NANDHA ENGINEERING COLLEGE

(AUTONOMOUS)

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

ERODE – 638052 TAMIL NADU

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1.1.2. Details of courses where syllabus revision was carried out in B.Tech –Information Technology in R17 Curriculum

Course Code	Course Name	% of Change
17ITX37	Problem Solving using Java	100
17ITX38	Product Lifecycle Management	100
	Average	**100**

18/7/24

Dr.G.R.Sreekanth
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NANDHA ENGINEERING COLLEGE

(An Autonomous Institution affiliated to Anna University Chennai and approved by AICTE, New Delhi)
Erode-638 052, Tamilnadu, India, Phone: 04294 – 225585

Curriculum and Syllabi
for
B.Tech – Information Technology [R17]

[CHOICE BASED CREDIT SYSTEM]

(This Curriculum and Syllabi are applicable to Students admitted from the academic year 2017-2018 onwards)

SEPTEMBER 2021

INFORMATION TECHNOLOGY DEPARTMENT PEOs , PSOs and POs

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

The following Programme Educational Objectives are designed for B.Tech. Information Technology programme in Information Technology based on the Department Vision & Mission to provide higher engineering education and motivate research in the field of Information Technology.

PEO1: To afford students with knowledge environment in mathematical, scientific and basic engineering basics necessary to evaluate, analyze and solve hardware/software engineering problems.

PEO2: To provide our graduates with core proficiency awareness of the life-long learning needed for a successful specialized career.

PEO3: To scrutinize real life problems, design and develop solutions through the knowledge of basic computing and management principles that are publicly acceptable.

PEO4: To apply multifaceted skills for employment and excel in IT professional careers and/or to continue their education in IT and/or related post graduate programmes.

PEO5: To create an interest for self learning, updating recent developments in the major area of study by way of inplant training and industrial visit and motivating to present in national / international forums for dissemination of knowledge.

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO 1: Apply the acquired knowledge of basic skills, principles of computing, mathematical foundations, algorithmic principles, modeling and design of computer- based systems in solving engineering Problems.

PSO 2: Relate and analyze the interdisciplinary problems for developing innovative sustained solutions with environmental concerns.

PSO 3: Able to update knowledge continuously in various technologies and programming languages to meet the industry standards.

PSO 4: Capable to handle efficiently as part of a team with professional behavior and ethics.

PROGRAM OUTCOMES (POs)

a-l	GRADUATE ATTRIBUTES	PO No.	PROGRAMME OUTCOMES
a	Engineering Knowledge	**PO1**	Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
b	Problem Analysis	**PO2**	Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
c	Design and Development of Solutions	**PO3**	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
d	Investigation of Complex Problems	**PO4**	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
e	Modern Tool Usage	**PO5**	Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
f	The Engineer and Society	**PO6**	Apply reasoning acquired by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
g	Environment and Sustainability	**PO7**	Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
h	Ethics	**PO8**	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
i	Individual and Team Work.	**PO9**	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
j	Communication	**PO10**	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
k	Project Management and Finance	**PO11**	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
l	Lifelong Learning	**PO12**	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOMES

Abroad relation between the Programme educational objectives and the Program Outcomes is given in the following table

PROGRAMME EDUCATIONAL OBJECTIVES	PROGRAMME OUTCOMES											
	a	b	c	d	E	f	G	H	I	j	k	l
1	3	3	2	3	2	1	1	2	1	1	3	1
2	3	3	3	3	3	1	1	1	1	1	1	2
3	3	3	3	3	3	2	2	3	1	2	2	2
4	3	3	3	2	3	2	1	2	1	1	1	2
5	3	3	2	3	2	1	1	3	1	1	2	1

MAPPING OF PROGRAM SPECIFIC OUTCOMES WITH PROGRAMME OUTCOMES

Abroad relation between the Program Specific Outcomes and the Programme Outcomes is given in the following table

PROGRAM SPECIFIC OUTCOMES	PROGRAMME OUTCOMES											
	A	b	c	d	E	f	G	H	I	j	k	l
1	3	3	2	3	2	1	1	1	1	1	1	2
2	3	3	3	3	3	2	2	3	1	3	3	3
3	3	3	3	3	3	3	3	2	1	1	1	3
4	3	3	2	3	3	2	2	3	1	2	2	2

