



# NANDHA ENGINEERING COLLEGE

(Autonomous)

Affiliated to Anna University Chennai ✦ Approved by AICTE ✦ Accredited by NBA-NewDelhi

Pitchchandampalayam, (P.O), Vaikkalmedu, Erode - Perundurai Road, Erode - 638 052

Phone : 04294-225585, 223711, 223722, 226393 Mobile : 73737 23722 Fax : 04294 - 224787

Website : [www.nandhaengg.org](http://www.nandhaengg.org)

E.mail : [info@nandhaengg.org](mailto:info@nandhaengg.org)

## 1.1.2 Details of Courses where syllabus revision was carried out in

### B.E - Computer Science and Engineering

Course Code	Course Name	% of Change
17MYB01	Calculus and Solid Geometry	30
17CYB04	Chemistry for Computer Engineers	40
17CSC03	Structured Programming	20
17MYB02	Complex Analysis and Laplace Transforms	20
17ITC01	OOPS using JAVA	60
17ITC04	Design and Analysis of Algorithms	60
17CSC06	Microprocessor and Computer Architecture	60
17ITP01	OOPS using JAVA Laboratory	60
17CSC08	Computer Networks	80
17CSP05	Database Management System Laboratory	20
17GEA01	Engineering Economics and Financial Accounting	20
<b>Average</b>		<b>42.73 %</b>



  
**PRINCIPAL**  
Nandha Engineering College  
(Autonomous)  
Erode - 638 052.

NANDHA ENGINEERING COLLEGE (AUTONOMOUS), ERODE – 638 052

REGULATIONS – 2017

CHOICE BASED CREDIT SYSTEM

**B.E. COMPUTER SCIENCE AND ENGINEERING**

CURRICULA: I – VIII SEMESTERS

SYLLABI

I - VIII SEMESTER

SEMESTER: I									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	CONTACT PERIODS	L	T	P	C
<b>THEORY</b>									
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
<b>PRACTICAL</b>									
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
<b>TOTAL</b>					<b>30</b>	<b>14</b>	<b>2</b>	<b>14</b>	<b>21</b>

SEMESTER: II									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	CONTACT PERIODS	L	T	P	C
<b>THEORY</b>									
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
<b>PRACTICAL</b>									
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
<b>TOTAL</b>					<b>34</b>	<b>17</b>	<b>2</b>	<b>14</b>	<b>24</b>



SEMESTER: III									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	CONTACT PERIODS	L	T	P	C
<b>THEORY</b>									
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.	17CSC05	Operating Systems	PC	-	3	3	0	0	3
5.	17ECC09	Digital Principles and System Design	ES	17ECC04	3	3	0	0	3
6.	17CSC06	Microprocessor and Computer Architecture	PC	-	3	3	0	0	3
<b>PRACTICAL</b>									
7.	17ITP01	OOPS using JAVA Laboratory	PC	-	4	0	0	4	2
8.	17CSP04	Operating Systems Laboratory	PC	-	2	0	0	2	1
9.	17GED01	Soft Skills – Listening & Speaking	EEC	-	2	0	0	2	0
<b>TOTAL</b>					<b>29</b>	<b>17</b>	<b>2</b>	<b>10</b>	<b>22</b>

SEMESTER: IV									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	CONTACT PERIODS	L	T	P	C
<b>THEORY</b>									
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.	17CSC07	Database Management System	PC	-	3	3	0	0	3
4.	17CSC08	Computer Networks	PC	-	3	3	0	0	3
5.	17CSC09	Artificial Intelligence	PC	-	3	3	0	0	3
6.	17GEA01	Engineering Economics and Financial Accounting	HS	-	3	3	0	0	3
<b>PRACTICAL</b>									
7.	17CSP05	Database Management System Laboratory	PC	-	4	0	0	4	2
8.	17CSP06	Computer Networks Laboratory	PC	-	2	0	0	2	1
9.	17GED02	Soft Skills – Reading and Writing	EEC	-	2	0	0	2	0
10.	17GED03	Personality and Character Development	EEC	-	1	0	0	1	0
<b>TOTAL</b>					<b>30</b>	<b>17</b>	<b>4</b>	<b>9</b>	<b>22</b>



SEMESTER: V									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	CONTACT PERIODS	L	T	P	C
<b>THEORY</b>									
1.	17CSC10	Theory of Computation	PC	17MYB08	3	3	0	0	3
2.	17ITC09	Internet and Web Programming	PC	17ITC01	4	2	0	2	3
3.	17CSC11	Object Oriented Software Engineering	PC	17CSC07	3	3	0	0	3
4.	17CSC12	Graphics and Multimedia	PC	-	3	3	0	0	3
5.	E1	Elective (PSE)	PSE	-	3	3	0	0	3
6.	E2	Elective (PSE)	PSE	-	3	3	0	0	3
<b>PRACTICAL</b>									
7.	17CSP07	Case Tools Laboratory	PC	-	4	0	0	4	2
8.	17CSP08	Graphics and Multimedia Laboratory	PC	-	4	0	0	4	2
9.	17GED08	Essence of Indian Traditional Knowledge	MC	-	2	2	0	0	0
<b>TOTAL</b>					<b>29</b>	<b>19</b>	<b>0</b>	<b>10</b>	<b>22</b>

SEMESTER:VI									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	CONTACT PERIODS	L	T	P	C
<b>THEORY</b>									
1.	17CSC14	Cloud Computing	PC	-	3	3	0	0	3
2.	17CSC15	Security in Computing	PC	17CSC07, 17CSC08	3	3	0	0	3
3.	17CSC16	Principles of Compiler Design	PC	17CSC10	3	3	0	0	3
4.	E3	Elective (PSE)	PSE	-	3	3	0	0	3
5.	E4	Elective (PSE)	PSE	-	3	3	0	0	3
6.	E5	Elective (PSE/OE)	PSE/OE	-	3	3	0	0	3
<b>PRACTICAL</b>									
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	MC	-	2	2	0	0	0
<b>TOTAL</b>					<b>27</b>	<b>19</b>	<b>0</b>	<b>8</b>	<b>20</b>

SEMESTER: VII									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	CONTACT PERIODS	L	T	P	C
<b>THEORY</b>									
1.	17CSC17	Mobile Computing	PC	17CSC08	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 (PSE/ OE)	PSE/OE	-	3	3	0	0	3
5.	E7	Elective (OE)	OE	-	3	3	0	0	3
<b>PRACTICAL</b>									
6.	17CSP10	Mobile Computing Laboratory	PC	-	2	0	0	2	1
7.	17CSD01	Project Work I	EEC	-	8	0	0	8	4
<b>TOTAL</b>					<b>25</b>	<b>15</b>	<b>0</b>	<b>10</b>	<b>20</b>

SEMESTER: VIII									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	CONTACT PERIODS	L	T	P	C
<b>THEORY</b>									
1.	E8	Elective (PSE)	PSE	-	3	3	0	0	3
2.	E9	Elective (OE)	OE	-	3	3	0	0	3
<b>PRACTICAL</b>									
3.	17CSD02	Project Work II	EEC	-	16	0	0	16	8
<b>TOTAL</b>					<b>22</b>	<b>6</b>	<b>0</b>	<b>16</b>	<b>14</b>

*(Signature)*  
**Dr.N.Rengarajan, B.Sc., B.Tech., M.E., Ph.D.,**  
**PRINCIPAL**  
**NANDHA ENGINEERING COLLEGE**  
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**ERODE - 638 052.**





