



**Cusrow Wadia Institute of Technology,
Pune - 411 001**

Computer Engineering Department

Multi Point Entry and Credit System 2010
(MPECS 2010)

CURRICULUM

[W.E.F. June - 2010]

CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

CURRICULUM REVISION (2010)

1 Preamble :

- Cusrow Wadia Institute of Technology, Pune was granted Academic Autonomy in the year 1985 by Government of Maharashtra vide letter No. PTI 2483/119915(234)/TE-I (B) dated 27/2/1985.
- Initially the Institute adopted the Model Curriculum prepared by then TTTI, Western Region, Bhopal. Subsequently, the revisions in the curriculum were made as per the needs of the Society.
- The Institute adopted Multi Point Entry and Credit System w.e.f. June 1998.
- The earlier revision was carried out in the year 2004. Subsequently the review of the curriculum was taken in the year 2007-2008. Necessary changes in the contents and detailing of the document as regards to the scope, implementation strategy and related processes were done in the year 2008.
- The present curriculum will come into force w.e.f. June 2010 .
- The feedback was taken from various stake holders and it was strongly felt that the rapid strides in the field of Information Technology, Computers and Manufacturing Processes, a dynamic curriculum need to adopt the benefits of the fast changing expectations in the contents as well as the Teaching Learning Methodology.
- The Institute has strengthened the hardware and software which is constantly consolidated and upgraded to match the needs of the society in general and the Industries in particular.
- Students should be proficient in the use of computers and related software irrespective of the branch of Engineering they are studying. The students shall be made to make maximum use of software packages and use Internet to derive and update their knowledge.
- The contemporary needs of the user system and overall development of the students is the governing factor in the revision of 2010 curriculum.

2 Approach for Curriculum Revision :

- Scientific system approach has been adopted in the revision of curriculum .
- A curriculum revision model showing various steps undergone is presented.
- Analysis of the existing curriculum was done by taking feedback from the faculty implementing the curriculum, Alumni, Industry / Field Personnel, Courses Committee Members and the Experts in the field of Education.
- Entry behaviour of the students was assessed. Basic entry qualification for Diploma is SSC or equivalent. However, higher entry qualification like 12th Science, 12th MCVV, ITI etc. was also considered.
- Curriculum documents of MSBTE, other Boards and other Autonomous Institutions were studied for inclusion of new courses and analysis of contents of existing and newly inducted courses and also the implementation strategy.
- The curriculum is rationalised as per the AICTE and MSBTE norms and guidelines.
- The team members were identified for conducting Search Conference, collecting feedback from stake holders and interviews with Experts for noting the suggestions about the courses and necessary modifications. The Interactive Sessions were arranged through Search Conference attended by the Experts from Industry and Academia. The faculty members were trained by specialists in Technical Education System as regards to the Curriculum Revision Process.

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3 Roles to be played and functions to be performed by a Diploma Holder :

- A Diploma holder may be employed in the Industry as a Technician or Supervisor for Production, Installation, Repairs and Maintenance. He also may be employed in drawing, estimation or as an Assistant in IT related activities. He may be an Entrepreneur, be assigned a job of Purchase/ Marketing Department. Diploma holder should have basic knowledge of the various subjects of his branch in Engineering and also the related Inter-disciplinary subjects. He should be aware of the present technologies and be able to adopt the changes in future. He shall acquire the necessary skill sets in the Engineering subjects.
- His role in the Society is that of a responsible individual and should conduct himself as regards the values and cultures. He should acquire the necessary professional, presentation and managerial Skills.

4 Analysing job functions and deriving curriculum objectives :

- The role of a Diploma holder, as a Technician on the job, is analysed in four Domains of Professional Skills, Life Long Learning, Personal Development and Social Development.
- The curriculum should help the students to acquire professional skills and inculcate attitudes in order that the student will be able to discharge the role and functions effectively on the societal and employment front.
- Goals and objectives of each program were framed. The courses common to several programmes and the courses relevant to particular programmes were classified under various categories.
- The overall course structure and Teaching Examination Scheme was prepared.
- The contents of various courses were finalised by considering the feedback from stake holders through interviews, Search Conference and discussions.
- The course structure and the contents were validated by the Board of Studies.
- Study of the Diploma programmes offered by MSBTE, other State Boards and other Autonomous Institutions was done to widen the perspective .