*Contribution 1:Reasonable 2:Significant 3:Strong

NANDHA ENGINEERING COLLEGE (AUTONOMOUS), ERODE – 638 052

REGULATIONS–2017 **CHOICE BASED CREDITSYSTEM**

B.TECH. INFORMATION TECHNOLOGY

CURRICULA: I –VIII SEMESTERS **SYLLABI I – VIII SEMESTERS**

SEMESTER: I									
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**PRERQUISITE**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY									
1.	17EYA01	Professional English- I	HS	-	4	2	0	2	3
2.	17MYB01	Calculus and Solid Geometry	BS	-	5	3	2	0	4
3.	17PYB02	Physics for Computer Engineers	BS	-	5	3	0	2	4
4.	17CYB03	Environmental Science	BS	-	3	3	0	0	3
5.	17CSC02	Python Programming	ES	-	3	3	0	0	3
PRACTICAL									
6.	17MEP01	Engineering Graphics Laboratory	ES	-	4	0	0	4	2
7.	17CSP02	Python Programming Laboratory	ES	-	4	0	0	4	2
8.	17GEP01	Personal Values	HS	-	2	0	0	2	0
				TOTAL	**30**	**14**	**2**	**14**	**21**

SEMESTER: II									
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**PRERQUISITE**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY									
1.	17EYA02	Professional English- II	HS	17EYA01	4	2	0	2	3
2.	17MYB02	Complex Analysis and Laplace Transforms	BS	17MYB01	5	3	2	0	4
3.	17PYB04	Applied Physics	BS	17PYB02	3	3	0	0	3
4.	17CYB04	Chemistry for computer Engineers	BS	-	5	3	0	2	4
5.	17CSC03	Structured Programming	ES	-	3	3	0	0	3
6.	17ECC04	Basics of Electronics Engineering	ES	-	4	3	0	0	3
PRACTICAL									
7.	17CSP03	Structured Programming Laboratory	ES	-	4	0	0	4	2
8.	17ECP02	Electronics Laboratory	ES	-	4	0	0	4	2
9.	17GEP02	Interpersonal Values	HS	17GEP01	2	0	0	2	0
				TOTAL	**34**	**17**	**2**	**14**	**24**

SEMESTER: III									
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**PRERQUISITE**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY									
1.	17MYB04	Probability and Statistics	BS	-	4	2	2	0	3
2.	17CSC04	Data Structures using Python	PC	17CSC02	5	3	0	2	4
3.	17ITC01	OOPS using Java	PC	-	3	3	0	0	3
4.	17ITC02	Computer Architecture and Organization	PC	-	3	3	0	0	3
5.	17ECC22	Digital Electronics and Microprocessor	ES	-	3	3	0	0	3
PRACTICAL									
6.	17ITP01	OOPS using Java Laboratory	PC	-	4	0	0	4	2
7.	17ECP05	Digital Electronics and Microprocessor Laboratory	ES	-	2	0	0	2	1
8.	17GED01	Soft Skills – Listening and Speaking	EEC	-	2	0	0	2	0
				TOTAL	**26**	**14**	**2**	**10**	**19**

SEMESTER: IV									
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**PRERQUISITE**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY									
1.	17MYB08	Discrete Mathematics	BS	-	4	2	2	0	3
2.	17ITC04	Design and Analysis of Algorithms	PC	17CSC04	5	3	2	0	4
3.	17ITC05	Computer Networks and Internets	PC	-	3	3	0	0	3
4.	17CSC07	Database Management System	PC	-	3	3	0	0	3
5.	17ITC06	Operating System Principles	PC	-	3	3	0	0	3
6.	17ITC07	Software Engineering	PC	-	3	3	0	0	3
PRACTICAL									
7.	17ITP02	Computer Networks and Internets Laboratory	PC	-	2	0	0	2	1
8.	17CSP05	Database Management System Laboratory	PC	-	4	0	0	4	2
9.	17ITP03	Operating System Principles Laboratory	PC	-	2	0	0	2	1
10.	17GED02	Soft Skills – Reading and Writing	EEC	-	2	0	0	2	0
11.	17GED03	Personality and Character Development	EEC	-	1	0	0	1	0
				TOTAL	**32**	**17**	**4**	**11**	**23**

SEMESTER: V									
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**PRERQUISITE**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY									
1.	17ECC12	Digital Signal Processing	ES	-	4	2	2	0	3
2.	17ITC09	Internet and Web Programming	PC	17ITC01	4	2	0	2	3
3.	17ITC10	Object Oriented Analysis and Design	PC	17ITC07	3	3	0	0	3
4.	17ITC11	Computer Graphics and Multimedia	PC	-	3	3	0	0	3
5.	E1	Elective I (PSE)	PSE	-	3	3	0	0	3
6.	E2	Elective II (PSE)	PSE	-	3	3	0	0	3
PRACTICAL									
7.	17ITP04	Case Tools Laboratory	PC	-	4	0	0	4	2
8.	17ITP05	Computer Graphics and Multimedia Laboratory	PC	-	2	0	0	2	1
9.	17GED08	Essence of Indian Traditional Knowledge	EEC	-	2	2	0	0	0
				TOTAL	**28**	**18**	**2**	**8**	**21**