**LIST OF PROGRAMME SPECIFIC ELECTIVES**

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PREREQUISITE	CONTACT PERIODS	L	T	P	C
1	17CSX01	Data Science	PSE	17MYB04, 17CSC07	3	3	0	0	3
2	17CSX02	Data Warehousing and Data Mining	PSE	17CSC07	3	3	0	0	3
3	17CSX03	Data Analytics	PSE	17CSC07	3	3	0	0	3
4	17CSX04	TCP/IP Design and Implementation	PSE	17CSC08	3	3	0	0	3
5	17CSX05	Network Analysis and Management	PSE	17CSC08	3	3	0	0	3
6	17CSX06	Wireless Communication and Networks	PSE	17CSC08	3	3	0	0	3
7	17CSX07	Embedded systems	PSE	-	3	3	0	0	3
8	17CSX08	Graph Theory	PSE	17CSC04	3	3	0	0	3
9	17CSX09	Information Retrieval Techniques	PSE	17CSC07	3	3	0	0	3
10	17CSX10	Mobile Application Development	PSE		3	3	0	0	3
11	17CSX11	Human Computer Interaction	PSE	17CSC08	3	3	0	0	3
12	17CSX12	Green Computing	PSE	17CSC08	3	3	0	0	3
13	17CSX13	Nano Computing	PSE	17CSC08	3	3	0	0	3
14	17CSX14	Deep Learning	PSE	17MYB02, 17MYB04	3	3	0	0	3
15	17CSX15	Knowledge Management	PSE	-	3	3	0	0	3
16	17CSX16	Image Processing Techniques	PSE	-	3	3	0	0	3
17	17ITX05	PHP programming	PSE	17ITC09	3	3	0	0	3
18	17ITX06	Programming with Java2 Enterprise Edition	PSE	17ITC01	3	3	0	0	3
19	17ITX07	Advanced Web Programming	PSE	17ITC09	3	3	0	0	3
20	17ITX08	C# and .Net	PSE	17ITC01	3	3	0	0	3
21	17ITX09	Ruby programming	PSE	-	3	3	0	0	3
22	17CSX17	Software Design and Architecture	PSE	-	3	3	0	0	3
23	17CSX18	Software Testing Methodologies	PSE	-	3	3	0	0	3
24	17CSX19	Software Agents	PSE	-	3	3	0	0	3
25	17CSX20	Software Quality Assurance	PSE	-	3	3	0	0	3

26	17CSX21	Software Project Management	PSE	-	3	3	0	0	3
27	17CSX22	Natural Language Processing	PSE	-	3	3	0	0	3
28	17CSX23	Text Mining	PSE	17CSX22	3	3	0	0	3
29	17CSX24	Distributed Systems	PSE	-	3	3	0	0	3
30	17CSX25	Game Programming	PSE	-	3	3	0	0	3
31	17CSX26	Blockchain Technologies	PSE	17ITC09, 17ITX07	3	3	0	0	3
32	17CSX27	Quantum Computing	PSE	17MYB04	3	3	0	0	3
33	17CSX28	Container Orchestration Using Kubernetes	PSE	17CSC14	3	3	0	0	3
34	17CSX29	Internet of Things	PSE	17CSC08	3	3	0	0	3
35	17CSX30	Agile methodologies	PSE	-	3	3	0	0	3
36	17MYB12	Basic Statistics and Numerical Analysis	PSE	-	3	3	0	0	3
37	17CSX31	Problem Solving and Programming	PSE	-	3	3	0	0	3
38	17CSX32	Social Network Analysis	PSE	-	3	3	0	0	3
39	17ITX26	Problem Solving and Algorithmic Skills	PSE	-	3	3	0	0	3
40	17ECX16	Internet of Things and its applications	PSE	-	3	3	0	0	3
41	17CSX33	Google Cloud Platform	PSE	17CSX34	3	3	0	0	3
42	17CSX34	Tableau	PSE	-	3	3	0	0	3
43	17CSX35	Node JS	PSE	17ITC09, 17ITX05	3	3	0	0	3
44	17CSX36	React JS	PSE	17ITC09, 17ITX05	3	3	0	0	3

HUMANITIES AND SOCIAL SCIENCES (HS)									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PREREQUISITE	CONTACT PERIODS	L	T	P	C
1.	17EYA01	Professional English- I	HS	-	4	2	0	2	3
2.	17GEP01	Personal Values	HS	-	2	0	0	2	0
3.	17EYA02	Professional English- II	HS	17EYA01	4	2	0	2	3
4.	17GEP02	Interpersonal Values	HS	17GEP01	2	0	0	2	0
5.	17GEA01	Engineering Economics and Financial Accounting	HS	-	3	3	0	0	3

*(Signature)*  
**Dr.N.Rengarajan, B.Sc., B.Tech., M.E., Ph.D.,**  
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BASIC SCIENCES (BS)									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	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
4.	17MYB02	Complex Analysis and Laplace Transforms	BS	17MYB01	5	3	2	0	4
5.	17PYB04	Applied Physics	BS	17PYB02	3	3	0	0	3
6.	17CYB04	Chemistry for Computer Engineers	BS	-	5	3	0	2	4
7.	17MYB04	Probability and Statistics	BS	-	4	2	2	0	3
8.	17MYB08	Discrete Mathematics	BS	-	4	2	2	0	3





ENGINEERING SCIENCES (ES)									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	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.	17ECC09	Digital Principles and System Design	ES	17ECC04	3	3	0	0	3
9.	17CSC13	Internet of Things	ES	-	3	3	0	0	3
10.	17CSP09	Internet of Things Laboratory	ES	-	4	0	0	4	2
EMPLOYABILITY ENHANCEMENT COURSES									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	CONTACT PERIODS	L	T	P	C
1.	17GED01	Soft Skills – Listening & Speaking	EEC	-	2	0	0	2	0
2.	17GED02	Soft Skills – Reading & Writing	EEC	-	2	0	0	2	0
3.	17GED03	Personality and Character Development	EEC	-	1	0	0	1	0
4.	17GED08	Essence of Indian Traditional Knowledge	MC	-	2	2	0	0	0
5.	17GED07	Constitution of India	MC	-	2	2	0	0	0
6.	17CSD01	Project Work I	EEC	-	8	0	0	8	4
7.	17CSD02	Project Work II	EEC	-	16	0	0	16	8
PROFESSIONAL CORE (PC)									
SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PRERQUISITE	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.	17CSC05	Operating Systems	PC	-	3	3	0	0	3



