

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

**Electronics & Telecommunication  
Engineering Department**

Multi Point Entry and Credit System 2010  
(MPECS 2010)

# **CURRICULUM**

**[W.E.F. June - 2010]**

## CURRICULUM REVISION (2010)

### 1 Preamble :

- Cusrow Wadia Institute of Technology, Pune was granted Academic Autonomy in 1985 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.
- Multi Point Entry and Credit System was effected from June 1998.
- Revision was carried out and 2010 curriculum came into force in June 2010.
- 2004 Curriculum was slow and conventional methods were adopted for Teaching and Learning.
- It was strongly felt that with the rapid strides in the field of IT, Computers and manufacturing, a dynamic curriculum need adopt the benefits of the above in the contents as also Teaching and Learning Methodology.
- The Institute has strengthened the hardware and is consolidating it with every coming year.
- Students should be proficient in the use of computers in any branch of engineering they are studying . In every course they should make maximum use of software packages and connect with the web to derive knowledge and obtain solutions.
- Thus, the contemporary needs of the user system is the governing factor in the revision of 2010 curriculum.

### 2 Approach for Curriculum Revision :

- Systems approach has been adopted in the revision of Curriculum.
- A curriculum model showing the steps undergone in the revision process is presented.
- Analysis of existing curriculum was done by taking suggestions from Industry / Field personnel, Courses Committee members, Alumni and teachers implementing the curriculum.
- Entry behavior of the students was assessed. Basic entry qualification is S.S.C. / 10<sup>th</sup> pass and 12<sup>th</sup> pass.
- Curriculum documents from other Institutions were procured and studied for inclusion of new courses and analysis of contents of existing and newly inducted courses and also the entire course structure .
- The team members were identified for conducting surveys, industrial visits, interviews with experts, noting suggestions about courses that they teach and have a flair in it. Interactive sessions with Alumni were also arranged. Team members were trained by specialists in Technical education and also by members from YASHADA for the above assignment.

# **CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1**

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## **3 Roles to be played and functions to be performed by a Diploma technician :**

Diploma pass out may be employed at entry level as a supervisor for production , installation, repairs and maintenance. He may also be employed in drawing and estimation section. He may be an entrepreneur, be assigned job of marketing or may be entrusted with purchase of materials and equipments.

- His role in the society is that of a responsible individual and should conduct himself properly.

## **4 Analysing job functions and deriving curriculum objectives :**

- The role of a technician on job is to be analysed in the four domains of personal development , social development , life long learning and professional skills.
- The curriculum should help the students to acquire certain skills and attitudes in order that he will be able to discharge effectively the role and functions on the societal and employment front.

## **5 Goals and Objectives of each course were framed .**

- Interactive sessions with industry personnel, course specialists.
- Study of Technician level programs from Autonomous Institutes and MSBTE was done to widen the perspective.

## **6 Evolving the Teaching and Examination Scheme :**

The following points were considered :

- Average days per week 5.5
- No. of hours per day 7.0
- No. of hours per week for instructions and predecided Co-curricular activities 38
- Each course shall be taught for sixteen weeks out of which effective teaching shall be for fourteen weeks and two weeks shall be for revision.

## **7 Course Categories :**

- Foundation
- Core
- Allied
- Applied
- Specialised
- Number of courses for a programme varies from 33 to 37.
- Number of credits to be earned for obtaining Diploma: 180 - 185.
- Ratio of theory to practical hours per week : approx. 50:50

## **8 Examination Scheme :**

- Theory paper 80 marks
- Tests 20 marks
- Practicals 25-50 marks
- Term work 25 - 50 marks
- Viva voce 25 - 50 marks
- Project work 100 - 150 marks
- No. of class declaration courses 8 - 12.

