Semester III (Second year] Curriculum								
Sl. No.	Type of course	Code	Course Title	Hours per week				Credits
				Lecture	Tutorial	Practical	Sessional	
Theory Papers								
1	Basic Science Course	BSC301	Mathematics-III	3	0	0	0	3
2	Engineering Science Course	ESC301	Digital System Design	3	0	0	0	3
3	Engineering Science Course	ESC302	Computer Organization & Architecture	3	0	0	0	3
4	Professional Core Course	PCC-CS301	Data Structure & Algorithm	3	0	0	0	3
5	Professional Core Course	PCC-CS302	Discrete Mathematics	3	0	0	0	3
6	Humanities and social sciences including Management	HSMC301	Humanities – I (Constitution of India, Essence of India and Knowledge Trading)	2	0	0	0	0
7	Humanities and social sciences including Management	HSMC302	Essential Studies for Professionals - III	2	0	0	0	2
	Total			**19**	**0**	**0**	**0**	**17**
Practical Papers								
1	Engineering Science Course	ESC391	Digital System Design	0	0	3	0	1.5
2	Engineering Science Course	ESC392	Computer Organization & Architecture	0	0	3	0	1.5
3	Professional Core Course	PCC-CS391	Data Structure & Algorithm	0	0	3	0	1.5
	Total			**0**	**0**	**9**	**0**	**4.5**
Sessional Papers								
1	Professional Core Course	PCC-CS381	Artificial Intelligence & Machine Learning Fundamentals	0	0	0	3	1.5
2	Humanities and social sciences including Management	HSMC382	Skill Development for Professionals - III	0	0	0	2	1
3	Project	PROJ - CS381	Innovative Project – I	0	0	0	0	1
4	Mandatory Additional Requirements (MAR)	MAR381	Mandatory Additional Requirements (MAR)	0	0	0	0	0
5	MOOCs (Mandatory for Honours)	MOOCs 321	Massive Open Online Course 3.1 (Mandatory for B.Tech (Honours))	0	0	0	2	2

6		MOOCs 322	Massive Open Online Course 3.2 (Mandatory for B.Tech (Honours))	0	0	0	2	1
	Total			**0**	**0**	**0**	**9**	**6.5**
	Total			**19**	**0**	**9**	**9**	**28**

Course Code : HSMC302
Course Title : Essential Studies For Professionals - III
Credit : 2
Pre-Requisites : Basic Social Science from primary to high school, NCERTs
L-T-P : 2-0-0 (Total Contact Hrs. 2)

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	
CO1.	To inculcate human values and ethical thinking among students.
CO2.	To prepare the stage for facing different levels of civil service and other competitive examinations.
CO3.	To prepare the ground for making them aware of the happenings, cultural historical and developmental aspects of the country as well as global affairs
CO4.	Learning current affairs with technique.

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
CO1.	**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
CO2.	**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

CO3.	**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
CO4.	**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

Course Code : HSMC382
Course Title : **SKILL DEVELOPMENT FOR PROFESSIONALS - III**
Credit : 1
Pre-Requisites : Basic Mathematics, General English from primary to high school.
L-T-P : 2-0-0 (Total Contact Hrs. 2)

Course Objective:

1. To enhance the aptitude & analytical skill of students with multiple tricky approaches.
2. To prepare the students for various competitive examinations & professional exams

Course Outcome

At the end of the course the students will be able

CO1.	To enhance their problem solving skills, to improve the basic mathematical & Logical Skills for any type of competitive examinations.
CO2.	To get best possible training for the them students through continuous training module.
CO3.	To find themselves sound for the campus recruitment program's aptitude Test.
CO4.	To enhance problem solving skill using fast track techniques without using calculator.