SEMESTER:VI									
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**PRERQUISITE**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY									
1.	17CSC09	Artificial Intelligence	PC	-	3	3	0	0	3
2.	17ITC13	Compiler Design	PC	-	3	3	0	0	3
3.	17ITC14	Cryptography and Network Security	PC	17ITC05	3	3	0	0	3
4.	E3	Elective III (PSE)	PSE	-	3	3	0	0	3
5.	E4	Elective IV (PSE)	PSE	-	3	3	0	0	3
6.	E5	Elective V (PSE/OE)	PSE/OE	-	3	3	0	0	3
PRACTICAL									
7.	17CSP09	Internet of Things Laboratory	ES	-	4	0	0	4	2
8.	17GED06	Comprehension	PC	-	2	0	0	2	0
9.	17GED07	Constitution of India	EEC	-	2	2	0	0	0
				TOTAL	**26**	**20**	**0**	**6**	**20**

SEMESTER: VII									
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**PRERQUISITE**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY									
1.	17GEA01	Engineering Economics and Financial Accounting	HS	-	3	3	0	0	3
2.	17ITC15	Machine Learning Techniques	PC	17MYB01	3	3	0	0	3
3.	17CSC18	Full Stack Development	PC	-	3	3	0	0	3
4.	E6	Elective – VI (PSE/OE)	PSE/OE	-	3	3	0	0	3
5.	E7	Elective VII (OE)	OE	-	3	3	0	0	3
PRACTICAL									
6.	17ITP06	Machine Learning Techniques Laboratory	PC	-	4	0	0	4	2
7.	17ITD01	Project Work I	EEC	-	4	0	0	8	4
				TOTAL	**23**	**15**	**0**	**12**	**21**

SEMESTER: VIII									
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**PRERQUISITE**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY									
1.	E8	Elective VIII (PSE)	PSE	-	3	3	0	0	3
2.	E9	Elective IX (OE)	OE	-	3	3	0	0	3
PRACTICAL									
3.	17ITD02	Project Work II	EEC	-	20	0	0	16	8
TOTAL					**26**	**6**	**0**	**16**	**14**

B.TECH. INFORMATION TECHNOLOGY

HUMANITIES SCIENCE (HS)									
AICTE NORMS : 5 –10%					**ACTUAL : 5.55 %**				
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**PRERQUISITE**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
1.	17EYA01	Professional English- I	HS	-	4	2	0	2	3
2.	17EYA02	Professional English- II	HS	17EYA01	4	2	0	2	3
3.	17GEP01	Personal Values	HS	-	2	0	0	2	0
4.	17GEP02	Interpersonal Values	HS	17GEP01	2	0	0	2	0
5.	17GEA01	Engineering Economics and Financial Accounting	HS	-	3	3	0	0	3

BASIC SCIENCE (BS)									
AICTE NORMS : 15 –20%					**ACTUAL : 17.28 %**				
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**PREREQUISITE**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
1.	17MYB01	Calculus and Solid Geometry	BS	-	5	3	2	0	4
2.	17PYB02	Physics for Computer Engineers	BS	-	5	3	0	2	4
3.	17CYB03	Environmental Science	BS	-	3	3	0	0	3
5.	17MYB02	Complex Analysis and Laplace Transforms	BS	17MYB01	5	3	2	0	4
6.	17PYB04	Applied Physics	BS	17PYB02	4	3	0	0	3
7.	17CYB04	Chemistry for Computer Engineers	BS	-	5	3	0	2	4
8.	17MYB04	Probability and Statistics	BS	-	4	2	2	0	3
9.	17MYB08	Discrete Mathematics	BS	-	4	2	2	0	3

PROGRAMME CORE (PC)									
AICTE NORMS : 30 –40%					**ACTUAL : 35.58%**				
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**PREREQUISITE**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
1.	17CSC04	Data Structures using Python	PC	17CSC02	4	2	0	2	3
2.	17ITC01	OOPs using Java	PC	-	3	3	0	0	3
3.	17ITP01	OOPs using Java Laboratory	PC	-	4	0	0	4	2
4.	17ITC02	Computer Architecture and Organization	PC	-	3	3	0	0	3
5.	17ITC04	Design and Analysis of Algorithms	PC	17CSC04	4	3	2	0	4
6.	17ITC05	Computer Networks and Internets	PC	-	3	3	0	0	3