4.	17CSC06	Microprocessor and Computer Architecture	PC	-	3	3	0	0	3
5.	17ITP01	OOPS using JAVA Laboratory	PC	-	4	0	0	4	2
6.	17CSP04	Operating Systems Laboratory	PC	-	2	0	0	2	1
7.	17CSC07	Database Management System	PC	-	3	3	0	0	3
8.	17CSC08	Computer Networks	PC	-	3	3	0	0	3
9.	17ITC04	Design and Analysis of Algorithms	PC	17CSC04	4	3	2	0	4
10.	17CSC09	Artificial Intelligence	PC	-	3	3	0	0	3
11.	17CSP05	Database Management System Laboratory	PC	-	4	0	0	4	2
12.	17CSP06	Computer Networks Laboratory	PC	-	2	0	0	2	1
13.	17CSC10	Theory of Computation	PC	17MYB08	3	3	0	0	3
14.	17CSC11	Object Oriented Software Engineering	PC	17CSC07	3	3	0	0	3
15.	17ITC09	Internet and Web Programming	PC	-	4	2	0	2	3
16.	17CSC12	Graphics and Multimedia	PC	-	3	3	0	0	3
17.	17CSP07	Case Tools Laboratory	PC	-	4	0	0	4	2
18.	17CSP08	Graphics and Multimedia Laboratory	PC	-	4	0	0	4	2
19.	17CSC14	Cloud Computing	PC	-	3	3	0	0	3
20.	17CSC15	Security in Computing	PC	17CSC07, 17CSC08	3	3	0	0	3
21.	17CSC16	Principles of Compiler Design	PC	17CSC10	3	3	0	0	3
22.	17GED06	Comprehension	PC	-	2	0	0	2	0
23.	17ITC15	Machine Learning Techniques	PC	17MYB01	3	3	0	0	3
24.	17CSC17	Mobile Computing	PC	17CSC08	3	3	0	0	3
25.	17CSP10	Mobile Computing Laboratory	PC	-	2	0	0	2	1
26.	17CSC18	Full Stack Development	PC	-	3	3	0	0	3



(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	VII/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.	17ECZ01	Modern wireless communication system	OE	-	3	3	0	0	3	VII
21.	17ECZ02	Consumer Electronics	OE	-	3	3	0	0	3	VII
22.	17ECZ03	Automotive Electronics	OE	-	3	3	0	0	3	VIII
23.	17ECZ04	Electronic Testing	OE	-	3	3	0	0	3	VIII
24.	17EEZ01	Renewable Energy Technology	OE	-	3	3	0	0	3	VII
25.	17EEZ02	Smart Grid	OE	-	3	3	0	0	3	VII
26.	17EEZ03	Energy Auditing, Conservation and Management	OE	-	3	3	0	0	3	VIII
27.	17EEZ04	Electrical Machines	OE	-	3	3	0	0	3	VIII



28	17EIZ01	Autotronic	OE	-	3	3	0	0	3	VII
29	17EIZ02	Industrial Automation	OE	-	3	3	0	0	3	VII
30	17EIZ03	Fiber Optic Sensors	OE	-	3	3	0	0	3	VIII
31.	17EIZ04	Ultrasonic Instrumentation	OE	-	3	3	0	0	3	VIII
32.	17ITZ01	Software Testing Tool	OE	-	3	3	0	0	3	VII
33.	17ITZ02	User Experience	OE	-	3	3	0	0	3	VII
34.	17ITZ03	Developing Mobile Apps	OE	-	3	3	0	0	3	VIII
35.	17ITZ04	Software Project Management	OE	-	3	3	0	0	3	VIII
36.	17ITZ05	Java Programming	OE	-	3	3	0	0	3	
37.	17MEZ01	Engineering Ergonomics	OE	-	3	3	0	0	3	VII / VIII
38.	17MEZ02	Energy Audit and Resource Management	OE	-	3	3	0	0	3	VII / VIII
39.	17MEZ03	Electric Vehicle Technology	OE	-	3	3	0	0	3	VII / VIII
40.	17MEZ04	Value Engineering	OE	-	3	3	0	0	3	VII / VIII
41.	17MEZ05	Smart Mobility	OE	-	3	3	0	0	3	VII / VIII
42.	17MEZ06	Smart Sensor Systems	OE	-	3	3	0	0	3	VII / VIII
43.	17MYZ01	Mathematical Structures	OE	-	3	3	0	0	3	VII
44.	17MYZ02	Optimization Techniques	OE	-	3	3	0	0	3	VII
45.	17MYZ03	Statics for Engineers	OE	-	3	3	0	0	3	VII
46.	17MYZ04	Statistics for Engineers	OE	-	3	3	0	0	3	VII
47.	17PYZ01	Nanomaterials	OE	-	3	3	0	0	3	VII
48.	17PYZ02	Nuclear physics and Reactors	OE	-	3	3	0	0	3	VII
49.	17PYZ03	Space science and technology	OE	-	3	3	0	0	3	VII
50.	17CYZ01	Chemistry for Every DayLife	OE	-	3	3	0	0	3	VII
51	17CYZ02	E - Waste Management	OE	-	3	3	0	0	3	VII
52	17CYZ03	Industrial Chemistry	OE	-	3	3	0	0	3	VII



53	17EYZ01	Communicative Hindi	OE	-	3	3	0	0	3	VII
54	17EYZ02	Fundamentals of German	OE	-	3	3	0	0	3	VII
55	17EYZ03	Basics of Japanese	OE	-	3	3	0	0	3	VII
56	17EYZ04	Employability Enhancement and Analytical Skills	OE	-	3	3	0	0	3	VII
57	17EYX01	Effective Communication	OE	-	3	3	0	0	3	VII
58	17GYZ01	Biology for Engineers	OE	-	3	3	0	0	3	VII
59.	17BMZ01	Health care technology	OE	-	3	3	0	0	3	VII
60.	17BMZ02	Telemedicine	OE	-	3	3	0	0	3	VII
61.	17BMZ03	Epidemiology and Pandemic Management	OE	-	3	3	0	0	3	VII
62.	17BMZ04	Medical Ethics	OE	-	3	3	0	0	3	VII

#### CREDIT DISTRIBUTION

SEM	HS	BS	PC	ES	EEC	PSE	OE	TOTAL
I	3	11	-	7	-	-	-	21
II	3	11	-	10	-	-	-	24
III	-	3	16	3	-	-	-	22
IV	3	3	16	-	-	-	-	22
V	-	-	16	-	-	6	-	22
VI	-	-	9	2	0	9	-	20
VII	-	-	10	-	4	3	3	20
VIII	-	-	-	-	8	3	3	14
<b>TOTAL</b>	<b>9</b>	<b>28</b>	<b>64</b>	<b>22</b>	<b>12</b>	<b>24</b>	<b>6</b>	<b>165</b>
<b>%</b>	<b>5.5</b>	<b>17.0</b>	<b>38.8</b>	<b>13.3</b>	<b>7.3</b>	<b>14.5</b>	<b>3.6</b>	
<b>AICTE %</b>	<b>5-10</b>	<b>15-20</b>	<b>30-40</b>	<b>15-20</b>	<b>-</b>	<b>10-15</b>	<b>5-10</b>	

TOTAL CREDITS (21+24+22+22+22+20+20+14) = 165 CREDITS



17MYB01 - CALCULUS AND SOLID GEOMETRY (Common to All Branches)					
		L	T	P	C
		3	2	0	4
PREREQUISITE : NIL			QUESTION PATTERN: TYPE - 4		
COURSE OBJECTIVES AND OUTCOMES:					
Course Objectives		Course Outcomes		Related Program outcomes	
1.0	To develop the use of matrix algebra techniques those are needed by engineers for practical applications.	1.1	The students will be able to apply the concept of orthogonal reduction to diagonalise the given matrix.	a,b,c,e,i,k,l	
2.0	Use the techniques, Skills and Engineering tools necessary for engineering practice, with Geometric concepts.	2.1	The students will be able to gain knowledge about the geometrical aspects of sphere.	a,b,c,e,f,i,l	
3.0	To improve their ability in solving geometrical applications of differential calculus problems.	3.1	The students will be able to find the radius of curvature, circle of curvature and centre of curvature for a given curve.	a,b,c,l	
4.0	To learn the important role of Mathematical concepts in engineering applications with the functions of several variables.	4.1	The students will be able to classify the maxima and minima for a given function with several variables, through by finding stationary points.	a,b,c,d,i,l	
5.0	To acquaint the student with mathematical tools needed in evaluating multiple integrals and their usage.	5.1	The students will be able to demonstrate the use of double and triple integrals to compute area and volume.	a,b,c,d,f,i,l	