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Quantitative Aptitude** Simple & Compound Interest, Data Interpretation, Indices & Surds, Number System, Quadratic Equations	6	L1 (Remember) L2 (Understand) L4 (Analyse)	PO1, PO2, PO10
2.	**Logical Reasoning: Syllogism,** Logical Venn diagram, If Else Statement **Puzzles** Seating Arrangement, Classification, Seating Arrangement with Blood Relations **Machine Input-Output** Pattern Based I/O **Inequality** a) Coded Inequality, b) Jumbled Inequality, c) Conditional inequality.	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1, PO2, PO10
3.	**Verbal English** **Sentence Corrections,** Fill the **blanks** with appropriate words/ articles/ preposition/verbs/adverbs/conjunction**.** **Reading Comprehension** (Advance Level) **Vocabulary**.	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1, PO2, PO10
4.	**Data interpretation:** Advanced Level.	6	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1, PO2, PO10

Learning Resources:

Reference Books:

1. Objective General English- S.P Bakshi
2. English Grammar and Competition-S.C Gupta
3. Fast Track Objective Arithmetic- Rajesh Verma
4. Advance Maths- Rakesh Yadav
5. Verbal and Non-Verbal Reasoning- R.S Agarwal
6. A new approach to Reasoning- BS Sijwali
7. Quantitative Aptitude-R.S Agarwal

Semester IV (Second year] Curriculum								
Sl. No.	**Type of course**	**Code**	**Course Title**	**Hours per week**				**Credits**
				Lecture	**Tutorial**	**Practical**	**Sessional**	
Theory Papers								
1	Professional Core Courses	ESC 401	Analog Electronic Circuits	3	0	0	0	3
2	Professional Core Courses	PCC- CS401	Design & Analysis of Algorithms	3	0	0	0	3
3	Professional Core Courses	PCC- CS402	Operating Systems	3	0	0	0	3
4	Professional Core Courses	PCC-CS403	IT Workshop (Sci Lab/MATLAB/R/Python)	1	0	0	0	0.5
5	Humanities & Social Sciences including Management courses	HSMC 401	Humanities-I (Technical Report Writing)	3	0	0	0	3
6	Humanities and social sciences including Management	HSMC402	Essential Studies for Professionals - IV	2	0	0	0	2
7	Humanities &Social Sciences including Management courses	HSMC 403	Management 1 (Organizational Behaviour)	3	0	0	0	3
8	Mandatory Courses	MC401	Environmental Sciences	0	0	0	0	0
	Total			**18**	**1**	**0**	**0**	**17.5**
Practical Papers								
1	Professional Core Courses	ESC 491	Analog Electronic Circuits Lab	0	0	3	0	1.5
2	Professional Core Courses	PCC- CS491	Design & Analysis of Algorithms Lab	0	0	3	0	1.5
3	Professional Core Courses	PCC- CS492	Operating Systems Lab	0	0	3	0	1.5
4	Professional Core Courses	PCC-CS493	IT Workshop Lab	0	0	3	0	1.5

	Total			**0**	**0**	**12**	**0**	**6**
Sessional Papers								
1	Humanities and social sciences including Management	HSMC482	Skill Development for Professionals - IV	0	0	0	2	1
2	Innovative Project	PROJ –CS481	Innovative Project – II	0	0	0	0	0.5
3	Mandatory Additional Requirements (MAR)	MAR481	Mandatory Additional Requirements (MAR)-IV	0	0	0	0	0
4	MOOCs (Mandatory for Honours)	MOOCs 421	Massive Open Online Course 4.1 (Mandatory for B.Tech (Honours))	0	0	0	1	1
5		MOOCs 422	Massive Open Online Course 4.2 (Mandatory for B.Tech (Honours))	0	0	0	1	1
	Total			**0**	**0**	**0**	**4**	**3.5**
	Total			**19**	**1**	**14**	**4**	**27**

Course Code : HSMC 402
Course Title : ESP-IV
Credit : 2
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

CO1.	To inculcate human values and ethical thinking among students.
CO2.	To prepare the stage for facing different levels of civil service and other competitive examinations.
CO3.	To prepare the ground for making them aware of the happenings, cultural historical and developmental aspects of the country as well as global affairs
CO4.	Learning current affairs with technique.