7.	17ITP02	Computer Networks and Internets Laboratory	PC	-	2	0	0	2	1
8.	17CSC07	Database Management System	PC	-	3	3	0	0	3
9.	17CSP05	Database Management System Laboratory	PC	-	4	0	0	4	2
10.	17ITC06	Operating System Principles	PC	-	3	3	0	0	3
11.	17ITC07	Software Engineering	PC	-	3	3	0	0	3
12.	17ITP03	Operating Systems Laboratory	PC	-	2	0	0	2	1
13.	17ITC09	Internet and Web Programming	PC	17ITC01	4	2	0	2	3
14.	17ITC10	Object Oriented Analysis and Design	PC	17ITC07	3	3	0	0	3
15.	17ITP04	Case Tools Laboratory	PC	-	4	0	0	4	2
16.	17ITC11	Computer Graphics and Multimedia	PC	-	3	3	0	0	3
17.	17ITP05	Computer Graphics and Multimedia Laboratory	PC	-	4	0	0	2	1
18.	17CSC09	Artificial Intelligence	PC	-	3	3	0	0	3
19.	17ITC13	Compiler Design	PC	-	3	3	0	0	3
20.	17ITC14	Cryptography and Network Security	PC	17ITC05	3	3	0	0	3
21.	17ITC15	Machine Learning Techniques	PC	17MYB01	3	3	0	0	3
22.	17ITP06	Machine Learning Techniques Laboratory	PC	-	4	0	0	4	2
23.	17GED06	Comprehension	PC	-	2	0	0	2	0
24.	17CSC18	Full Stack Development	PC	-	3	3	0	0	3

ENGINEERING SCIENCE (ES)									
AICTE NORMS : 15 –20%									**ACTUAL : 17.90 %**
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**PREREQUISITE**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
1.	17CSC02	Python Programming	ES	-	3	3	0	0	3
2.	17MEP01	Engineering Graphics Laboratory	ES	-	4	0	0	4	2
3.	17CSP02	Python Programming Laboratory	ES	-	4	0	0	4	2
4.	17CSC03	Structured Programming	ES	-	3	3	0	0	3
5.	17ECC04	Basics of Electronics Engineering	ES	-	4	3	0	0	3
6.	17CSP03	Structured Programming Laboratory	ES	-	4	0	0	4	2
7.	17ECP02	Electronics Laboratory	ES	-	4	0	0	4	2

8.	17ECC22	Digital Electronics and Microprocessor	ES	-	3	3	0	0	3
9.	17ECP05	Digital Electronics and Microprocessor Laboratory	ES	-	2	0	0	2	1
10.	17ECC12	Digital Signal Processing	ES	-	4	2	2	0	3
11.	17CSP09	Internet of Things Laboratory	ES	-	4	0	0	4	2

ENGINEERING EMPLOYABILITY COURSE (EEC)								
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
1.	17ITD01	Project Work I	EEC	4	0	0	8	4
2.	17ITD02	Project Work II	EEC	20	0	0	16	8

ENGINEERING EMPLOYABILITY COURSE (EEC- Not to be included in CGPA)								
SL. NO.	**COURSE CODE**	**COURSE TITLE**	**CATEGORY**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
1.	17GED01	Soft Skills – Listening and Speaking	EEC	2	0	0	2	0
2.	17GED02	Soft Skills – Reading and Writing	EEC	2	0	0	2	0
3.	17GED03	Personality and Character Development	EEC	1	0	0	1	0
4.	17GED07	Constitution of India	EEC	2	2	0	0	0
5.	17GED08	Essence of Indian Traditional Knowledge	EEC	2	2	0	0	0