5 Evolving the Teaching Learning Process :

The following points were considered :

- No. of weeks - 16
- Average days per week- 5.5
- No. of contact hours per day- 7
- No. of hours per week for instruction and pre-decided Co-curricular activities - 38.
- Each course shall be taught for sixteen weeks and two weeks shall be utilized for revision in that term.

6 Course Categories :

- Foundation(1)
- Core(2)
- Allied(3)
- Applied(4)
- Specialized(5)
- Number of courses for a programme - 35 - 37.
- Number of courses for award of class - 9

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- Number of Elective courses - 3
- Number of credits to be earned for obtaining Diploma - 185.
- One credit = one hour of lecture / practical per week for a course.
- Ratio of theory to practical hours per week : approx. 50:50

7 Examination Scheme :

- Theory paper - 80 marks
- Tests - 20 marks
- Term Work - 25-50 marks
- Practicals -25 - 50 marks
- Viva voce- 25 - 50 marks
- Project Work -100 + 50 marks
- Grand total - 4500 marks
- Grand total of marks for award of class - 1400.

8 Course-wise content detailing:

- For finalisation of course structure from Courses Committee, Examination Committee and Board of Studies, various processes in the Curriculum Revision Model were followed. Also the documents of MSBTE and Autonomous Polytechnics were referred.
- Contents were decided by taking into consideration, the expectations of the stake holders, specific needs of Industry, Interviews, Discussions and Experts opinions.
- Every course has a unique code e.g. R10CE4101. 'R10' means the course is from the curriculum revised in 2010. CE implies Civil Engineering Department will teach this course. '4' indicates that it is Applied Course Category in the programme structure. '1' means the course is to be taught to Civil Engineering programme. '01' is the serial number of the course in Applied Courses Category.

The 7th character in the above 9 digit code is assigned for the programme, e.g. 1- Civil, 2 - Mechanical, 3 - Electrical, 4 - Computer and 5 - Electronics & Telecommunication Engineering and 7 - Common courses for all programmes taught by Science Department.

