. To learn all types of Computer architecture and Organization fundamentals.
3. To understand theory of computation and its applications.
4. To use fundamentals of Algorithms and Database principles.

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Programming and Data Structures:** Queues, linked lists, trees, binary search trees.	6	L1 (Remember) L2 (Understand) L4 (Analyse)	PO1,PO2, PO3
2.	**Computer Organization and Architecture:**Memory hierarchy: cache, main memory and secondary storage; I/O interface (interrupt and DMA mode)	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3
3.	**Theory of Computation**: Regular expressions and finite automata. Context-free grammars and push-down automata. Regular and context free languages, pumping lemma. Turing machines and un-decidability	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3
4.	**Algorithms and Database:** Searching, sorting, hashing. Asymptotic worst case time and space complexity. Algorithm design techniques: greedy,	6	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3

	dynamic programming and divide-and-conquer. Graph search, minimum spanning trees, shortest paths.ER-model. Relational model: relational algebra, tuple calculus, SQL.			

Learning Resources:

Text Books:
1. G.K publishers GATE Computer Science Engineering,
2. McGraw hill GATE 2020 Computer Science Engineering,
3. Wiley GATE 2020 Computer Science Engineering,

Subject Code : IVC(IT)701	Category: Mandatory& Industry Value Added Course
Subject Name : ADVANCED TECHNICAL KNOWLEDGE-VII	Semester : 7th
L-T-P : 2-0-0 (Total Contact Hrs. 2)	Credit: 0
Pre-Requisites: Basics of Compiler, Operating systems and Computer network	

Course Objective:
1. To learn about the Details of compiler designs for professional exams
2. To learn about fundamentals of data base management for various exams
3. To learn about Operating systems for professional exams
4. To learn about fundamentals computer networksfor various exams

Course Outcome:

At the end of the course the students will be able
1. To develop adetailed knowledge of compiler designs.
2. To learn all types of Data Base Management Systems' fundamentals.
3. To understand Operating Systems and its applications.
4. To use fundamentals of Computer networks and its methods.

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Compiler Design** Lexical analysis, parsing, syntax-directed translation. Runtime environments. Intermediate code generation. Local optimization, Data flow analyses: constant propagation, likeness analysis, common sub expression elimination	6	L1 (Remember) L2 (Understand) L4 (Analyze)	PO1,PO2, PO3
2.	**Databases** Integrity constraints, normal forms. File organization, indexing (e.g., B and B+ trees). Transactions and concurrency control	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3
3.	**Operating System:** Processes, threads, inter-process communication, concurrency and synchronization, Deadlock, CPU scheduling. Memory management and virtual memory, File system. Flow and error control techniques, switching. IPv4/IPv6, routers and routing algorithms (distance vector, link state). TCP/UDP and sockets, congestion control. Application layer protocols (DNS, SMTP, POP, FTP, HTTP). Basics of Wi-Fi.	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3

4.	**Computer Networks:** Concept of layering: OSI and TCP/IP Protocol Stacks; Basics of packet, circuit and virtual circuit- switching; Data link layer: framing, error detection, Medium Access Control, Ethernet bridging; Routing protocols: shortest path, flooding, distance vector and link state routing; Fragmentation and IP addressing, IPv4, CIDR notation, Basics of IP support protocols (ARP, DHCP, ICMP), Network Address Translation (NAT); Transport layer: flow control and congestion control, UDP, TCP, sockets; Application layer protocols: DNS, SMTP, HTTP, FTP, Email.	6	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3

Learning Resources:

Text Books:
1. G.K publishers GATE Computer Science Engineering,
2. McGraw hill GATE 2020 Computer Science Engineering,
3. Wiley GATE 2020 Computer Science Engineering,

Subject Code : IVC801	**Category**: Mandatory& Industry Value Added Course
Subject Name : GENERAL STUDIES & CURRENT AFFAIRS VIII	**Semester** : 8th
L-T-P : 2-0-0 (Total Contact Hrs. 2)	**Credit:** 0
Pre-Requisites: Basic Social Science from primary to high school, NCERTs	

Course Objective:
1. To learn about basic of History to know about our past and to implement it in our daily life.
2. To learn about the Political System of Our Country.
3. To learn the concepts of Basics of Geography and Economics from which Students will acquire knowledge for Competitive exams.

Course Outcome:

At the end of the course the students will be able
1. To inculcate human values and ethical thinking among students.
2. To prepare the stage for facing different levels of civil service and other competitive examinations.
3. To prepare the ground for making them aware of the happenings, cultural historical and developmental aspects of the country as well as global affairs
4. Learning current affairs with technique.

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Laws of Society:** Evolution of Indian Constitution, Part -II and Part - III.	6	L1 (Remember) L2 (Understand) L4 (Analyse)	PO6,PO7, PO8
2.	**Our Freedom Struggle**: Indian National Congress, National Movement- 1905- 1947.	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO6,PO7, PO8
3.	**Know Your Country**: Physiography of India.	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO6,PO7, PO8
4.	**Economics, India and World and Universal Human Values:** Capital and Money Market, Fiscal System of India. Monthly Current Affairs Magazine, Nature acceptance of Human Values, Competence in Professional Ethics, Strategies for transition towards value based life and profession.	6	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO6,PO7, PO8

Learning Resources:

Text Books:

1. NCERT Books from class 8-12.

Reference Books:

1. Indian Constitution-M. Laxmikant
2. Indian Economy-Ramesh Singh
3. History of Modern India- Bepan Chandra
4. Geography of India- Majid Hussain
5. Current Affairs Magazine of IEM-UEM

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