SYLLABUS:

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

Course Code : HSMC482
Course Title : SKILL DEVELOPMENT FOR PROFESSIONALS - IV
Credit : 1
Pre-Requisites : Basic Mathematics, General English from primary to high school.

L-T-P : 2-0-0 (Total Contact Hrs. 2)

Course Outcome
At the end of the course the students will be able

CO1.	To enhance their problem solving skills, to improve the basic mathematical & Logical Skills for any type of competitive examinations.
CO2.	To get best possible training for the them students through continuous training module.
CO3.	To find themselves sound for the campus recruitment program's aptitude Test.
CO4.	To enhance problem solving skill using fast track techniques without using calculator.

Course Objective:

1. To enhance the aptitude & analytical skill of students with multiple tricky approaches.
2. To prepare the students for various competitive examinations & professional exams

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Quantitative Aptitude** Permutation & Combination, Probability, Geometry, Mensuration	6	L1 (Remember) L2 (Understand) L4 (Analyse)	PO1, PO2, PO10
2.	**Logical Reasoning** **1) Seating Arrangement** a) Circular seating arrangement b) Square seating Arrangement c) Line Arrangement **2) Calendar And Clock** **3) Miscellaneous Problems**	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1, PO2, PO10
3.	**Verbal English** **1) Sentence Corrections** **2)** Fill the **blanks** with appropriate words/articles/preposition/verbs/adverbs/conjunction**.** **3) Reading Comprehension** (Advance Level) **4) Vocabulary**	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1, PO2, PO10

Learning Resources:

Reference Books:

1. Objective General English- S.P Bakshi
2. English Grammar and Competition-S.C Gupta
3. Fast Track Objective Arithmetic- Rajesh Verma
4. Advance Maths- Rakesh Yadav
5. Verbal and Non-Verbal Reasoning- R.S Agarwal
6. A new approach to Reasoning- BS Sijwali
7. Quantitative Aptitude-R.S Agarwal

Semester V (Third year] Curriculum								
Sl. No.	**Type of course**	**Code**	**Course Title**	**Hours per week**				**Credits**
				Lecture	**Tutorial**	**Practical**	**Sessional**	
Theory Papers								
1	Engineering Science Course	ESC501	Signals & Systems	3	0	0	0	3
2	Professional Core Courses	PCC- CS501	Database Management Systems	3	0	0	0	3
3	Professional Core Courses	PCC- CS502	Formal Language & Automata Theory	3	0	0	0	3
4	Professional Core Courses	PCC- CS503	Object Oriented Programming	2	0	0	0	2
5	Professional Core Courses	PCC- CS504	Software Engineering	2	0	0	0	2
6	Humanities &Social Sciences including Management courses	HSMC-501	Humanities II (Principles of Management)	3	0	0	0	3
7	Professional Elective courses	PEC-CS-501	Professional Elective-I	3	0	0	0	3
8	Humanities and social sciences including Management	HSMC502	Essential Studies for Professionals - V	2	0	0	0	2
	Total			**21**	**0**	**0**	**0**	**21**
Practical Papers								
1	Professional Core Courses	PCC- CS591	Database Management Systems Lab	0	0	4	0	2
2	Professional Core Courses	PCC- CS593	Object Oriented Programming Lab	0	0	4	0	2
3	Professional Core Courses	PCC- CS594	Software Engineering Lab	0	0	2	0	1
	Total			**0**	**0**	**10**	**0**	**5**
Sessional Papers								

1	Humanities and social sciences including Management	HSMC582	Skill Development for Professionals - V	0	0	0	2	1
2	Innovative Project	PROJ –CS501	Innovative Project - III	0	0	0	0	1
3	Mandatory Additional Requirements (MAR)	MAR581	Mandatory Additional Requirements (MAR)-V	0	0	0	0	0
4	MOOCs (Mandatory for Honours)	MOOCs 521	Massive Open Online Course 5.1 (Mandatory for B.Tech (Honours))	0	0	0	1	1
5		MOOCs 522	Massive Open Online Course 5.2 (Mandatory for B.Tech (Honours))	0	0	0	1	1
Total				**0**	**0**	**0**	**4**	**4**
Total				**21**	**0**	**10**	**4**	**30**