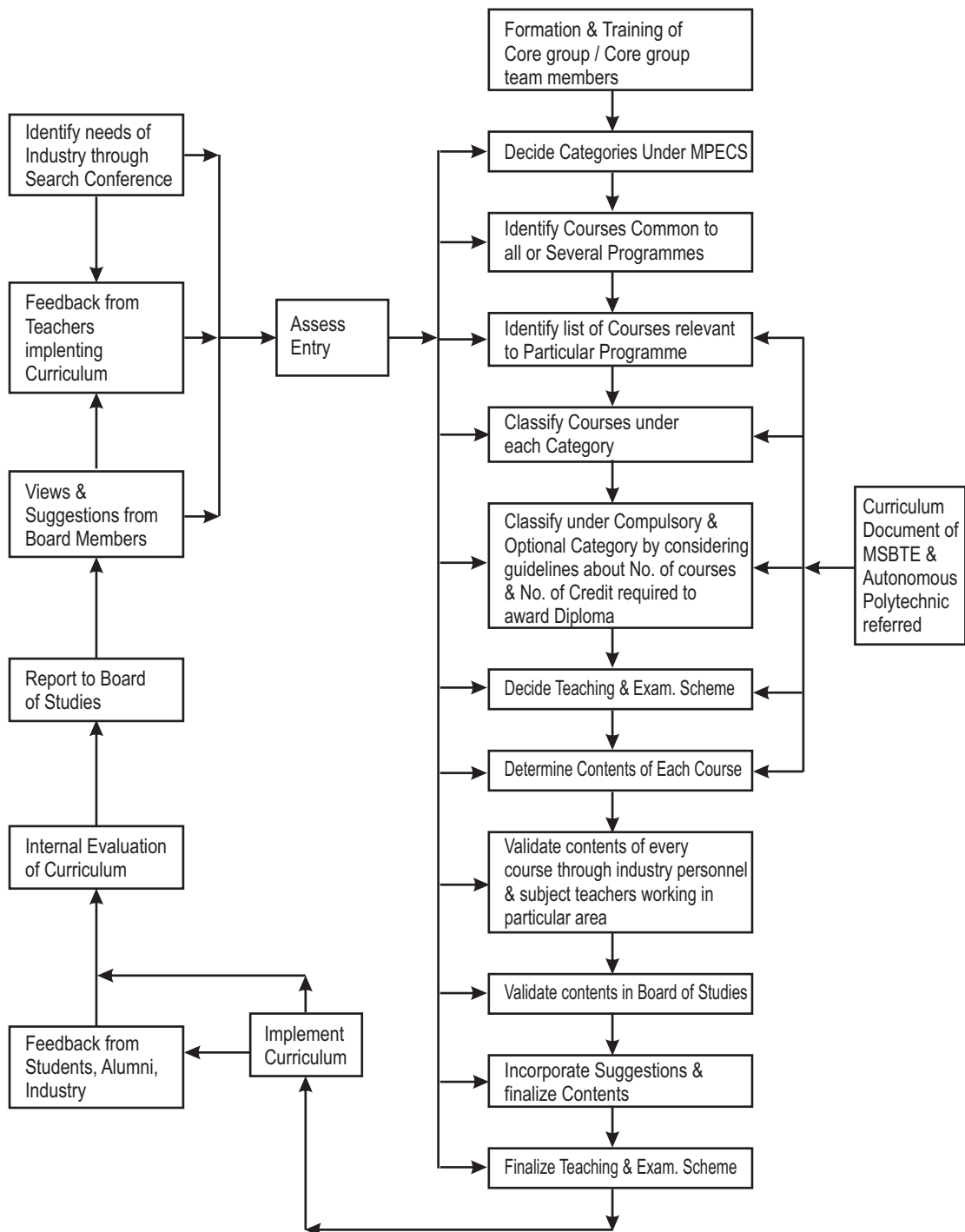
- A rationale giving the importance of the course in the curriculum is vividly explained. The course objectives are derived indicating the purpose to teach the course / subject.
- The Practicals, Seminars are spelt out along with assessment technique .
- The input for professional practices and generic skills are included in most of the courses so that the students will be able to learn the contents beyond syllabus.
- The curriculum document prescribes learning resources for students e.g. Reference books, Textbooks, Websites, Handbooks, Printed notes etc.
- Use of Learning Management System, Audio Visual Aids be increased for enhancing the Teaching Learning Process.

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9 Curriculum Implementation Strategy:

- Members of the faculty shall continuously undergo Induction Training Programme, Content upgrading programme conducted by ISTE , NITTTR and other Organisations.
- The faculty members will be deputed to attend Refresher courses and Training programmes so as to help them keep abreast with latest developments and technology.
- Faculty members will be trained in respect of various aspects and methods of evaluation systems, Paper setting etc.
- Faculty will be trained for monitoring the curriculum implementation.
- Library will be constantly modernised with additions of latest titles and books. The Library will have open access to the students. Library will be open for extended hours from 10 a.m. to 8.00 p.m. The Book Bank Facility will support the demand of the students.
- The Laboratory and Field Manuals will be structured and standardised so that the students can spend more time for doing practicals, understanding the significance, discussions and result analysis rather than only writing the journals.
- The Examination rules will be revised to suit the curriculum and will have similarity as regards to principles followed by MSBTE and other Examination bodies.
- The Evaluation Systems and marking schemes will be commensurate with the input hours and importance of the topics in the course.
- 24 X 7 Internet connection is available for faculty, staff and students. Also Wi-Fi connectivity provided in all classrooms and laboratories will support the modern methods of teaching.
- Uninterrupted Power Supply and captive power is made available to take over the load shedding.
- The laboratories, equipments and computers be maintained in working conditions. The models, charts and exhibits be displayed to invite attention of the students .
- Industrial visits, Field visits, Study tours shall be arranged regularly in a preplanned and structured manner so as to have focus on technical aspects.
- Guest faculty should be invited to deliver lectures on recent trends, technology, materials and processes. These activities be planned in the beginning of the term.
- The students should imbibe various life skills, generic skills, learn stress management and adjust help and appreciate colleagues especially during group activities, study tours and visits etc.

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Curriculum Revision Model Used At CWIT - 2010

CWIT - (COMPUTER ENGINEERING)

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What is Computer Engineering?