<b>UNIT I - MATRICES</b>	(9+6)
Characteristic Equation-Eigen values and Eigen vectors of a matrix -Properties (statement only)- Cayley Hamilton Theorem and its applications- Orthogonal transformation of a symmetric matrix to a diagonal form - Quadratic form- Reduction of a Quadratic form to canonical form by orthogonal transformation.	
<b>UNIT II - ANALYTICAL GEOMETRY OF THREE DIMENSIONS</b>	(9+6)
Equation of a Plane – Angle between two planes - Equation of straight lines-Coplanar lines- skew lines- Equation of a sphere – Orthogonal spheres.	
<b>UNIT III - GEOMETRICAL APPLICATIONS OF DIFFERENTIAL CALCULUS</b>	(9+6)
Curvature – Curvature in Cartesian co-ordinates-Centre and Radius of curvature-Circle of curvature-Evolutes and Involutives-Envelopes.	
<b>UNIT IV - FUNCTIONS OF SEVERAL VARIABLES</b>	(9+6)
Partial derivatives - Euler's theorem on homogeneous function -Jacobian-Maxima and Minima of functions of two variables-Constrained Maxima and Minima by Lagrange's multiplier method.	
<b>UNIT V - MULTIPLE INTEGRALS</b>	(9+6)
Double integration in Cartesian Co-ordinates-Change of order of integration-Area as double integral- Triple integration in Cartesian Co-ordinates-Volume as triple integrals.	
<b>TOTAL (L: 45 +T:30) = 75 PERIODS</b>	



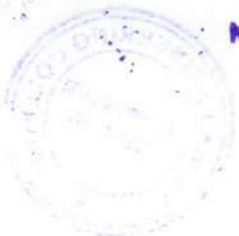
**Note : Simulation of Engineering Problems ( Qualitative Analysis) using open source software**

**TEXT BOOKS:**

1. Dr. B.S.Grewal, "Higher Engineering Mathematics", 42<sup>nd</sup> ed., Khanna publications, 2012.
2. Erwin Kreyszig, "Advanced Engineering Mathematics", 9<sup>th</sup> ed., John Wiley & sons, 2013.
3. Veerarajan.T, "Engineering Mathematics for Semester I & II", 3<sup>rd</sup> ed., Tata McGraw Hill, 2014.

**REFERENCES:**

1. N.P.Bali, Manish Goyal, "A text book of Engineering Mathematics Sem-II", 5<sup>th</sup> ed., Laxmi Publications.2011.
2. Kandasamy P, Thilagavathy K, Gunavathy K, "Engineering Mathematics for first Year", 9<sup>th</sup> ed., R. V. Chand & Co Ltd, 2013.
3. Glyn James, "Advanced Engineering Mathematics", 7<sup>th</sup> ed., Wiley India, (2007).



17CYB04 – CHEMISTRY FOR COMPUTER ENGINEERS (Common to CSE & IT Branches)					
		L	T	P	C
		3	0	2	4
PREREQUISITE : NIL			QUESTION PATTERN : TYPE - 3		
Course Objectives and Outcomes					
Course Objectives		Course Outcomes		Related Program outcomes	
1.0	To understand the principles of water characterization and treatment methods	1.1	The students will be able to apply knowledge of fundamental principles of chemistry	a,b,c,f,g,i,j,k,l	
2.0	To introduce the basic concepts of electrode potential and batteries	2.1	The students will be able to define and solve engineering problems, including the utilization of creative and innovative skills	a,b,c,d,f,g	
3.0	To understand the principles and applications of corrosion	3.1	The students will be able to gain practical experience with chemical process equipment as well as to analyze and interpret data	a,b,d,i	
4.0	To provide the knowledge of surface chemistry.	4.1	The students will be able to understand the impact of engineering solutions in a global, economic, environmental and societal content	a,b,c,g	
5.0	To study about the e-waste and its management.	5.1	The students will be able to understand the management of electronic waste	a,b,c,k	

<b>UNIT I - WATER TECHNOLOGY</b>	(9)
Hardness - types - estimation by EDTA method - Domestic water treatment - disinfection methods (chlorination, ozonation and UV treatment) - Boiler troubles (scale, sludge, priming, foaming and caustic embrittlement) -Internal conditioning(carbonate, phosphate and calgon) - External conditioning - demineralization process - desalination - reverse osmosis method.	
<b>UNIT II - ELECTROCHEMISTRY</b>	(9)
Electrochemistry - electrode potential - Nernst equation and problems - Reference electrode - standard hydrogen electrode - calomel electrode - potentiometric titration (redox) - conductometric titration (strong acid – strong base) - Batteries - types - lead acid battery – fuel cell – hydrogen and oxygen fuel cell.	
<b>UNIT III - CORROSION SCIENCE</b>	(9)
Corrosion - definition – types - chemical and electrochemical corrosion (mechanism) – Galvanic corrosion – Differential aeration corrosion - Pitting corrosion – Factors influencing corrosion- Corrosion control - sacrificial anode method.	
<b>UNIT IV - CHEMICAL KINETICS AND SURFACE CHEMISTRY</b>	(9)
Order of a reaction (definition) - kinetics of first order reaction – acid catalyzed hydrolysis of ester, - kinetics of second order reaction – base catalysed hydrolysis of ester - Arrhenius equation - effect of temperature on reaction rate - Surface chemistry: Adsorption - types of adsorption - Langmuir adsorption isotherm – role of adsorption in catalytic reactions.	
<b>UNIT V - E - WASTE AND ITS MANAGEMENT</b>	(9)
E- Waste – Definition – sources of e-waste – hazardous substances in e-waste – chlorinated compounds – heavy metals - Need for e-waste management - Management of e-waste – Inventory management – production process modification - Disposal treatment of e-waste - incineration - acid baths – landfills.	



**LIST OF EXPERIMENTS**

1. Determination of total, temporary & permanent hardness of water by EDTA method.
2. Determination of alkalinity in water sample.
3. Determination of chloride content of water sample by argentometric method.
4. Conductometric titration of strong acid vs strong base.
5. Estimation of iron content of the given solution using potentiometer.

**TOTAL (L:45+P:30) = 75 PERIODS****TEXT BOOKS:**

1. J. Glynn Henry and Gary W. Heinke, "Environmental Science and Engineering", Prentice Hall of India, 2014.
2. P.C. Jain and Monica Jain, "Engineering Chemistry", Vol I & II, Dhanpat Rai Pub, Co., New Delhi, 15<sup>th</sup> ed., 2015.

**REFERENCES:**

1. S.S. Dara, "A Text book of Engineering Chemistry", S.Chand & Co. Ltd., New Delhi, 2014.
2. J. Glynn Henry and Gary W.Heinke, "Environmental Science and Engineering", Prentice Hall of India, 2014
3. "Electroplating, Anodizing and Metal treatment", Hand book, NIIR board, Delhi, 2004.
4. Ramachandra, T. V. (2013) "Management of Municipal Solid Waste", TERI Press, New Delhi.