Course Code : HSMC 502
Course Title : ESP-V
Credit : 2
Pre-Requisites : Basics of Digital Electronic, Programming, Discrete Mathematics and Computer Organization
L-T-P : 2-0-0 (Total Contact Hrs. 2)

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

CO1.	To develop an understanding of Digital electronic circuit components and their working principles.
CO2.	To learn all types of linear, non-linear data structures and calculate time complexity and space complexity of any given algorithm.
CO3.	To understand memory technology and communication among processing elements.
CO4.	To use logical notation & Perform logical proofs, recursive functions and solve recurrence relations and principles of counting

Course Content:

Module No.	Description	Hours
1.	**Digital Logic:** Digital Logic Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point).	6
2.	**Programming and Data Structures** Programming and Data Structures Programming in C. Recursion. Arrays, stacks.	12
3.	**Computer Organization and Architecture:** Machine instructions and addressing modes. ALU, data path and control unit. Instruction pipelining.	12
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

Learning Resources:

Ref. Books:

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

Course Code	:	HSMC582
Course Title	:	SKILL DEVELOPMENT FOR PROFESSIONALS - V
Credit	:	1
Pre-Requisites	:	Basic Mathematics, General English from primary to high school.
L-T-P	:	2-0-0 (Total Contact Hrs. 2)

Course Objective:

1. To enhance the aptitude & analytical skill of students with multiple tricky approaches.
2. To prepare the students for various competitive examinations & professional exams

Course Outcomes

CO1.	The ability to communicate effectively with a range of audiences.
CO2.	The ability to face the test and interview conducted by different companies and succeed
CO3.	The ability to recognize the need for continuing professional development.
CO4.	The ability to succeed in competitive exams

Course Content:

Module No.	Description	Hours	Blooms Level	PO(1..12) Mapping
1.	**Quantitative Aptitude & Data Interpretation**- Miscellaneous	12	L1 (Remember) L2 (Understand) L4 (Analyse)	PO1,PO2, PO10
2.	**Logical Reasoning** 1) Statement And Assumption, 2) Statement And Conclusion, 3) Statement And Course Of Action, 4) Cause And Effect, 5) Drawing Inference	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO10
3.	**Verbal English** **1) Sentence Corrections** 2) Fill the **blanks** with appropriate words/articles/preposition/verbs/adverbs/conjunction. 3) **Reading Comprehension** (Advance Level) **4) Vocabulary**	12	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO10

Learning Resources:

Reference Books:

1. Objective General English- S.P Bakshi
2. English Grammar and Competition-S.C Gupta
3. Fast Track Objective Arithmetic- Rajesh Verma
4. Advance Maths- Rakesh Yadav
5. Verbal and Non-Verbal Reasoning- R.S Agarwal
6. A new approach to Reasoning- BS Sijwali
7. Quantitative Aptitude-R.S Agarwal

Semester VI (Third year] Curriculum								
Sl. No.	**Type of course**	**Code**	**Course Title**	**Hours per week**				**Credits**
				Lecture	**Tutorial**	**Practical**	**Sessional**	
Theory Papers								
1	Professional Core Courses	PCC-CS601	Compiler Design	3	0	0	0	3
2	Professional Core Courses	PCC-CS602	Computer Networks	3	0	0	0	3
3	Professional Core Courses	PCC-CS603	Cloud Computing & IOT	2	0	0	0	2
4	Professional Elective courses	PEC-CS601	Professional Elective-II **E:** BlockChain **D:** Digital Forensics	3	0	0	0	3
5	Professional Elective courses	PEC-CS602	Professional Elective-III **E:** Data Mining and Analytics **F:** Financial and Cost Accounting	3	0	0	0	3
6	Open Elective courses	OEC - CS601	Open Elective-I **E:** Image Processing and Pattern Recognition **F:** Advanced Social, Text and Media Analytics	3	0	0	0	3
7	Humanities and social sciences including Management	HSMC602	Essential Studies for Professionals - VI	2	0	0	0	2
	Total			**19**	**0**	**0**	**0**	**19**
Practical Papers								
1	Professional Core Courses	PCC-CS691	Compiler Design Lab	0	0	4	0	2
2	Professional Core Courses	PCC-CS692	Computer Networks Lab	0	0	4	0	2
3	Professional Core Courses	PCC-CS693	Cloud Computing & IOT Lab	0	0	2	0	1
4	Innovative Project	PROJ-CS601	Project-1	0	0	6	0	3
	Total			**0**	**0**	**14**	**0**	**7**