Almost every facet of our life, whether in industry, academic institutes, government organizations, health care, research, or domestic life is dependent on Computers in some form or another.

A Computer Engineer design and develop the hardware and software systems that have made computers important part of our day to day life. They research, design, develop, test, and oversee the installation of computer hardware and software and supervise its manufacture. The educational program prepares them to address current and future problems in various fields.

Importance of Computer Engineering Programme :

A Computer Engineer studies the *whole computer system* in its entirety, and is equally comfortable working with both hardware and software. He also understands how the hardware and software interact with each other. This ability to work on both sides of the *hardware/software interface* makes the Computer Engineer uniquely qualified to conceive, design, and integrate complete computer systems from scratch.

The Diploma program in Computer Engineering provides students with a strong theoretical and practical background in both the hardware and the software aspects of computer based systems, along with the engineering analysis, design, and implementation skills necessary to work between the two. The curriculum is based on an engineering philosophy, with emphasis on both, the hardware and software.

Objectives of Computer Engineering Programme:

The objectives of the Computer Engineering programme is to educate students in the core topics as well as in a broad set of specialities of Computer Engineering, to impart students with professional attributes that characterize a well-schooled engineer and citizen. The department achieves this through a balance of required courses and judicious choices of technical electives in three stages of studies in Computer Engineering. The first teaches the students basic or foundation courses, the second teaches the core courses and the third teaches in depth some specialized areas of computer engineering through choices of technical electives taken during the junior and senior years. Our objectives are:

- The students will apply their knowledge and skills to succeed in a Computer Engineering career and/or obtain an advanced degree.
- The students will function ethically and responsibly.
- The students will apply basic principles and practices of computing to successfully complete hardware and/or software related engineering projects to meet customer objectives.
- The students will apply the basic principles and practices of engineering in the computing domain for the benefit of society.

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PROGRAMME : DIPLOMA IN COMPUTER ENGINEERING SCHEME FOR MPECS 2010

Sl. No.	Category	Course Code	Course Title	Pre-requisite	C/O	Teaching Scheme				Examination Scheme			
						L	P	Cre-dis	TH	TT	PR	OR	TW
01		R10SC1701	Basic Mathematics		C	4	0	4	80	20	-	-	-
02		R10SC1702	Engineering Mathematics	R10SC1701	C	4	0	4	80	20	-	-	-
03		R10SC1704	Engineering Physics		C	3	2	5	80	20	-	-	25
04		R10SC1707	Technical English		C	2	2	4	80	20	-	-	25
05	FOUNDATION COURSES	R10SC1708	Communication Skills		C	1	2	3	-	-	-	-	50
06		R10ME1202	Engineering Graphic Skills		C	2	4	6	-	-	-	-	50
07		R10CP1401	Introduction To Computer Systems		C	3	4	7	80	20	-	-	25
08		R10EX1415	Electronic Devices and Components	R10SC1704	C	4	2	6	80	20	-	-	25
			Total			23	16	39	480	120	-	-	200
09		R10ME2203	Industrial Org. and Management		C	3	-	3	80	20	-	-	-
10		R10EE2304	Electrical Engineering	R10SC1704	C	4	2	6	80	20	-	-	50
11		R10ME2208	Workshop Practice		C	-	4	4	-	-	-	-	50
12	ALLIED COURSES	R10EE2303	Marketing Management			2	2	4	-	-	-	@50	50
13		R10CP2402	Desk Top Publishing			-	4	4	-	-	-	@50	50
14		R10ME2205	Entrepreneurship Development		O2	2	2	4	-	-	-	@50	50
15		R10SC2701	Advanced Mathematics	R10SC1702		4	-	4	80	20	-	-	-
			Total			13	8	21	240/ 160	60/ 40	-	50/100	150/200