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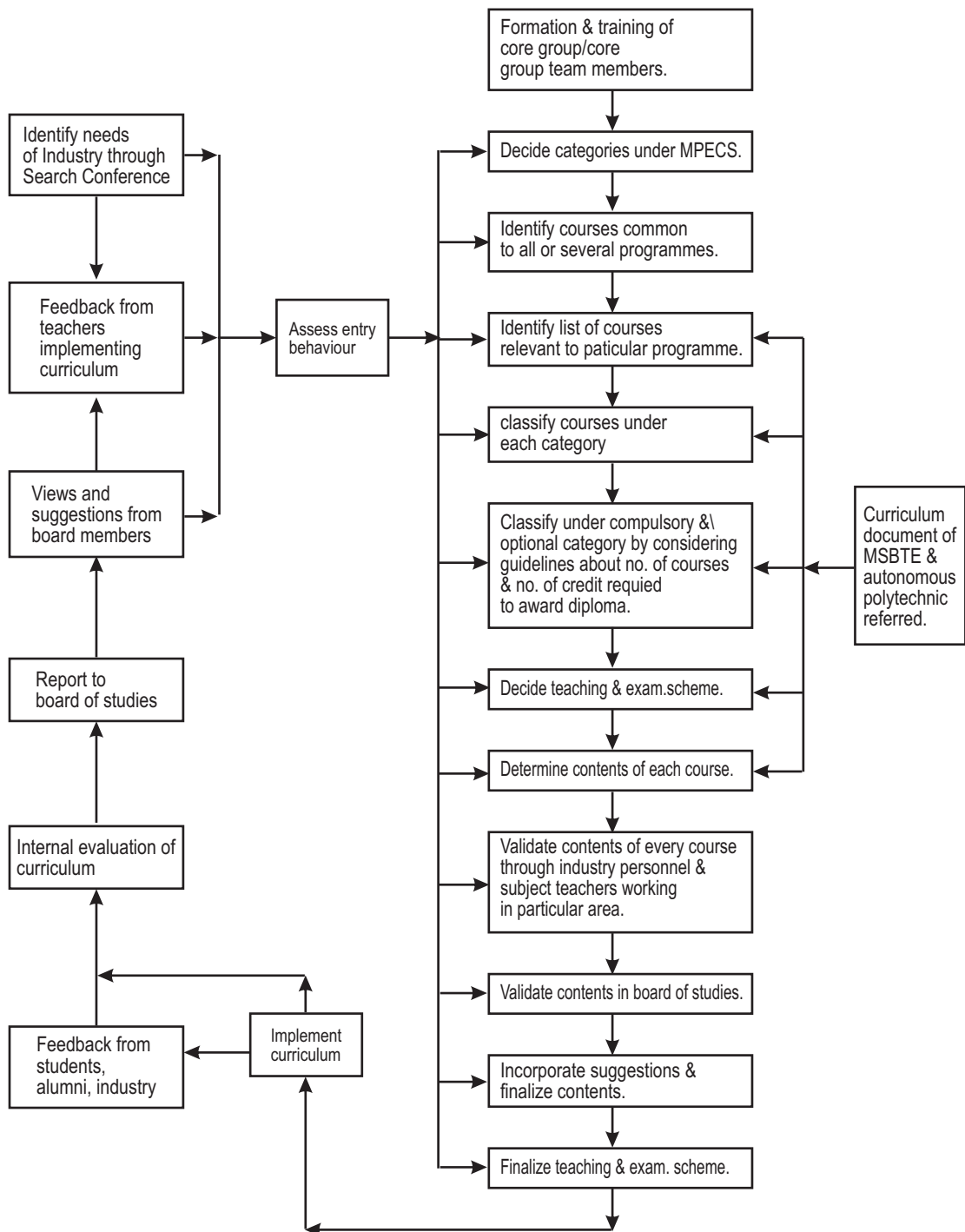
## **9 Course-wise content detailing:**

- For finalisation of course structure from Courses Committee, Examination Committee, Documents of MSBTE and Autonomous Polytechnics were referred .
- Contents were decided on the drop of those prevalent in other Institutions . The needs of the industry were taken into consideration with inputs from search conferences, Alumni meetings, parents meetings, experts opinions etc.
- Every course has a unique code e.g. CE 415 . CE implies Civil Engineering Department will teach this course. 4 indicates that it is Applied courses category in the programme structure . '1' means the course is to be taught to Civil Engg. Students. 5 is the serial number of the course in the Applied Courses category.
- A rationale giving the importance of the course in the curriculum, should be vividly explained. Course objectives are to be derived indicating the purpose to teach the subject.
- Practicals , tutorials, seminars are to be spelt out along with the assessment technique. The number of hours have to be assigned for each head and the credits earned.
- Prescribe learning resources for students such as Printed notes, Text books, Hand books, CDs, Web sites etc.
- Develop list of resources for teaching also.