Sessional Papers								
1	Humanities and social sciences including Management	HSMC682	Skill Development for Professionals - VI	0	0	0	2	1
2	Mandatory Additional Requirements (MAR)	MAR681	Mandatory Additional Requirements (MAR)-VI	0	0	0	0	0
3	MOOCs (Mandatory for Honours)	MOOCs 621	Massive Open Online Course 6.1 (Mandatory for B.Tech (Honours))	0	0	0	1	1
4		MOOCs 622	Massive Open Online Course 6.2 (Mandatory for B.Tech (Honours))	0	0	0	1	1
	Total			**0**	**0**	**0**	**4**	**3**
	Total			**19**	**0**	**14**	**4**	**29**

Course Code : HSMC 602
Course Title : ESP-VI
Credit Points : 2
Pre-Requisites : Basics of Data structure, Architecture, Theory of computation and Algorithms
L-T-P : 2-0-0 (Total Contact Hrs. 2)

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 Outcomes At the end of the course the students will be able	
CO1.	To develop an understanding of Programming and Data Structures.
CO2.	To learn all types of Computer architecture and Organization fundamentals.
CO3.	To understand theory of computation and its applications.

CO4.	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, dynamic programming and divide-and-conquer. Graph search, minimum spanning trees, shortest paths. ER-model. Relational model: relational algebra, tuple calculus, SQL.	6	L1 (Remember) L2 (Understand) L3 (Apply) L4 (Analyze)	PO1,PO2, PO3

Learning Resources:

Reference Books:

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

Course Code : HSMC682
Course Title : **SKILL DEVELOPMENT FOR PROFESSIONALS - VI**
Credit Points : 1
Pre-Requisites : Basic Mathematics, General English from primary to high school.
L-T-P : 2-0-0 (Total Contact Hrs. 2)

Course Objective:

1. To enhance the aptitude & analytical skill of students with multiple tricky approaches.
2. To prepare the students for various competitive examinations & professional exams

Course Outcomes	
CO1.	The ability to communicate effectively with a range of audiences.
CO2.	The ability to face the test and interview conducted by different companies and succeed. And also preparation to appear different competitive exams starts.
CO3.	The ability to recognize the need for continuing professional development.
CO4.	The ability to succeed in competitive exams (BANK/IBPS/SSC/GATE / GRE / PSU's/Placement Aptitude etc.).

SYLLABUS:

Module No.	Description	Hours
1.	**Revision and Advanced Problems in Quantitative Aptitude:** 1)Numbers (+, -, x, etc), Percentages, Ratio, Partnership, Linear Equations, Profit & Loss 2)Averages, Mixtures & Allegations, Number System, Time and Work 3)Simple & Compound Interest, Other / Misc Quantitative Apt., Indices and Surds, Quadratic Equations 4)Permutations & Combinations, Probability, Geometry, Mensuration 5)Data Interpretation, Various Charts, Diagrams, Tables	12
2.	**Revision and Advanced Problems in Reasoning** 1)Coding, Series & Numbers, Blood Relations, Analogy 2)Cubes, Data Sufficiency, Non-Verbal Reasoning 3)Syllogisms, Puzzles, Machine I/O, Inequality 4)Seating Arrangement, Calendar / Clock 5)Statements, Other / Misc Logical Reasoning, Decision Making (Ethics)	12
3.	**Revision and Advanced Questions in Verbal English** 1)Grammar, 2)Clauses, 3)Spotting errors, 4)Sentence Correction, 5)Blanks, 6)Reading Comprehensions, 7)Vocabulary	12