LIST OF PROGRAMME SPECIFIC ELECTIVES (PSE)									
AICTE NORMS : 10 –15%					ACTUAL : 12.96 %				
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	CONTACT PERIODS	L	T	P	C
1.	17ITX04	Data mining and warehousing	PSE	17CSC07	3	3	0	0	3
2.	17ITX05	PHP Programming	PSE	17ITC09	3	3	0	0	3
3.	17ITX06	Programming with JAVA 2 Enterprise Edition	PSE	17ITC01	3	3	0	0	3
4.	17ITX07	Advanced Web Programming	PSE	17ITC09	3	3	0	0	3
5.	17ITX08	C# and .Net	PSE	17ITC01	3	3	0	0	3
6.	17ITX09	Ruby Programming	PSE	-	3	3	0	0	3
7.	17ITX11	Principles of Cloud Computing	PSE	-	3	3	0	0	3
8.	17ITX14	Software Testing	PSE	-	3	3	0	0	3
9.	17ITX19	Information Security Management	PSE	-	3	3	0	0	3
10.	17CSX19	Software Agents	PSE	-	3	3	0	0	3
11.	17CSX11	Human Computer Interaction	PSE	17ITC05	3	3	0	0	3
12.	17ITX17	Building Enterprise Applications	PSE	17ITX06	3	3	0	0	3
13.	17ITX20	Finite Automata	PSE	17ITC13	3	3	0	0	3
14.	17CSX20	Software Quality Assurance	PSE	-	3	3	0	0	3
15.	17ITX21	Knowledge Management Techniques	PSE	-	3	3	0	0	3
16.	17ITX22	Enterprise Resource Planning	PSE	-	3	3	0	0	3
17.	17CSX22	Natural Language Processing	PSE	-	3	3	0	0	3
18.	17ITX25	Video Processing And Analytics	PSE	-	3	3	0	0	3
19.	17MYB12	Basic Statistics and Numerical Analysis	PSE	-	3	3	0	0	3
20.	17ITX26	Problem Solving and Algorithmic Skills	PSE	-	3	3	0	0	3
21.	17CSX31	Problem Solving And Programming	PSE	-	3	3	0	0	3
22.	17CSX29	Internet of Things	PSE	17ITC05	3	3	0	0	3
23	17CSX30	Agile Methodologies	PSE	-	3	3	0	0	3
24.	17CSX05	Network Analysis and Management	PSE	17ITC05	3	3	0	0	3
25	17ITX28	Agile Software Development	PSE	-	3	3	0	0	3
26.	17ITX29	IT operations	PSE	-	3	3	0	0	3
27.	17ITX30	IT operations Advanced	PSE	17ITX29 17CSC09	3	3	0	0	3

28.	17ITX31	Professional Readiness for Innovation, Employability and Entrepreneurship	PSE	-	3	3	0	0	3
29.	17ITX32	Test Driven Programming	PSE	-	3	3	0	0	3
30.	17ITX33	Java-Full Stack Implementation	PSE	-	3	3	0	0	3
31.	17ITX37	Problem Solving using Java	PSE	-	3	3	0	0	3
32.	17ITX38	Product Lifecycle Management	PSE	-	3	3	0	0	3

LIST OF OPEN ELECTIVES (OE)

(b)Open Electives			AICTE Credit Distribution Norm:18							
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PREREQUISITE	CONTACT PERIODS	L	T	P	C	P.S
1	17AGZ01	Baking and Confectionery Technology	OE	-	3	3	0	0	3	VII
2	17AGZ02	Food safety and quality control system	OE	-	3	3	0	0	3	VII
3	17AGZ03	Farm Mechanization	OE	-	3	3	0	0	3	VIII
4	17AGZ04	Processing of Fruits and Vegetables	OE	-	3	3	0	0	3	VIII
5	17CHZ01	Waste Water Treatment	OE	-	3	3	0	0	3	VII
6	17CHZ02	Piping Engineering	OE	-	3	3	0	0	3	VII
7	17CHZ03	Process Automation	OE	-	3	3	0	0	3	VII
8	17CHZ04	Process Instrumentation	OE	-	3	3	0	0	3	VII
9	17CEZ01	Energy conservation in Buildings	OE	-	3	3	0	0	3	VII
10	17CEZ02	Air Pollution Management	OE	-	3	3	0	0	3	VIII
11	17CEZ03	Building Services	OE	-	3	3	0	0	3	VIII
12	17CEZ04	Road Safety Management	OE	-	3	3	0	0	3	VII
13	17CEZ05	Waste Management	OE	-	3	3	0	0	3	VIII
14	17CSZ01	Design Thinking	OE	-	3	3	0	0	3	VII
15	17CSZ02	Digital Marketing	OE	-	3	3	0	0	3	VII
16	17CSZ03	Software Engineering	OE	-	3	3	0	0	3	VIII
17	17CSZ04	Unified Functional Testing	OE	-	3	3	0	0	3	VIII
18	17CSZ05	C Programming	OE	-	3	3	0	0	3	VI
19	17CSZ06	Data Structures	OE	-	3	3	0	0	3	VI

