ECE ESP SYLLABUS

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

2ND SEMESTER:-

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

4TH SEMESTER:-

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

5TH SEMESTER

Subject Code : IVC(ECE)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: Basic Physics	

Course Objective:

1. To learn about basic of network theory and circuits for professional exams
2. To learn about fundamentals of electronics devices for various exams
3. To learn about details of analog electronics circuits for professional exams
4. To learn about fundamentals of signal and systems for various exams

Course Outcome:

At the end of the course the students will be able

1. To develop an understanding of network theory and circuits and their applications.
2. To learn all types electronics devices principle of operation and applications.
3. To understand the analog circuit theory and integrated circuits elements' principles.
4. To utilize various signals operation for different systems effectively.

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Networks Theory** Network solution methods: Nodal and mesh analysis; Network theorems: superposition, Thevenin and Norton's, maximum power transfer; Wye-Delta transformation; Steady state sinusoidal analysis using phasors; Time domain analysis of simple linear circuits; Solution of network equations using Laplace transform; Frequency domain analysis of Recircuits; Linear 2-port network parameters: driving point and transferfunctions; Stateequationsfor networks	12	L1 (Remember) L2 (Understand) L4 (Analyze)	PO1,PO2, PO3
2.	**Electronic Devices** Energy bands in intrinsic and extrinsic silicon; Carrier transport: diffusion current, drift current, mobility and resistivity; Generation and recombination of carriers; Poisson and continuity equations; P-N junction, Zener diode, BJT, MOS capacitor, MOSFET, LED, photo diode andsolar cell; Integratedcircuit fabrication	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3

	process: oxidation, diffusion, ion implantation, Photolithography and twin-tub CMOS process.			
3.	**Analog Circuits** Small signal equivalent circuits of diodes, BJTs and MOSFETs; Simple diode circuits: clipping, clamping and rectifiers; Single-stage BJT and MOSFET amplifiers: biasing, bias stability, mid frequency small signal analysis and frequency response; BJT and MOSFET amplifiers: multi-stage, differential, feedback, power and operational; Simple op-amp circuits; Active filters; Sinusoidal oscillators: criterion for oscillation, single-transistor and op- amp configurations; Function generators, wave-shaping circuits and 555 timers; Voltage reference circuits; Power supplies: ripple removal and regulation	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3
4.	**Signals and Systems** Continuous-time signals: Fourier series and Fourier transform representations, sampling theorem and applications; Discrete-time signals: discrete-time Fourier transform (DTFT), DFT, FFT, Z-transform, interpolation of discrete-time signals; LTI systems: definition and properties, causality, stability, impulse response, convolution, poles and zeros, parallel and cascade structure, frequency response, group delay, phase delay, digital filter design techniques.	6	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3

Learning Resources:

Text Books:

1. G.K publishers GATE ELECTRONICS & COMMUNICATIONS
2. McGraw hill GATE 2020 ELECTRONICS & COMMUNICATIONS
3. Wiley GATE 2020 ELECTRONICS & COMMUNICATIONS

6TH SEMESTER

Subject Code : IVC(ECE)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 Physics	

Course Objective:

1. To learn about the Basic Electromagnetics laws and their applications forprofessional exams
2. To learn about fundamentals of digital logics of electronics for various exams
3. To learn about various combinational and sequential circuits of devices for professional exams
4. To learn about fundamentals of transmission lines and antenna systems for various exams

Course Outcome:

At the end of the course the students will be able

1. To develop an understanding of Basic of Electromagnetics.
2. To learn all types of Logics gates and their applications in circuits.
3. To understand various combinational and sequential circuits of devices and its applications.
4. To use fundamentals of transmission lines and antenna systems principles.

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Electromagnetics** Electrostatics; Maxwell's equations: differential and integral forms and their interpretation, boundary conditions, wave equation, Poynting vector; Planewaves and properties: reflection and refraction, polarization, phase and group velocity, propagation through various media, skin depth; Transmission lines: equations, characteristic impedance, impedance matching, impedance transformation, S-parameters, Smith chart Waveguides: modes, boundary conditions, cut- off frequencies, dispersion relations; Antennas: antenna types, radiation pattern, gain and directivity, return loss, antenna arrays; Basicsof radar; Light propagation in optical fibers.	18	L1 (Remember) L2 (Understand) L4 (Analyse)	PO1,PO2, PO3

2.	**Digital Circuits** Number systems; Combinatorial circuits: Boolean algebra, minimization of functions using Boolean identities and Karnaugh map, logic gates and their static CMOS implementations, arithmetic circuits, code converters, multiplexers, decoders and PLAs; Sequential circuits: latches and flip-flops, counters, shift-registers and finite state machines; Data converters: sample and hold circuits, ADCs and DACs; Semiconductor memories: ROM, SRAM, DRAM; 8-bit microprocessor (8085): architecture, programming, memory and I/O interfacing.	18	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3

Learning Resources:

Text Books:

1. G.K publishers GATE ELECTRONICS & COMMUNICATIONS
2. McGraw hill GATE 2020 ELECTRONICS & COMMUNICATIONS
3. Wiley GATE 2020 ELECTRONICS & COMMUNICATIONS

7TH SEMESTER

Subject Code : IVC(ECE)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 Physics	

Course Objective:

1. To learn about the Basic of control systems and their applications for professional exams
2. To learn about fundamentals of communication engineering for various exams
3. To learn about various steady state and transient analysis of the systems for professional exams
4. To learn about advance systems of communication for various exams

Course Outcomes:

At the end of the course the students will be able

1. To develop an understanding of Basic of control systems.
2. To learn basic communication process and their applications in devices.
3. To understand steady state and transient states of devices and their effects.
4. To use advance systems of communication and understand their operating principles.

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Communication systems** Random processes: autocorrelation and power spectral density, properties of white noise, filtering of random signals through LTI systems; Analog communications: amplitude modulation and demodulation, angle modulation and demodulation, spectra of AM and FM, superheterodyne receivers, circuits for analog communications; Information theory: entropy, mutual information and channel capacity theorem; Digital communications: PCM, DPCM, digital modulation schemes, amplitude, phase and frequency shift keying (ASK, PSK, FSK), QAM, MAP and ML decoding, matched filter receiver, calculation of bandwidth, SNR and BER for digital modulation; Fundamentals of error correction, Hamming codes; Timing and	18	L1 (Remember) L2 (Understand) L4 (Analyze)	PO1,PO2, PO3

	frequency synchronization, inter-symbol interference and its mitigation; Basics of TDMA, FDMA and CDMA			
2.	**Control Systems** Basic control system components; Feedback principle; Transfer function; Block diagram representation; Signal flow graph; Transient and steady-state analysis of LTI systems; Frequency response; Routh-Hurwitz and Nyquist stability criteria; Bode and root-locus plots; Lag, lead and lag-lead compensation; State variable model and solution of state equation of LTI systems	18	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3

Learning Resources:

Text Books:

1. G.K publishers GATE ELECTRONICS & COMMUNICATIONS
2. McGraw hill GATE 2020 ELECTRONICS & COMMUNICATIONS
3. Wiley GATE 2020 ELECTRONICS & COMMUNICATIONS

8TH SEMESTER

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.	Mock tests of UPSC Prelims CSAT-I	18	L1 (Remember) L2 (Understand) L4 (Analyse)	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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