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PROGRAMME : DIPLOMA IN COMPUTER ENGINEERING SCHEME FOR MPECS 2010

16	R10CP3401	Intro. To Programming Techniques		C	3	4	7	80	20	@25	-	50
17	R10CP3402	Computer Organization	R10EX3415	C	4	-	4	80	20	-	-	-
18	R10CP3403	Operating Systems	R10CP3402	C	4	-	4	80	20	-	-	-
19	R10CP3404	Data Structures	R10CP3401	C	3	4	7	80	20	-	25	50
20	R10CP3405	Object Oriented Programming with C++		C	3	4	7	80	20	-	-	50
21	R10CP3406	Database Management Systems		C	3	4	7	80	20	25	-	50
22	R10CP3407	Computer Networks		C	3	2	5	80	20	-	-	50
23	R10CP3408	Microprocessors and Interfacing	R10EX3415	C	3	2	5	80	20	-	-	50
24	R10CP3409	Software Engineering		C	4	2	6	80	20	-	-	50
25	R10CP3410	Data Communication		C	3	2	5	80	20	-	-	50
26	R10EX3415	Digital Techniques		C	3	2	5	80	20	-	-	50
		Total			36	26	62	880	220	50	25	450
27	R10CP4401	Web Design		C	1	4	5	-	-	50	-	50
28	R10ME4402	Computer Aided Drafting		C	1	4	5	-	-	50	-	50
29	R10CP4403	Advanced C Programming	R10CP3404	C	4	2	6	80	20	-	@25	50
30	R10CP4404	Network Administration	R10CP3403	C	2	4	6	-	-	-	50	50
31	R10CP4405	P. C. Maintenance	R10CP3402	C	4	2	6	80	20	-	-	50
32	R10CP4406	Unix System Administration	R10CP3403	C	4	2	6	80	20	-	-	50
33	R10CP4407	Project and Seminar	100 Credits	C	-	6	6	-	-	-	50	100
		Total			16	24	40	240	60	100	150	400

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PROGRAMME : DIPLOMA IN COMPUTER ENGINEERING SCHEME FOR MPECS 2010

34	R10CP5401	Java Programming	R10CP3405	C	3	4	7	80	20	@25	-	50
35	R10CP5402	Multimedia Techniques		C	3	2	5	80	20	-	@25	50
36	R10CP5403	Web Programming			2	4	6	-	-	-	50	50
37	R10CP5404	Windows Programming			2	4	6	-	-	-	50	50
38	R10CP5405	Animation Techniques		O1	2	4	6	-	-	-	50	50
39	R10CP5406	Embedded Technology	R10CP5408		2	4	6	-	-	-	50	50
40	R10CP5407	Advanced Computer Networks	R10CP3407		3	2	5	80	20	-	25	50
41	R10CP5408	Micro Controllers	R10CP3408		3	2	5	80	20	-	25	50
42	R10CP5409	Computer Security	R10CP3407	O1	3	2	5	80	20	-	25	50
43	R10CP5410	Advanced Java	R10CP5401		3	2	5	80	20	-	25	50
44	R10CP5411	Object Oriented Modeling and Design	R10CP3405		3	2	5	80	20	-	25	50
		Total			11	12	23	240	60	25	100	200
		Grand Total			99	86	185	2080 / 2000	520 / 500	175	325 / 375	1400 / 1450

@: Internal Examination

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PROGRAMME : DIPLOMA IN COMPUTER ENGINEERING SUMMARY OF MPECS 2010 SCHEME

Sr. No.	Category	No. of Courses		Teaching Scheme					Examination Scheme				
		Comp.	Opt.	L	P	Credits	TH+TT	PR	OR	TW	TOTAL		
1	Foundation	8	-	23	16	39	600	-	-	200	800		
2	Allied	3	2	13	8	21	300/200	-	50/100	150/200	500		
3	Core	11	-	36	26	62	1100	50	25	450	1625		
4	Applied	7	-	16	24	40	300	100	150	400	950		
5	Specialized	2	2	11	12	23	300	25	100	200	625		
		31	4	99	86	185	2600/2500	175	325/375	1400/1450	4500		

Total Credits : 185

Total Marks : 4500

Total No. of Courses to complete the Program : 35

Total No. of Theory Exams : 26

Total No. of Practical / Oral exams : 14

Theory credits to Non - Theory credits Ratio : 53.5:46.5

Theory marks to Non - Theory marks Ratio : 58:42

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PROGRAMME : DIPLOMA IN COMPUTER ENGINEERING LIST OF COURSES FOR CLASS DECLARATION