20	17CSZ07	Web Services Using Java	OE	-	3	3	0	0	3	VII
21	17ECZ01	Modern wireless communication system	OE	-	3	3	0	0	3	VII
22	17ECZ02	Consumer Electronics	OE	-	3	3	0	0	3	VII
23	17ECZ03	Automotive Electronics	OE	-	3	3	0	0	3	VIII
24	17ECZ04	Electronic Testing	OE	-	3	3	0	0	3	VIII
25	17EEZ01	Renewable Energy Technology	OE	-	3	3	0	0	3	VII
26	17EEZ02	Smart Grid	OE	-	3	3	0	0	3	VII
27	17EEZ03	Energy Auditing, Conservation and Management	OE	-	3	3	0	0	3	VIII
28	17EEZ04	Electrical Machines	OE	-	3	3	0	0	3	VIII
29	17EIZ01	Autotronix	OE	-	3	3	0	0	3	VII
30	17EIZ02	Industrial Automation	OE	-	3	3	0	0	3	VII
31	17EIZ03	Fiber Optic Sensors	OE	-	3	3	0	0	3	VIII
32	17EIZ04	Ultrasonic Instrumentation	OE	-	3	3	0	0	3	VIII
33	17ITZ01	Software Testing Tool	OE	-	3	3	0	0	3	VII
34	17ITZ02	User Experience	OE	-	3	3	0	0	3	VII
35	17ITZ03	Developing Mobile Apps	OE	-	3	3	0	0	3	VIII
36	17ITZ04	Software Project Management	OE	-	3	3	0	0	3	VIII
37	17ITZ05	Java Programming	OE	-	3	3	0	0	3	
38	17MEZ01	Engineering Ergonomics	OE	-	3	3	0	0	3	VII / VIII
39	17MEZ02	Energy Audit and Resource Management	OE	-	3	3	0	0	3	VII / VIII
40	17MEZ03	Electric Vehicle Technology	OE	-	3	3	0	0	3	VII / VIII
41	17MEZ04	Value Engineering	OE	-	3	3	0	0	3	VII / VIII
42	17MEZ05	Smart Mobility	OE	-	3	3	0	0	3	VII / VIII
43	17MEZ06	Smart Sensor Systems	OE	-	3	3	0	0	3	VII / VIII
44	17MYZ01	Mathematical Structures	OE	-	3	3	0	0	3	VII
45	17MYZ02	Optimization Techniques	OE	-	3	3	0	0	3	VII
46	17MYZ03	Statics for Engineers	OE	-	3	3	0	0	3	VII
47	17MYZ04	Statistics for Engineers	OE	-	3	3	0	0	3	VII

48	17PYZ01	Nanomaterials	OE	-	3	3	0	0	3	VII
49	17PYZ02	Nuclear physics and Reactors	OE	-	3	3	0	0	3	VII
50	17PYZ03	Space science and technology	OE	-	3	3	0	0	3	VII
51	17CYZ01	Chemistry for Every Day Life	OE	-	3	3	0	0	3	VII
52	17CYZ02	E - Waste Management	OE	-	3	3	0	0	3	VII
53	17CYZ03	Industrial Chemistry	OE	-	3	3	0	0	3	VII
54	17EYZ01	Communicative Hindi	OE	-	3	3	0	0	3	VII
55	17EYZ02	Fundamentals of German	OE	-	3	3	0	0	3	VII
56	17EYZ03	Basics of Japanese	OE	-	3	3	0	0	3	VII
57	17EYZ04	Employability Enhancement and Analytical Skills	OE	-	3	3	0	0	3	VII
58	17EYX01	Effective Communication	OE	-	3	3	0	0	3	VII
59	17GYZ01	Biology for Engineers	OE	-	3	3	0	0	3	VII
60	17BMZ01	Health care technology	OE	-	3	3	0	0	3	VII
61	17BMZ02	Telemedicine	OE	-	3	3	0	0	3	VII
62	17BMZ03	Epidemiology and Pandemic Management	OE	-	3	3	0	0	3	VII
63	17BMZ04	Medical Ethics	OE	-	3	3	0	0	3	VII
64	17EYZ05	Workplace Communication	OE	-	3	3	0	0	3	VII
65	17AIZ01	Fundamentals of artificial intelligence and machine learning	OE	-	3	3	0	0	3	VII
66	17AIZ02	Data science fundamentals	OE	-	3	3	0	0	3	VII
67	17AIZ03	Introduction to Business analytics	OE	-	3	3	0	0	3	VIII
68	17AIZ04	Augmented reality/virtual reality technologies	OE	-	3	3	0	0	3	VII`
69	17ITZ06	Data Structures using C	OE	-	3	3	0	0	3	VII
70	17ITZ07	Product Lifecycle Management for Engineers	OE	-	3	3	0	0	3	VII