38 | Page **Dr.N.Rengarajan, B.Sc., B.Tech., M.E., Ph.D.,**  
**PRINCIPAL**  
**NANDHA ENGINEERING COLLEGE**  
**(Autonomous)**  
**ERODE - 638 052.**

Approved by Eighth Academic Council



**17CSC03 STRUCTURED PROGRAMMING**  
(Common to CSE & IT Branches)

	L	T	P	C
	3	0	0	3

PRE REQUISITE : NIL

QUESTION PATTERN : TYPE - 1

**COURSE OBJECTIVES AND OUTCOMES:**

Course Objectives		Course Outcomes		Related Program outcomes
1.0	To know the correct and efficient ways of solving problems.	1.1	The student will be able to understand the basic terminology used in computer programming.	a,b,c,d,e,h,j,k,l
2.0	To learn the basics of C declarations, operators and expressions.	2.1	The student can use different data types and operators in a computer program.	a,b,c,d,e,h,i,j,k,l
3.0	To work on all the elementary statements (Loop, Branch).	3.1	The student will be able to design programs involving decision structures and loops.	a,b,c,d,e,h,i,j,k,l
4.0	To learn the manipulation of arrays and strings	4.1	The student will be able to write programs using arrays and strings.	a,b,c,d,e,h,i,j,k,l
5.0	To learn the manipulation of functions	5.1	The student will be able to develop programs using functions by different parameter passing techniques.	a,b,c,d,e,h,i,j,k,l

**UNIT I -OVERVIEW OF C**

(9)

Introduction to C - Structure of C program - Programming Rules - C Declarations: Tokens - keywords - identifiers - constants - data types - variable declaration and initialization - type conversion - constant and volatile variables - operators and expressions

**UNIT II -CONTROL STRUCTURES**

(9)

Managing Input and Output operations - Decision Statements: if Statements - if-else Statement - Nested if-else - if-else-if ladder -goto statement – switch statement - nested switch case - Loop Control: for loop - while loop - do while loop - Nested Loop Statements - break and continue statement

**UNIT III - ARRAYS AND STRINGS**

(9)

Introduction to Array - Definition - Array initialization - Characteristics - One Dimensional Array - Array operations -Two dimensional arrays -Strings and String handling functions.

**UNIT IV - FUNCTIONS**

(9)

Functions: Basics - definition - Elements of User defined Functions - return statement, Function types, Parameter Passing Techniques, Function returning more values - Passing Array to Functions - Recursion - Storage classes.

**UNIT V -POINTERS AND FILE MANAGEMENT**

(9)

Pointer concepts - Pointers & Arrays, Structure concepts - Defining, Declaring, Accessing Member Variables, Structure within Structure - Union - File Management in C- Dynamic Memory Allocation

**TOTAL (L:45) : 45 PERIODS**





**TEXT BOOK:**

1. Ashok N. Kamthane, "Programming in C", 2<sup>nd</sup> ed., Pearson Education, 2013.

**REFERENCES:**

1. Yashavant Kanetkar, "Let us C", BPB publications, New Delhi, 3<sup>rd</sup> ed., 2011.
2. Pradipt Dey, Manas Ghosh, "Fundamentals of Computing and Programming in C", 1<sup>st</sup> ed., Oxford University Press, 2009.
3. Byron S Gottfried, "Programming with C", Schaum's Outlines, 2<sup>nd</sup> ed., Tata McGraw-Hill, 2006.
4. R.G. Dromey, "How to Solve it by Computer", Pearson Education, 4<sup>th</sup> Reprint, 2007.



*Dr. N. Rengarajan*  
**Dr.N.Rengarajan, B.Sc., B.Tech., M.E., Ph.D.,**  
**PRINCIPAL**  
**NANDHA ENGINEERING COLLEGE**  
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**ERODE - 638 052.**



17MYB02 COMPLEX ANALYSIS AND LAPLACE TRANSFORMS (Common to All Branches)				
	L	T	P	C
	3	2	0	4
PREREQUISITE : 17MYB01		QUESTION PATTERN : TYPE - 4		
COURSE OBJECTIVES AND OUTCOMES:				
Course Objectives		Course Outcomes		Related Program outcomes
1.0	To expose the concepts of differential equations.	1.1	The students will be able to predict the suitable method to solve second and higher order differential equations	a,b,c,d,f,i,k,l
2.0	To communicate the problem solutions using correct Mathematical terminology of vector calculus.	2.1	The students will be able to apply the concepts of Differentiation and Integration to Vectors.	a,b,c,f,g,l
3.0	Apply rigorous and analytic approach to analyse the conformal mapping.	3.1	The students will be able to compute an analytic function, when its real or imaginary part is known.	a,b,c,d,e,i,l
4.0	Acquiring the knowledge of evaluating contour integrals using residue theorem.	4.1	The students will be able to identify the Singularities and its corresponding Residues for the given function.	a,b,c,d,e,h,j,l
5.0	Apply the concepts of Laplace transforms & its applications to various problems related to Engineering.	5.1	The students will be able to predict a suitable method to evaluate the Contour integration.	a,b,c,d,e,f,i,l
<b>UNIT I - ORDINARY DIFFERENTIAL EQUATIONS</b>				<b>(9+6)</b>
Higher order linear differential equations with constant coefficients - Method of variation of parameters Cauchy's and Legendre's Equations.				
<b>UNIT II - VECTOR CALCULUS</b>				<b>(9+6)</b>
Gradient and Directional derivative -Divergence and Curl – Irrotational, solenoidal and scalar potential –Line integral over a plane curve-Surface Integral and Volume Integral-Green's theorem in a plane-Gauss divergence theorem and Stokes Theorem (Excluding Proofs )-Simple Applications Involving Square, Rectangles, Cube and Parallelopiped.				
<b>UNIT III- ANALYTIC FUNCTIONS</b>				<b>(9+6)</b>
Functions of a complex variable-Analytic functions– Necessary and sufficient conditions of Cauchy's -Riemann Equations in Cartesian Coordinates (Excluding Proofs) – Properties of Analytic Functions – Harmonic conjugate – Construction of an analytic function by Milne's Thomson Method– Conformal mapping : $w = c+z$ , $cz$ , $1/z$ and Bilinear Transformation.				
<b>UNIT IV - COMPLEX INTEGRATION</b>				<b>(9+6)</b>
Statement and Simple applications of Cauchy's integral theorem and Cauchy's integral formula(Excluding Proofs) – Taylor's and Laurent's Series Expansions - Singularities - Residues – Cauchy's Residue theorem (Statement only) – Evaluation of contour integration over unit circle and semi circle (Excluding poles on Real axis).				
<b>UNIT V- LAPLACE TRANSFORM</b>				<b>(9+6)</b>
Condition for existence - Transforms of Elementary functions –Basic Properties- First & Second Shifting Theorems (Statement only) –Transforms of derivatives and integrals- Transform of periodic functions - Initial and Final value Theorems. Inverse Laplace transforms -Convolution theorem (Statement only) –Solution of linear second order Ordinary differential equations with constant coefficients using Laplace transforms.				
<b>TOTAL (L: 45+T:30) = 75 PERIODS</b>				



**Note : Simulation of Engineering Problems ( Qualitative Analysis) using open source software**

**TEXT BOOKS:**

1. Dr. B. S. Grewal, "Higher Engineering Mathematics", 42<sup>nd</sup> ed., Khanna publications, 2012.
2. Erwin Kreyszig, "Advanced Engineering Mathematics", 9<sup>th</sup> ed., John Wiley & sons, 2013.
3. Veerarajan.T, "Engineering Mathematics for Semester I & II", 3<sup>rd</sup> ed., Tata McGraw Hill, 2014.