Learning Resources:

Reference Books:

1. Objective General English- S.P Bakshi
2. English Grammar and Competition-S.C Gupta
3. Fast Track Objective Arithmetic- Rajesh Verma
4. Advance Maths- Rakesh Yadav
5. Verbal and Non-Verbal Reasoning- R.S Agarwal
6. A new approach to Reasoning- BS Sijwali
7. Quantitative Aptitude-R.S Agarwal

Semester VII (Fourth year] Curriculum								
Sl. No.	**Type of course**	**Code**	**Course Title**	**Hours per week**				**Credits**
				Lecture	**Tutorial**	**Practical**	**Sessional**	
Theory Papers								
1	Professional Elective courses	PCC-CS701	Network Security & Cryptography	2	0	0	0	2
2	Professional Elective courses	PEC-CS701	Professional Elective-IV	3	0	0	0	3
3	Professional Elective courses	PEC-CS702	Professional Elective-V	3	0	0	0	3
4	Open Elective courses	OEC - CS701	Open Elective-II	3	0	0	0	3
5	Humanities and social sciences including Management	HSMC702	Essential Studies for Professionals - VII	2	0	0	0	2
	Total			**13**	**0**	**0**	**0**	**13**
Practical Papers								
1	Innovative Project	PROJ-CS701	Project-II	**0**	**0**	**12**	**0**	**6**
2	Professional Core Courses	PCC-CS791	Internet of Things Lab	0	0	4	0	1
	Total			**0**	**0**	**16**	0	7
Sessional Papers								

1	Humanities and social sciences including Management	HSMC782	Skill Development for Professionals - VII	0	0	0	2	1
2	Mandatory Additional Requirements (MAR)	MAR781	Mandatory Additional Requirements (MAR) -VII	0	0	0	0	0
3	MOOCs (Mandatory for Honours)	MOOCs 721	Massive Open Online Course 7.1 (Mandatory for B.Tech (Honours))	0	0	0	3	3
4		MOOCs 722	Massive Open Online Course 7.2 (Mandatory for B.Tech (Honours))	0	0	0	2	2
	Total			**0**	**0**	**0**	**7**	**6**
	Total			**13**	**0**	**12**	**7**	**26**

Subject Code : HSMC 702	**Category**:
Subject Name : ESP-VII	**Semester** : 7th
L-T-P : 2-0-0 (Total Contact Hrs. 2)	**Credit:** 2
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 networks for various exams

Course Outcomes:

At the end of the course the students will be able

1. To develop a detailed 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
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	6

	elimination	
2.	**Databases** Integrity constraints, normal forms. File organization, indexing (e.g., B and B+ trees). Transactions and concurrency control	12
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
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

Learning Resources:

Reference 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 : HSMC782	**Category**:
Subject Name : **SKILL DEVELOPMENT FOR PROFESSIONALS - VII**	**Semester** : 7^{TH}
L-T-P : 2-0-0 (Total Contact Hrs. 2)	**Credit:** 1
Pre-Requisites: Basic Mathematics, General English from primary to high school.	

Course Objective:

1. To enhance the aptitude & analytical skill of students with multiple tricky approaches.
2. To prepare the students for various competitive examinations & professional exams

Course Outcomes:

1. Revision of entire Syllabus along with specific type of Mock Tests for the competitive exams like UPSC, IBPS, SBI PO/SO, SSC,RAIL, INSURANCE etc.
2. Learning Advance quantitative Aptitude Techniques on Algebra , Geometry, Menstruation, Tr etc which is very essential for appearing in different competitive Exams along with SSC.

3. Solving Puzzle based problems & learning different Analytical techniques.
4. Misc Practise sets on different Competitive Exams mains level papers.