NO. OF COURSES: 9 COMPULSORY COURSES: 8 OPTIONAL COURSES: 1

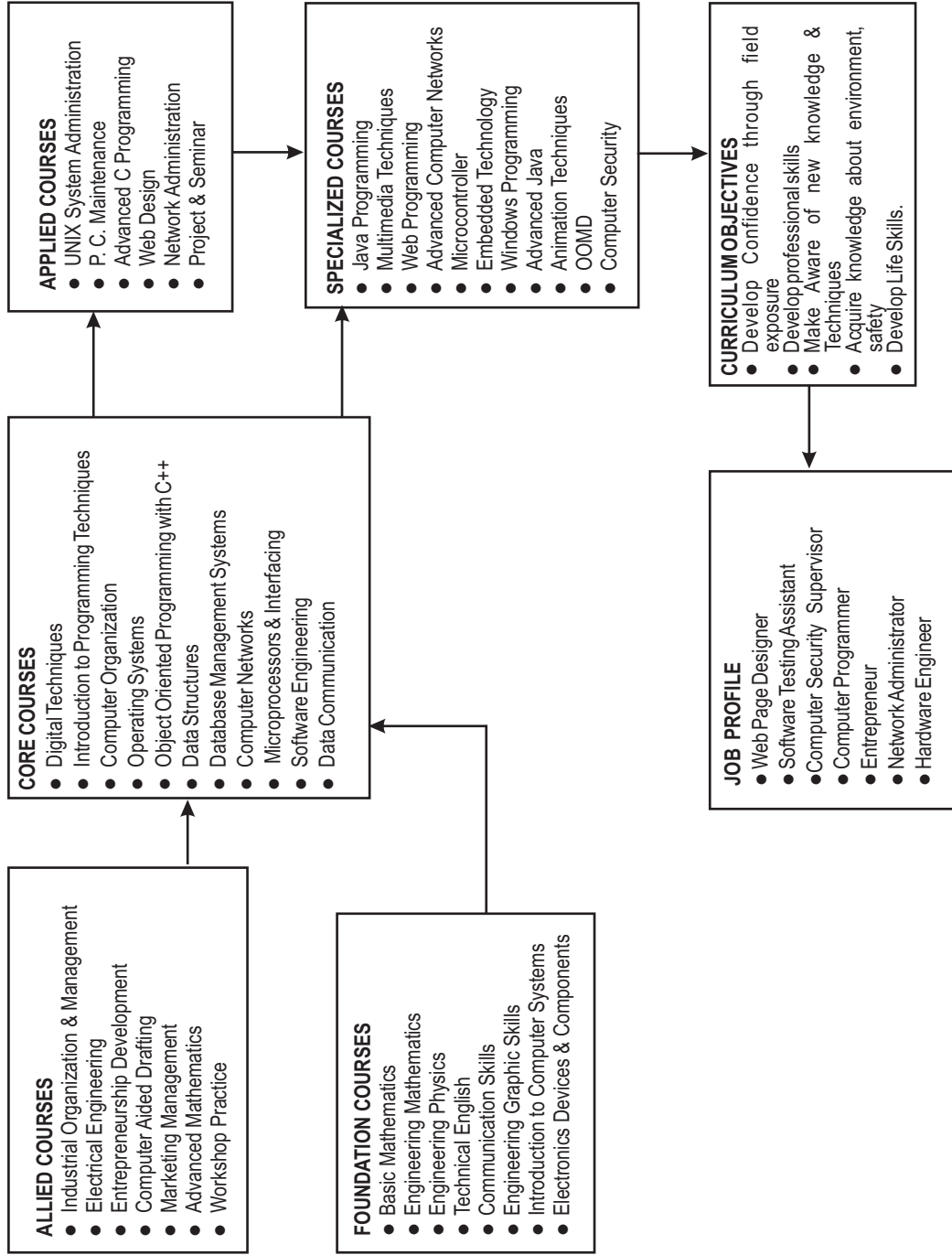
Category	Course Code	Course Title	Pre-requisite	Credits	Examination Scheme					
					TH	TT	PR	TW		
ALLIED COURSES	R10ME2203	Industrial Organization and Management		C 3	80	20	-	-	-	
CORE COURSES	R10CP3407	Computer Networks		C 5	80	20	-	-	50	
	R10CP3409	Software Engineering		C 6	80	20	-	-	50	
APPLIED COURSES	R10CP4405	P. C. Maintenance	R10CP3402	C 6	80	20	-	-	50	
	R10CP4406	Unix System Administration	R10CP3403	C 6	80	20	-	-	50	
	R10CP4407	Project and Seminar	100 Credits	C 6	-	-	-	-	100	
	R10CP5401	Java Programming	R10CP3405	C 7	80	20	@25	-	50	
	R10CP5402	Multimedia Techniques		C 5	80	20	-	@25	50	
	R10CP5407	Advanced Computer Networks	R10CP3407		5	80	20	-	25	50
SPECIALISED COURSES	R10CP5408	Micro Controllers	R10CP3408	ANY ONE	5	80	20	-	25	50
	R10CP5409	Computer Security	R10CP3407		5	80	20	-	25	50
	R10CP5410	Advanced Java	R10CP5401		5	80	20	-	25	50
	R10CP5411	OOMD	R10CP3405		5	80	20	-	25	50