**REFERENCES:**

1. N.P.Bali, Manish Goyal, "A text book of Engineering Mathematics: Sem-II", 5<sup>th</sup> ed., Laxmi Publications.2011.
2. Kandasamy .P, Thilagavathy .K, Gunavathy .K, "Engineering Mathematics for first Year", 9<sup>th</sup> Rv. ed. S.Chand & Co Ltd, 2013.
3. Glyn James, "Advanced Engineering Mathematics", 7<sup>th</sup> ed., Wiley India, (2007).

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**17ITC01 - OOPS USING JAVA**  
( Common to CSE and IT Branches)

	L	T	P	C
	3	0	0	3

PRE REQUISITE : NIL

QUESTION PATTERN: TYPE - I

**COURSE OBJECTIVES AND OUTCOMES:**

Course Objectives		Course Outcomes		Related Program outcomes
1.0	To impart fundamental concepts of OOP using java	1.1	The students will be able to understand the basics of object oriented concepts in java.	a,b,e,g,h,i,j,k,l
2.0	To gain exposure about inheritance, packages and Interfaces	2.1	The students will be able to develop applications using inheritance, packages and interfaces.	a,b,c,d,e,f,g,h,i,j,k,l
3.0	To explore about the exception handling mechanism	3.1	The students will be able to construct applications with exception handling.	a,b,c,d,e,f,g,h,i,j,k,l
4.0	To understand threads and collection concepts	4.1	The students will be able to build applications using threads and collection framework	a,b,c,d,e,f,g,h,i,j,k,l e
5.0	To know about GUI components and database connectivity	5.1	The students will be able to build simple java application with neat GUI and database connectivity	a,b,c,d,e,f,g,h,i,j,k,l

**UNIT I - INTRODUCTION TO OOP USING JAVA**

(9)

Elements of Object Oriented Programming – Overview of JAVA – Data Types, Variables and Arrays –Operators–Control Statements – Introduction to classes and methods– Keywords: Static, final, this– String –Wrapper Class.

**UNIT II - INHERITANCE, PACKAGES AND INTERFACES**

(9)

Inheritance Basics – Using Super – Constructor Call – Method Overriding – Dynamic Method Dispatch – Using Abstract Classes – Using Final with Inheritance – Packages – Access Protection – Interfaces–Exploring java.io Package –File –Byte Streams –Character Streams.

**UNIT III - EXCEPTION HANDLING AND COLLECTIONS**

(9)

Exception-Handling Fundamentals – Exception Types – Using try and catch – Multiple catch Clauses – Nested try Statements – throw, throws, finally -Collections Overview – Collection Interfaces – Collection Classes.

**UNIT IV-THREADS**

(9)

Java Thread Model – Main Thread – Creating a Thread – Creating Multiple Threads – Using isAlive( ) and join( ) – Thread Priorities – Synchronization – Interthread Communication – Suspending, Resuming, and Stopping Threads – Using Multithreading

**UNIT V - GUI WITH DATABASE CONNECTIVITY**

(9)

Applet Basics –AWT classes –Frames –Graphics –AWT controls –Layout managers –Swing – Swing Components: JApplet – Icons and Labels – Text Fields – Buttons – Combo Boxes – Tabbed Panes – Scroll Panes – Trees – Tables.JDBC: Connecting to, querying and Manipulating the database(Create, Insert, Update, Delete).

**TOTAL (L: 45) = 45 PERIODS**

**TEXT BOOKS:**

1. Herbert Schildt, "Java: The Complete Reference", McGraw Hill Education, 9<sup>th</sup> ed.,2017.
2. R.M. Menon, "Expert Oracle JDBC Programming", Apress 1<sup>st</sup> ed., 2005.

**REFERENCE:**

1. Cay. S. Horstmann, Gary Cornell, "Core Java-JAVA Fundamentals", Prentice Hall, 10<sup>th</sup> ed., 2016.





**17ITC04 DESIGN AND ANALYSIS OF ALGORITHMS**

( Common to CSE and IT Branches)

L	T	P	C
3	2	0	4

PRE REQUISITE : 17CSC04

QUESTION PATTERN: TYPE - I

**COURSE OBJECTIVES AND OUTCOMES:**

Course Objectives		Course Outcomes		Related Program outcomes
1.0	To know the fundamental concepts and techniques for problem solving and algorithm design.	1.1	The students will be able to analyze worst, best and average case running times of algorithms using asymptotic notations.	a,b,l
2.0	To learn the different sorting algorithms and the strategy followed.	2.1	The students will be able to use different sorting techniques such as heap sort, merge sort, and quick sort.	a,b,c,d,l
3.0	To be familiar with dynamic and greedy algorithm design techniques	3.1	The students will be able to design dynamic-programming algorithms and apply them to test for optimality.	a,b,c,d,f,i,k,l
4.0	To understand backtracking, Branch bound techniques.	4.1	The students will be able to analyze the complexity of searching and hashing.	a,b,c,d,f,i,k,l
5.0	To learn the different range of behaviors of algorithms, the notion of tractable and intractable problems.	5.1	The students will be able analyze the complexities of various problems in different domain.	b,c,d,e,i,k,l

**UNIT I - INTRODUCTION (9+6)**

Notion of an Algorithm – Fundamentals of Algorithmic Problem Solving – Important Problem Types – Fundamentals of the Analysis of Algorithmic Efficiency –Asymptotic Notations and their properties. Analysis Framework – Empirical analysis - Mathematical analysis for Recursive and Non-recursive algorithms – Visualization.

**UNIT II - BRUTE FORCE AND DIVIDE-AND-CONQUER (9+6)**

Brute Force – Computing  $a^n$  – String Matching - Selection Sort and Bubble Sort – Sequential Search - Closest-Pair and Convex-Hull Problems - Exhaustive Search: Travelling Salesman Problem - Knapsack Problem - Assignment problem. Divide and Conquer Methodology – Binary Search – Merge sort – Quick sort –Closest-Pair and Convex - Hull Problems.

**UNIT III - DYNAMIC PROGRAMMING AND GREEDY TECHNIQUE (9+6)**

Dynamic Programming : Computing a Binomial coefficient – Warshall's and Floyd's Algorithm – Optimal Binary Search trees - 0/1 Knapsack Problem. Greedy Technique: Prim's algorithm and Kruskal's Algorithm - Huffman Trees.

**UNIT IV – ITERATIVE IMPROVEMENT AND LIMITATIONS OF ALGORITHM POWER (9+6)**

Iterative Improvement - The Simplex Method - The Maximum-Flow Problem- Maximum Matching in Bipartite Graphs. Limitations of Algorithm Power : Lower bound arguments – Decision trees – P, NP and NP complete Problems.

**UNIT V - COPING WITH THE LIMITATIONS OF ALGORITHM POWER (9+6)**

Backtracking: N Queen's problem – Hamiltonian Circuit problem – Subset problem. Branch and Bound: Assignment problem – Knapsack Problem – Travelling Salesman Problem – Approximation algorithms for NP hard problems.

**TOTAL (L:45+T:30) =75 PERIODS**

**TEXT BOOK:**

1. Anany Levitin, "Introduction to the Design and Analysis of Algorithm", Pearson Education Asia, 2<sup>nd</sup> ed., 2013.

**REFERENCES:**

1. Harsh Bhasin, "Algorithms Design and Analysis ", Oxford university press, 2016.
2. S. Sridhar, "Design and Analysis of Algorithms ", Oxford university press, 2014.