Course Content:

Module No.	Description	Hours
1.	**Quantitative Aptitude** Miscellaneous Problems on quantitative aptitude [CAT level-4].	12
2.	**Logical Reasoning:** Miscellaneous Problems on Logical Reasoning [CAT level 4].	12
3.	**Verbal English** Miscellaneous Problems on Verbal English [CAT level-4].	12

Learning Resources:

Reference Books:

1. Objective General English- S.P Bakshi
2. English Grammar and Competition-S.C Gupta
3. Fast Track Objective Arithmetic- Rajesh Verma
4. Advance Maths- Rakesh Yadav
5. Verbal and Non-Verbal Reasoning- R.S Agarwal
6. A new approach to Reasoning- BS Sijwali
7. Quantitative Aptitude-R.S Agarwal

Semester VIII (Fourth year] Curriculum								
Sl. No.	Type of course	Code	Course Title	Hours per week				Credits
				Lecture	Tutorial	Practical	Sessional	
Theory Papers								
1	Professional Elective courses	PEC-CS801	Professional Elective-VI	3	0	0	0	3
2	Open Elective courses	OEC - CS801	Open Elective-III	3	0	0	0	3

3	Open Elective courses	OEC - CS802	Open Elective-IV	3	0	0	0	3
4	Humanities and social sciences including Management	HSMC802	Essential Studies for Professionals - VIII	2	0	0	0	2
	Total			**11**	**0**	**0**	**0**	**11**
Practical Papers								
1	Innovative Project	PROJ-CS801	Project-III	0	0	12	0	6
	Total			**0**	**0**	**12**	**0**	**6**
Autonomous Papers								
1	Humanities and social sciences including Management	HSMC882	Skill Development for Professionals - VIII	0	0	0	2	1
2	Mandatory Additional Requirements (MAR)	MAR881	Mandatory Additional Requirements (MAR)-VIII	0	0	0	0	0
3	MOOCs (Mandatory for Honours)	MOOCs 821	Massive Open Online Course 8.1 (Mandatory for B.Tech (Honours))	0	0	0	3	3
4		MOOCs 822	Massive Open Online Course 8.2 (Mandatory for B.Tech (Honours))	0	0	0	2	3
5	Grand viva	PCC-CS881	Grand Viva-voce	0	0	0	0	2
	Total			**11**	**0**	**0**	**7**	**9**
	Total			**11**	**0**	**12**	**7**	**26**

Subject Code : HSMC 802	**Category**:
Subject Name : ESP-VIII	**Semester** : 8th
L-T-P : 2-0-0 (Total Contact Hrs. 2)	**Credit:** 2
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 Outcomes:

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
1.	**Laws of Society**: Evolution of Indian Constitution, Part -II and Part - III.	6
2.	**Our Freedom Struggle**: Indian National Congress, National Movement- 1905- 1947.	12
3.	**Know Your Country**: Physiography of India.	12
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

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 : HSMC882		**Category**:	
Subject Name : **SKILL DEVELOPMENT FOR PROFESSIONALS - VIII**		**Semester**	: 8TH
L-T-P	: 2-0-0 (Total Contact Hrs. 2)	**Credit:** 1	
Pre-Requisites: Basic Mathematics, General English from primary to high school.			

Course Objective:

1. To enhance the aptitude & analytical skill of students with multiple tricky approaches.
2. To prepare the students for various competitive examinations & professional exams

Course Outcomes:

1. To make the students aware of all the nuances of various public sector examinations.
2. To motivate them hone their previously learnt skills necessary for cracking various exams like civil service examination (UPSC and State PSC), Staff Selection Commission, Railway Services and other exams.
3. This part of the syllabus will also expertise them to boost their conversational skills by allowing them to speak on a variety of topics with ease.
4. Appearing mock tests of different competitive exams both prelims & mains.

Course Content:

Module No.	Description	Hours
1.	**Mock tests OF UPSC CSAT-II.**	12

Learning Resources:

Reference Books:

1. Verbal and Non-Verbal Reasoning- R.S Agarwal
2. Quantitative Aptitude-R.S. Agarwal
3. GK PUBLICATION –for UPSC Civil Services