Max. Theory Marks : 800
 Max. Practi/Oral Marks : 150
 Max. Term Work Marks : 450
 Grand Total : 1400
 Theory Credits To Non - Theory Credits Ratio : 55:45
 Theory Marks To Non - Theory Marks Ratio : 57:43

CWIT - (COMPUTER ENGINEERING)

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LINK DIAGRAM FOR COMPUTER ENGINEERING



CWIT - (COMPUTER ENGINEERING)

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PROGRAMME : DIPLOMA IN COMPUTER ENGINEERING

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SR.NO.	CATEGORY	COURSE CODE	COURSE TITLE	PAGE NO.
01	FOUNDATION COURSES	R10SC1701	Basic Mathematics	01
02		R10SC1702	Engineering Mathematics	05
03		R10SC1704	Engineering Physics	08
04		R10SC1707	Technical English	12
05		R10SC1708	Communication Skills	15
06		R10ME1202	Engineering Graphic Skills	18
07		R10CP1401	Introduction to Computer Systems	21
08		R10EX1415	Electronics Devices & Components	26
09	ALLIED COURSES	R10ME2203	Industrial Organization & Management	29
10		R10EE2304	Electrical Engineering	32
11		R10ME2208	Workshop Practice	36
12		R10EE2303	Marketing Management	38
13		R10CP2402	Desk Top Publishing	40
14		R10ME2205	Entrepreneurship Development	44
15		R10SC2701	Advanced Mathematics	47
16	CORE COURSES	R10EX3415	Digital Techniques	50
17		R10CP3401	Introduction to Programming Techniques	53
18		R10CP3402	Computer Organization	57
19		R10CP3403	Operating Systems	60
20		R10CP3404	Data Structures	63
21		R10CP3405	Object Oriented Programming with C++	67
22		R10CP3406	Database Management Systems	70
23		R10CP3407	Computer Networks	74
24		R10CP3408	Microprocessor and Interfacing	78
25		R10CP3409	Software Engineering	81
26	R10CP3410	Data Communication	85	

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PROGRAMME : DIPLOMA IN COMPUTER ENGINEERING

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SR.NO.	CATEGORY	COURSE CODE	COURSE TITLE	PAGE NO.
27	APPLIED COURSES	R10CP4401	Web Design	88
28		R10ME4402	Computer Aided Drafting	92
29		R10CP4403	Advanced 'C' Programming	95
30		R10CP4404	Network Administration	99
31		R10CP4405	P. C. Maintenance	103
32		R10CP4406	UNIX System Administration	107
33		R10CP4407	Project and Seminar	110
34	SPECIALIZED COURSES	R10CP5401	Java Programming	112
35		R10CP5402	Multimedia Techniques	117
36		R10CP5403	Web Programming	120
37		R10CP5404	Windows Programming	124
38		R10CP5405	Animation Techniques	127
39		R10CP5406	Embedded Technology	132
40		R10CP5407	Advanced Computer Networks	135
41		R10CP5408	Microcontrollers	139
42		R10CP5409	Computer Security	142
43		R10CP5410	Advanced Java	146
44		R10CP5411	Object Oriented Modeling and Design	150