*(Signature)*  
**Dr.N.Rengarajan, B.Sc., B.Tech., M.E., Ph.D.,**  
**PRINCIPAL**  
**NANDHA ENGINEERING COLLEGE**  
**(Autonomous)**  
**ERODE - 638 052.**





17CSC06 MICROPROCESSOR AND COMPUTER ARCHITECTURE						
			L	T	P	C
			3	0	0	3
PRE REQUISITE : NIL			QUESTION PATTERN : TYPE - I			
COURSE OBJECTIVES AND OUTCOMES:						
Course Objectives		Course Outcomes			Related Program outcomes	
1.0	To introduce fundamentals of 8086 architecture.	1.1	The students will be able to explain the basic architecture of 8086.	a,c,l		
2.0	To understand different peripheral devices.	2.1	The students will be able to employ the peripheral interfacing.	a,b,c,h,l		
3.0	To study the design of arithmetic and logic unit and implementation of fixed point and Floating-point arithmetic operations.	3.1	The students will be able to solve basic binary math operation.	a,c,e,k,l		
4.0	To perceive knowledge about internal and external memory technologies.	4.1	The students will be able to understand the variety of memory technologies.	a,b,c,h,l		
5.0	To learn about Processing and pipelining.	5.1	The students will be able to describe the instruction execution and pipelining concepts.	a,c,k,l		
<b>UNIT I - 8086 ARCHITECTURE</b>					(9)	
Introduction to Microprocessor – Architecture – Minimum and Maximum mode operations of 8086 – Addressing modes – Instruction set – Assembly Language Programming.						
<b>UNIT II - INTERRUPTS &amp; PERIPHERALS INTERFACING</b>					(9)	
Interrupts: Introduction – interrupt vector table – interrupt service routines - Peripherals & Interfacing With 8086: Serial & parallel I/O (8251A and 8255) – Programmable interval timer (8253) – Programmable DMA controller (8257) – programmable interrupt controller (8259A) – Keyboard and display controller (8279).						
<b>UNIT III - COMPUTER ARITHMETIC</b>					(9)	
Data Representation – Hardware and Software Implementation of Arithmetic Unit for Common Arithmetic Operations: Addition, Subtraction, Multiplication, Division (Fixed point and floating point) – Design of Fast Address.						
<b>UNIT IV - MEMORY SYSTEM</b>					(9)	
Basic Concepts – Semiconductor RAM – ROM – Speed – Size and Cost – Cache Memories – Improving Cache Performance – Virtual Memory – Memory Management Requirements –Secondary Storage Devices.						
<b>UNIT V - PROCESSING UNIT AND PIPELINING</b>					(9)	
Fundamental Concepts – Execution of Complete Instruction – Hardware Control – Micro Programmed Control – Pipelining Basic Concepts – Data Hazards – Instruction Hazards – Data Path and Control Considerations – Superscalar Operations – Performance Considerations.						
<b>TOTAL (L: 45) = 45 PERIODS</b>						
<b>TEXT BOOKS:</b>						
1. A.K. Ray and K.M. Bhurchandi "Advanced Microprocessors and Peripherals", 2 <sup>nd</sup> ed., Tata McGraw Hill, 2013.						
2. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, "Computer Organization", 5 <sup>th</sup> ed., Tata McGraw Hill, 2011.						





**REFERENCES:**

1. Douglas V. Hall, "Microprocessors and Interfacing Programming and Hardware". Tata McGraw Hill, 2007.
2. K Uday Kumar, B S Umashankar, "Advanced Micro processors & IBM-PC Assembly Language Programming", Tata McGraw Hill, 2003
3. Peter Abel, "IBM PC Assembly language & Programming", PHI, 5<sup>th</sup> ed., 2001.
4. William Stallings, "Computer Organization and Architecture – Designing for Performance", International Edition, Pearson Education, 2013.
5. John P. Hayes, "Computer Architecture and Organization", 3<sup>rd</sup> ed., Tata McGraw Hill, 1998.

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17ITP01 - OOPS USING JAVA LABORATORY ( Common to CSE and IT Branches)					
		L	T	P	C
		0	0	4	2
PRE REQUISITE : NIL					
COURSE OBJECTIVES AND OUTCOMES:					
Course Objectives		Course Outcomes			Related Program outcomes
1.0	To impart basic programming elements of Java	1.1	The students will be able to create simple java programs using basic programming elements in java.	a,b,e,g,h,i,j,k,l	
2.0	To gain exposure about inheritance, packages and Interfaces	2.1	The students will be able to develop applications using inheritance, packages and interfaces.	a,b,c,d,e,f,g,h,i,j,k,l	
3.0	To explore about the exception handling mechanism	3.1	The students will be able to construct applications with exception handling.	a,b,c,d,e,f,g,h,i,j,k,l	
4.0	To understand threads and collection concepts	4.1	The students will be able to build applications using threads and collection framework	a,b,c,d,e,f,g,h,i,j,k,l e	
5.0	To know about Swing components and database connectivity	5.1	The students will be able to build simple java application with neat GUI and database connectivity	a,b,c,d,e,f,g,h,i,j,k,l	
<b>LIST OF EXPERIMENTS</b>					
<ol style="list-style-type: none"> <li>Basic programming elements of Java (Arrays, String).</li> <li>Programs using Static, final and this keywords.</li> <li>Programs illustrating the implementation of various forms of inheritance</li> <li>Programs illustrating overloading and overriding methods in Java.</li> <li>Programs to use packages and Interfaces in Java.</li> <li>Develop a Java application using Exception handling.</li> <li>Programs to create and synchronize multiple threads in Java.</li> <li>Programs for collection framework.</li> <li>Programs to use Swing Components.</li> <li>Simple Java application with neat GUI and database connectivity.</li> </ol>					
<b>LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS</b>					
<b>SOFTWARE :</b>					
1. Java / Equivalent Compiler					
<b>HARDWARE:</b>					
1. Standalone desktops 30 Nos					
					<b>TOTAL (L: 60) = 60 PERIODS</b>





**17CSC08 COMPUTER NETWORKS**

	L	T	P	C
	3	0	0	3

PRE REQUISITE : NIL

QUESTION PATTERN: TYPE - I

**COURSE OBJECTIVES AND OUTCOMES:**

Course Objectives		Course Outcomes		Related Program outcomes
1.0	To understand the concepts of data communications	1.1	The students will be able to familiarize with the Data Communication Concepts	a,c,f,h,i,j,l
2.0	To impart the fundamental concepts of Data Link Layer	2.1	The students will be able to implement the Data Link Layer Concepts	a,b,c,e,i,l
3.0	To gain exposure about Addressing and Routing Protocols	3.1	The students will be able to realize the need of Addressing and Routing	a,b,c,d,e,i,j,l
4.0	To get knowledge about services in Transport Layer	4.1	The students will be able to build a clear concern on Transport Layer Services	a,b,c,d,e,i,j,l
5.0	To learn about Application Layer functionalities	5.1	The students will be able to work with Application layer protocols	a,b,c,d,e,i,j,l

**UNIT I - DATA COMMUNICATIONS** (9)  
 Data communication Components – Data representation and Data flow – Networks – Protocols and Standards – OSI model – TCP/IP protocol suite – Multiplexing – Transmission Media.

**UNIT II - DATA LINK LAYER** (9)  
 Error Detection and Error Correction – Introduction–Block coding – Linear block codes – cyclic codes – Checksum – Flow Control and Error control Protocols: Stop and Wait – Go back – N ARQ – Selective Repeat ARQ – Piggybacking – Random Access – CSMA/CD, CDMA/CA.