Honor Degree Courses								
Vertical I - Cloud and Data Center Technologies								
S.NO	**SUB. CODE**	**SUBJECT**	**CONTACT PERIODS**	**PRERQUISITE**	**L**	**T**	**P**	**C**
1.	17ITX01	Data Science and Big Data Analytics	3	17MYB04 17CSC07	3	0	0	3
2.	17ITX02	Advanced Database Management System	3	17CSC07	3	0	0	3
3.	17ITX03	Object Oriented Database Management System	3	17ITC01 17CSC07	3	0	0	3
4.	17ITX15	Information Storage Management	3	17CSC07	3	0	0	3
5.	17ITX18	Business Intelligence	3	-	3	0	0	3
6.	17ITX23	Text Mining Techniques	3	-	3	0	0	3
7.	17ITX27	Data Science Techniques	3	-	3	0	0	3
8.	17ITX34	Cloud Services Management	3	-	3	0	0	3

Vertical II - Networking and Security								
S.No	**Sub. Code**	**Subject**	**Contact Periods**	**PRERQUISITE**	**L**	**T**	**P**	**C**
1.	17ITX10	Mobile Communication	3	17ITC05	3	0	0	3
2.	17ITX12	Ethical Hacking	3	17ITC13	3	0	0	3
3.	17ITX13	Social media network analysis	3	17ITC13	3	0	0	3
4.	17ITX16	Composing Mobile Apps	3	-	3	0	0	3
5.	17ITX24	Distributed Systems Concepts and Design	3	-	3	0	0	3
6.	17ECX16	Internet Of Things And Its Applications	3	-	3	0	0	3
7.	17ITX35	Cyber Security	3	17ITC14	3	0	0	3
8.	17ITX36	Security and Privacy in Cloud	3	-	3	0	0	3

Minor Degree Courses								
Web Development								
S.No	**Sub. Code**	**Subject**	**Contact Periods**	**PRE-REQUISITE**	**L**	**T**	**P**	**C**
1	17ITM01	Fundamentals of Problem Solving	3	-	3	0	0	3
2	17ITM02	Java programming Basics	3	-	3	0	0	3
3	17ITM03	Database System Concepts	3	-	3	0	0	3
4	17ITM04	UI and UX Design	3	-	3	0	0	3
5	17ITM05	Web essentials	3	-	3	0	0	3
6	17ITM06	Full stack web development	3	-	3	0	0	3
7	17ITM07	App development	3	-	3	0	0	3
8	17ITM08	Web Application Security	3	-	3	0	0	3

CREDIT DISTRIBUTION

SEM	HS	BS	PC	ES	EEC	PSE	OE	TOTAL
I	3	11	-	7	-	-	-	**21**
II	3	11	-	10	-	-	-	**24**
III	-	3	12	4	-	-	-	**19**
IV	-	3	20	-	-	-	-	**23**
V	-	-	12	3	-	6	-	**21**
VI	-	-	9	2	-	9	-	**20**
VII	3	-	8	-	4	3	3	**21**
VIII	-	-	-	-	8	3	3	**14**
TOTAL	**9**	**28**	**61**	**26**	**12**	**21**	**6**	**163**
%	**5.52**	**17.18**	**37.42**	**15.95**	**7.36**	**12.88**	**3.68**	
AICTE %	**5-10**	**15-20**	**30-40**	**15-20**	**-**	**10-15**	**5-10**	

TOTALCREDITS (21+24+19+23+21+20+21+14) = 163CREDITS

17ITX37 PROBLEM SOLVING USING JAVA

L	T	P	C
3	0	0	3

PRE REQUISITE : NIL

COURSE OBJECTIVES AND OUTCOMES:

	Course Objectives		Course Outcomes	Related Program outcome
1.0	To understand the basics of Java Programming Language	**1.1**	The Students will be able to solve simple problems using Java.	**a,b,c,d,e, h,j,k,l**
2.0	To understand fundamentals of programming such as conditional and iterative execution	**2.1**	The students will be able to write programs using branching and looping statements	**a,b,c,d,e, h,i,j,k,l**
3.0	To understand the concepts of Java arrays and Strings.	**3.1**	The students will be able to Be able to develop confidently with Strings and implement arrays.	**a,b,c,d,e, h,i,j,k,l**
4.0	To understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods.	**4.1**	The students will be able to understand basic oops concepts and develop applications using inheritance and interfaces.	**a,b,c,d,e, h,i,j,k,l**
5.0	To understand threads and collection concepts	**5.1**	The students will be able to build applications using threads and collection framework.	**a,b,c,d,e, h,i,j,k,l**

UNIT I - INTRODUCTION TO JAVA (9)

History of java-Features-Glimpse of java-Data types and Variables-Local variable-Instance variable-static variable-Keywords: this, super, final- Type conversion & casting- Importance of Scanner class-Getting started with Eclipse IDE and VSCode.