**UNIT III - NETWORK LAYER** (9)  
 Logical addressing – IPV4 – IPV6–Address mapping–ARP, RARP, BOOTP and DHCP–ICMP – Delivery, Forwarding and Unicast Routing protocols – Multicast Routing protocols.

**UNIT IV - TRANSPORT LAYER** (9)  
 Process to Process Delivery – User Datagram Protocol – Transmission Control Protocol – SCTP – Congestion Control – Quality of Service – Techniques to improve QoS.

**UNIT V - APPLICATION LAYER** (9)  
 Domain Name System – DDNS – TELNET – EMAIL – File transfer– HTTP – Network Management System – SNMP.

**TOTAL (L: 45) = 45 PERIODS**

**TEXT BOOK:**

1. Behrouz A. Forouzan, "Data communication and Networking", Tata McGraw-Hill, 4<sup>th</sup> ed., 2012.

**REFERENCES:**

1. William Stallings, "Data and Computer Communication", 8<sup>th</sup> ed., Pearson Education, 2017.
2. James F. Kurose, Keith W. Ross, "Computer Networking - A Top-Down Approach Featuring the Internet", 5<sup>th</sup> ed., Pearson Education, 2010.



**17CSP05 DATABASE MANAGEMENT SYSTEM LABORATORY**

L	T	P	C
0	0	4	2

PRE REQUISITE : NIL

**COURSE OBJECTIVES AND OUTCOMES:**

Course Objectives		Course Outcomes		Related Program outcomes
1.0	To design a database system.	1.1	The students will be able to define database with various integrity constraints.	b,c,j
2.0	To study the usage of DDL and DML commands.	2.1	The students will be able to working with various DDL, DML queries.	b,c,d,g
3.0	To learn about joins, views, various built in functions and procedures and functions	3.1	The students will be able to create various views and make use of various types of joins and procedures and functions	a,b,d,e
4.0	To know about normalization	4.1	The students will be able to do conceptual design using E-R model and normalize the design.	a,b,c,k
5.0	To work with database connectivity.	5.1	The students will be able to work with real time data base connectivity	a,c,j,k

**LIST OF EXPERIMENTS**

- Structured Query Language : Creating Database
  - Creating a Table
  - Specifying Relational Data Types
  - Specifying Constraints
  - Creating Indexes
- Table and Record Handling
  - INSERT statement
  - Using SELECT and INSERT together
  - DELETE, UPDATE, TRUNCATE statements
  - DROP, ALTER statements
- Retrieving Data from a Database
  - The SELECT statement
  - Using the WHERE clause
  - Using Logical Operators in the WHERE clause
  - Using IN, BETWEEN, LIKE, ORDER BY, GROUP BY and HAVING Clause
  - Using Aggregate Functions Combining Tables
  - Using JOINS Sub queries
- Database Management
  - Creating Views
  - Creating Column Aliases
  - Creating Database Users
  - Using GRANT and REVOKE
- High level language extension with Triggers
- Database design using E-R model and Normalization
- Design and implementation of Payroll processing system
- Design and implementation of Banking system
- Design and implementation of Library Information System
- Design and implementation of Student Evaluation System

**TOTAL (P: 60) = 60 PERIODS**

  
**Dr.N.Rengarajan, B.Sc., B.Tech., M.E., Ph.D.,**  
**PRINCIPAL**  
**NANDHA ENGINEERING COLLEGE**  
**(Autonomous)**  
**ERODE - 638 052.**





**HARDWARE / SOFTWARE REQUIRED FOR A BATCH OF 30 STUDENTS:**

**HARDWARE:**

1. 33 nodes with LAN connection or Standalone PCs

**SOFTWARE:**

1. MYSQL 8.0
2. Visual Basic 6.0

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17GEA01 ENGINEERING ECONOMICS AND FINANCIAL ACCOUNTING					
		L	T	P	C
		3	0	0	3
PRE REQUISITE : NIL		QUESTION PATTERN: TYPE - IV			
COURSE OBJECTIVES AND OUTCOMES:					
Course Objectives		Course Outcomes			Related Program outcomes
1.0	To manage an Organization; to describe principles of macroeconomics to have the understanding of economic environment of Business.	1.1	The students will be able to know the importance of Engineering Economics and Principles of Micro and Macro Economics.		a,b,c,e,l
2.0	To understand the Market demand and supply analysis and the ways in which changes in these determinants affect equilibrium price and output	2.1	The students will be able to estimate the market position with the knowledge in demand forecasting and supply.		a,b,c,e,l
3.0	To know the production and cost function in various market condition.	3.1	The students will be able to develop and estimate cost for any project.		a,b,c,e,l
4.0	To determine the changes in price of the product, the effect of a price control in different market structure, taxation and services.	4.1	The students will be able to fix the price of the product with the knowledge in different market structure and taxation design.		a,b,c,d,e,f,g,h, l,k,l
5.0	To acquire a reasonable knowledge in Accounts; to analyze and evaluate Financial Statements.	5.1	The students will be able to analyze the financial statement to determine the optimal managerial decisions.		a,b,c,d,e,f,g,h, l,k,l
<b>UNIT I - INTRODUCTION</b>					(9)
Managerial Economics – Relationship with other disciplines, Firms – Types, Objectives and Goals, Managerial Decisions, Decision Analysis.					
<b>UNIT II - DEMAND AND SUPPLY ANALYSIS</b>					(9)
Demand – Types of Demand, Determinants of Demand, Demand Function, Demand Elasticity, Demand Forecasting. Supply – Determinants of Supply, Supply Function, Supply Elasticity.					
<b>UNIT III - PRODUCTION AND COST ANALYSIS</b>					(8)
Production Function – Returns to scale, Production Optimization, Isoquants, and Managerial uses of Production Function. Cost Concepts – Cost Function, Determinants of Cost, Estimation of Cost.					
<b>UNIT IV – PRICING AND TAXATION</b>					(9)
Determinants of Price, Pricing under different Objectives and different Market Structures, Price Discrimination, Pricing methods in practice. Tax Design: The Structure of Taxation – Taxation of goods and services.					
<b>UNIT V - FINANCIAL ACCOUNTING, CAPITAL BUDGETING AND ACCOUNTING STANDARDS</b>					(10)
Introduction to Financial, Cost and Management Accounting, Accounting Concepts and Conventions, Final Accounts, Investments – Evaluation of Investment Decision – Average Rate of Return, Payback Period, Net Present Value. Accounting Standard: History – International Financial Reporting Standards – Indian Accounting Standards.					
<b>TOTAL (L: 45) = 45 PERIODS</b>					
<b>TEXT BOOKS:</b>					
1. Anjali Bagad, "Engineering Economics and Financial Accounting", Technical Publications 2 <sup>nd</sup> Revised ed., 2011.					
2. B. Senthil Arasu, J. Praveen Paul, "Engineering Economics and Financial Accounting", SchiTech Publication (India) Pvt. Ltd.					



**REFERENCES:**

1. McGuigan, Moyer and Harris, "Managerial Economics; Applications, Strategy and Tactics", Thomson South Western, 10<sup>th</sup> ed., 2005.
2. Paresh Shah, "Basic Financial Accounting for Management", Oxford University Press, New Delhi, 2007.

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**Dr.N.Rengarajan, B.Sc., B.Tech., M.E., Ph.D.,**  
**PRINCIPAL**  
**NANDHA ENGINEERING COLLEGE**  
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