UNIT II-OPERATORS AND DECISION MAKING STATEMENTS (9)

Operators- Arithmetic Operator, Bitwise Operator, Conditional Operator, Unary Operator-Relational and Logical operators-Conditional statements: If else, If else if, Nested if -Looping Statements: For Loop, while Loop, do while loop-switch-break-continue- auto boxing and unboxing.

UNIT III-ARRAYS AND STRINGS (9)

Arrays: One Dimensional Array-Two Dimensional Array-Inbuilt functions in arrays. Strings-String array-Inbuilt functions in Strings-String Buffer class-String Builder class-String Tokenizer class

UNIT IV-OBJECT-ORIENTED PROGRAMMING PARADIGM (9)

Class-objects-Encapsulation-Inheritance and its types-Polymorphism: Static binding and dynamic binding-Methods –Constructors and its types-Abstract class-Interface.

UNIT V- MULTITHREADING AND COLLECTIONS (9)

Throwable classes-Exception types-Exception keywords-Collection classes: List, Set-Thread-Ways of thread creation-methods-thread priorities-Synchronization-multithreading-Lambda Expression.

TOTAL (L: 45) = 45 PERIODS

TEXT BOOK:

1. Herbert Schildt, “Java:The Complete Reference”,McGraw Hill Education, Twelfth edition,2021.

REFERENCE:

1. Cay.S.Horstmann,GaryCornell, “Core Java-JAVA Fundamentals”, Prentice Hall,Eleventh edition, 2020.

17ITX38 PRODUCT LIFE CYCLE MANAGEMENT					
		L	T	P	C
		2	0	2	3
PREREQUISITE : NIL					
COURSE OBJECTIVES AND OUTCOMES:					
Course Objectives		**Course Outcomes**			**Related Program Outcome**
1.0	To understand history, concepts and terminology of PLM.	**1.1**	The students will be able to understand history, concepts and terminology of PLM		**a,b**
2.0	To understand the changes that effects the business	**2.1**	The students will be able to Understand different changes that effects the business		**a,b,c**
3.0	To Interpret the technology forecasting and product innovation and development in business processes.	**3.1**	The students will be able to understand benefits of PLM in Business.		**a,b,d,j,k**
4.0	To understand PLM in service industry	**4.1**	The students will be able to understand the role of PLM in service industry.		**a,b,e,f,i**
5.0	To Familiarize with various strategies of PLM	**5.1**	The students will be able to familiar with various strategies of PLM		**a,b,d,l**

Unit I – INTRODUCTION TO PRODUCT LIFECYCLE MANAGEMENT	**(9)**
Introduction to PLM, Fundamentals of PLM- Objective of PLM - Activities of PLM - Joined-up and Holistic Approach - Generic Product Lifecycle Phases, PLM Grid, Components of PLM Grid, Why PLM, How PLM.	
Unit II - COMPLEX AND CHANGING ENVIRONMENT	**(9)**
Changes and Interconnections, Macroeconomic and Geopolitical Changes, Environmental and Social Changes, Corporate Changes, Technological Changes, Product Changes, The Result and the Requirements	
UNIT III - PLM DEPLOYMENT AND BUSINESS BENEFITS	**(9)**
Deployment Stages of PLM, PLM maturity model, Realization stage of the project, Accomplishing change, Business benefits of a PLM system - Factors leading to PLM, Benefits of the PLM system, Improving the productivity of labour, Costs of quality, PLM and data warehousing as a tool to support decision-making	
UNIT IV – SERVICE INDUSTRY AND PLM	**(9)**
Introduction to service, Further productization, Making a service, PLM in service business - PLM challenges in service business, Services modularized, Making items out of product functions, IT specifically variable product	

UNIT V - PRODUCT AND PRODUCT MANAGEMENT STRATEGY AS A PART OF BUSINESS STRATEGY	(9)
Product lifecycle management as a business strategy tool, From changes in the business environment to product strategy, Making a product strategy, Product management strategy, Time to market, Time to react, Time to volume, Time to service, Electronic business and PLM	
	TOTAL (L:45) : 45 PERIODS

TEXT BOOKS:

1. John Stark, "Product Lifecycle Management: 21st Century Paradigm for Product Realisation", Springer Publisher, 2011 (2nd Edition).
2. Antti Saaksvuori and Anselmi Immonen, "Product Lifecycle Management", Springer Publisher, 2008 (3rd Edition).

REFERENCES:

1. International Journal of Product Lifecycle Management, Inderscience Publishers
2. Ivica Crnkovic, Ulf Asklund and Annita Persson Dahlqvist, "Implementing and Integrating ProductData Management and Software Configuration Management", Art ech House Publishers, 2003.