## **10 Curriculum Implementation Strategy:**

- Newly appointed teachers should undergo Induction Programmes conducted by NITTTTR or any other Government organization.
- Teachers should be deputed for refresher courses and for opening out new vistas of knowledge and enterprise.
- Teachers be made aware of pitfalls in setting of Test and Term end examination question papers.
- Teachers should be imparted training for monitoring curriculum implementation.
- Library to be equipped with latest editions and titles and sufficient number of copies to be procured. Library hours extended from 10.00 a.m. to 8.00 p.m. CDs on various topics to be compiled. Open access to students in Library.
- Lab and field manuals to be in printed forms so that students spend more time in discussions, analysis and finding solutions.
- Revise examination rules to suit the curriculum.
- Marking scheme to be commensurate with the input hours and importance of the topics.
- Equipments to be maintained in working condition. DSR to be maintained. Wall hung Charts should be used to invite students attention to various topic, figures and sketches.
- 24 x 7 Internet connection should be made available for staff and students.
- Captive power should be made available to take over load shedding.
- Industrial visits, field visits , study tours to be arranged to provide opportunity for students to observe actually the machines, structures.
- During these periods students imbibe community living skills and learn to adjust help and appreciate colleagues.
- Guest faculty should be invited to deliver lectures on recent trends, technology, materials & processes some of which should be made part of the contents of the relevant course.

# CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1



**Curriculum Revision Model Used At CWIT -2010**

CWIT - (Electronics & Telecommunication Engg.)

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## **What is Electronics & Telecommunication Engineering?**

The Electronics & Telecommunication Engineering is a balanced program of Electronics, Electrical, Digital, Microprocessors, Power, Automatic Control, Instrumentation, Telecommunications supported by basic units in analysis, software, engineering science, and opens doors to a wide range of employment opportunities.

## **Importance of Electronics & Telecommunication Programme**

The program is well equipped with a good understanding of Electronics Systems design techniques and their applications in area such as control, telecommunication and consumer products. The program emphasizes analytical methods to plan and design networks to meet the goals of quality, reliability and cost. The students will also develop skills enabling to exercise independent, critical and creative thought also self confidence and maturity to be successful in their later career.

The diploma programme in Electronics & Telecommunication Engineering provides students with a strong theoretical & practical background in both hardware & software aspects of Digital Communication Systems, Mechatronics, Microprocessors Based System and Computer Based Systems along with the engineering analysis, design and implementation skills necessary to work in team. The curriculum is based on an engineering philosophy.

## **Objectives of Electronics & Telecommunication Engineering programme**

The objectives of Electronics & Telecommunication Engineering programme is achieved through a balance of required courses and judicious choices of technical electives and broad coverage of topics in Electronics and Telecommunication to give excellent foundation for career growth and also gives opportunity of putting the learning into practice.

The main objectives of Electronics & Telecommunication Engineering programme are:

- The students will learn the professional studies in all years to develop practical and career skills such as teamwork, communication, presentation and project management.
- The student acquire in depth knowledge of the components and systems that make the global telecommunications network, starting with basis in Electronics and Computing.
- The students will learn about the media and devices that transport & direct communication signals through the network.
- The students will become familiar with current technology and develop the tools they will need to work with future technology.

# **CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1**

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- The students will also learn about the policies and regulations that have shaped the industry around the world.
- The students will use the workstations for designing and testing electronic circuits and for creating modern programmable intelligent electronic system applications.

## **Electronics & Telecommunication Engineering Department :**

The department was established and started functioning in the year 1951. In the recent era of globalization Electronic Communication is playing a vital role and undoubtedly playing a major source of development. There is vast scope for jobs for the students of Electronics and Telecommunication Engineering in reputed industries in India and abroad, especially in communication field.

The department is having fully equipped laboratories as per DTE and AICTE norms, covering total range of sophisticated equipments, machines, instruments, computers and software. The department is involved in students centered activities like Personality Development, Industrial Tours, Guest Lectures and Social Activities.

Department has Laboratories namely Basic Electronics Labs, Digital Electronics and Microprocessors Lab, Software Lab. Mechatronics Lab, Microwave and Communication Lab, Power Electronics Lab, Mobile communication lab and Project Lab.

- More than 50 dual trace CRO (30MHz)
- Digital Storage Oscilloscopes
- More than 50 Branded Computers with higher end specifications.
- Internet facilities
- Simulation and software lab e quipped with application software's.
- Television, VCR, Video Camera, LCD, Television & VCR Trainer kits.
- Various projects are undertaken in the department based on Microcontroller, Security Systems, Industrial Automations, Telecommunication
- Well equipped software laboratory with Pentium-IV computers on LAN.
- Devoted and highly qualified staff.
- Departmental Library Facility

## CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

### PROGRAMME : DIPLOMA IN ELECTRONICS & TELECOMMUNICATION ENGINEERING (MPECS SCHEME - 2010)

S.N	Category	Course code	Course Title	Preq	C/O	L	P+T	C	TH	TT	PR	OR	TW
TERM I													
1	FOUNDATION	RISC701	BASIC MATHEMATICS		C	04	-	04	80	20	-	-	-
2	FOUNDATION	RISC703	BASIC PHYSICS		C	03	02	05	80	20	-	-	25
3	FOUNDATION	RISC705	BASIC CHEMISTRY		C	03	02	05	80	20	-	-	25
4	FOUNDATION	RISC707	TECHNICAL ENGLISH		C	02	02	04	80	20	-	-	25
5	FOUNDATION	ROME 1 202	ENGG GENERAL SKILL		C	02	04	06	-	-	-	-	50
6	FOUNDATION	ROME 1 209	WORKSHOP PRACTICE I		C	-	02	02	-	-	-	-	50
TOTAL													175
TERM II													
7	FOUNDATION	RISC702	ENGG MATHEMATICS	RISC701	C	04	-	04	80	20	-	-	-
8	FOUNDATION	RISC706	APPLIED SCIENCE		C	04	04	08	-	-	-	-	100
9	FOUNDATION	RISC708	COMMUNICATION SKILL		C	01	02	03	-	-	-	-	50
10	CORE	RICE501	FUNDA OF PROGRAMMING		C	04	02	06	80	20	-	-	50
11	ALLED	RI0 EE204	ELECTRICAL ENGG	RI0 EE204	C	04	02	06	80	20	-	-	50
12	FOUNDATION	RICE503	ELECTRONICS LAB PRACTICE		C	-	02	02	-	-	-	-	50
TOTAL													500
TERM III													
13	FOUNDATION	RICE501	SEMICONDUCTOR DEVICES & CIRCUITS		C	04	02	06	80	20	50	-	50
14	CORE	RICE503	COMMUNICATION SYSTEM - I		C	04	02	06	80	20	50	-	50
15	FOUNDATION	RICE502	NETWORK THEORY		C	04	02	06	80	20	-	-	50
16	ALLED	ROME202	GENERAL ENGINEERING		C	02	02	04	-	-	-	@ 50	50
17	CORE	RICE502	DIGITAL ELECTRONICS		C	04	02	06	80	20	-	-	50
18	ALLED	RISC 201	ADVANCED MATHEMATICS	RISC702	ANY ONE	04	-	04	80	20	-	-	50
	ALLED	ROME205	ENTERPRENSHIP DEVELOPMENT		ONE	02	02	04	-	-	-	@ 50	50
TOTAL													250



## CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

### PROGRAMME : DIPLOMA IN ELECTRONICS & TELECOMMUNICATION ENGINEERING (MPECS SCHEME - 2010)

S.N	Category	Course code	Course Title	Preq	C/O	L	P+T	C	TH	TT	PR	OR	TW
TERM IV													
19	APPLIED CORE	ROEX 4 501	APPLIED ELECTRONICS		C	04	02	06	80	20	50	-	-
20		ROEX50 5	MICROPROCESSOR & PROGRAMMING		C	04	02	06	80	20	-	-	50
21	CORE	* ROEX504	OPAMP & INTEGRATED CIRCUITS		C	04	02	06	80	20	-	-	50
22	CORE	* ROEX50 8	COMMUNICATION SYSTEM - II		C	04	02	06	80	20	-	-	50
23	CORE	ROEX50 6	INDUSTRIAL EL. ELECTRONICS		C	04	02	06	80	20	50	-	-
24	CORE	ROEX50 7	SIGNALS & SYSTEMS		C	02	02	04	-	-	-	-	25
			TOTAL			22	12	34	400	100	100	-	175
TERM V													
25	ALLIED	* ROEX203	INDORG & MANAGEMENT		C	03	-	03	80	20	-	-	-
26	APPLIED	* ROEX450 5	OPTICAL & MICROWAVE NETWORK		C	04	02	06	80	20	-	-	25
27	APPLIED	* ROEX450 4	MICROCONTROLLER & INTERFACING DEVICES		C	04	02	06	80	20	-	-	25
28	APPLIED	ROEX450 2	ELECTRONICS CIRCUIT DESIGN		C	02	02	04	-	-	-	50	50
29	APPLIED	ROEX450 3	POWER ELECTRONICS		C	04	02	06	80	20	-	-	50
30	APPLIED	ROEX450 8	CIRCUIT SIMULATION LAB		C	02	02	04	-	-	-	-	50
31	APPLIED	ROEX450 6	CONSUMER ELECTRONICS		C	03	02	05	-	-	-	50	50
32	APPLIED	* ROEX450 9	PROJECT & SUMMAR		C	22	14	36	320	80	-	100	250
			TOTAL										

## CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

### PROGRAMME : DIPLOMA IN ELECTRONICS & TELECOMMUNICATION ENGINEERING (MPECS SCHEME - 2010)

Sl#	Category	Course code	Course Title	Preq	CO	L	P+T	C	TH	TT	PR	OR	TW
TERM VI													
33	APPLIED	ROEX450 7	INSTRUMENTATION & CONTROL		C	04	02	06	80	20	-	-	50
34	SPECIALISED	* ROEX5501	ROBOTICS	ROEX35 06	ANY ONE	04	02	06	80	20	50	-	50
		* ROEX5502	PROGRAMMING LOGIC CONTROLLER	ROEX35 06	ONE	04	02	06	80	20	50	-	50
35	SPECIALISED	* ROEX5503	MECHATRONICS	ROEX5506		04	02	06	80	20	50	-	50
		* ROEX5504	DATA COMMUNICATION	ROEX35 05	ANY ONE	04	02	06	80	20	50	-	50
		* ROEX5505	EMBEDDED SYSTEM	ROEX35 05	ONE	04	02	06	80	20	50	-	50
		* ROEX35 06	ADVANCED MICROCONTROLLERS	ROEX35 05		04	02	06	80	20	50	-	50
36	SPECIALISED	* ROEX5507	TELEMATICS	ROEX35 03	ANY ONE	04	02	06	80	20	50	-	50
		* ROEX5508	MOBILE COMMUNICATION	ROEX35 03	ONE	04	02	06	80	20	50	-	50
		* ROEX5509	SWELTTE & RADAR COMM	ROEX35 03		04	02	06	80	20	50	-	50
	APPLIED	* ROEX460 9	PROJECT & SEMINAR	100C	C		04	04	-	-	-	50	100
			TOTAL			16	12	28	520	80	150	50	500
			GRAND TOTAL			113	72	185	2000	500	350	200	1450
			TOTAL (THEORY+PRACTICALS)								4500		

\*1 INDICATES CLASS DECLARATION SUBJECTS

@ SUBJECTS ROEX26

0 2 AND ROEX22

0 5 HAVING INTERNAL ORAL EXAMINATION

01 SEPTEMBER 2010

- CONTINUUM

# CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

## PROGRAMME : DIPLOMA IN ELECTRONICS & TELECOMMUNICATION ENGINEERING (MPECS SCHEME - 2010)

### DETE CLASS DECLARATION SUBJECTS

Sl. No.	CATEGORY	COURSE CODE	COURSE TITLE	PREQ.	C/O	L	P	CREDIT	TH	TT	PR	OR	TW	
1	ALLIED COURSES	HMW200	BUSING & MANAGEMENT	-	C	04	-	04	80	20	-	-	-	
2		HMCE504	OPAMP & INTEGRATED CIRCUITS	-	C	04	02	06	80	20	-	-	50	
3		HMCE508	COMMUNICATION SYSTEM - II	-	C	04	02	06	80	20	-	-	50	
4	APPLIED COURSES	HMCE505	MCU CONTROLLER & INTERFACING DEVICES	-	C	04	02	06	80	20	-	-	25	
5		HMCE506	OPTICAL AND FIBRE NETWORK	-	C	04	02	06	80	20	-	-	25	
6		HMCE509	PROJECT & SEMINAR	-	C	-	06	06	-	-	-	-	50	
7	SPECIALIZED COURSES	HMCE501	PRIORITY	HMCE506	ANY	04	02	06	80	20	50	-	50	
		HMCE502	PROGRAMMABLE LOGIC CONTROLLERS	HMCE506	ONE	04	02	06	80	20	50	-	50	
		HMCE503	INTELELECTRONICS	HMCE506	ONE	04	02	06	80	20	50	-	50	
8		HMCE504	DATA COMMUNICATION	HMCE506	ANY	04	02	06	80	20	50	-	50	
		HMCE505	EMBEDDED SYSTEM	HMCE506	ONE	04	02	06	80	20	50	-	50	
		HMCE506	ADVANCED MICROCONTROLLERS	HMCE506	ONE	04	02	06	80	20	50	-	50	
9		HMCE507	TELEMETRICS	HMCE506	ANY	04	02	06	80	20	50	-	50	
		HMCE508	MOBILE COMMUNICATION	HMCE506	ONE	04	02	06	80	20	50	-	50	
		HMCE509	SPECIALITY & BROAD COMM.	HMCE506	ONE	04	02	06	80	20	50	-	50	
TOTAL										640	160	150	50	400

THEORY MARKS = 800; PRACTICAL MARKS = 600

GRAND TOTAL = 1400

The Maximum Theory Marks = 800  
 The Maximum Practical Marks = 600  
 Theory Credit & Practical Credit Ratio = 61:39  
 Theory Marks & Practical Marks Ratio = 57:43

DETE/REV.2010/CURRICULUM

## CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

### OVERALL SUMMARY

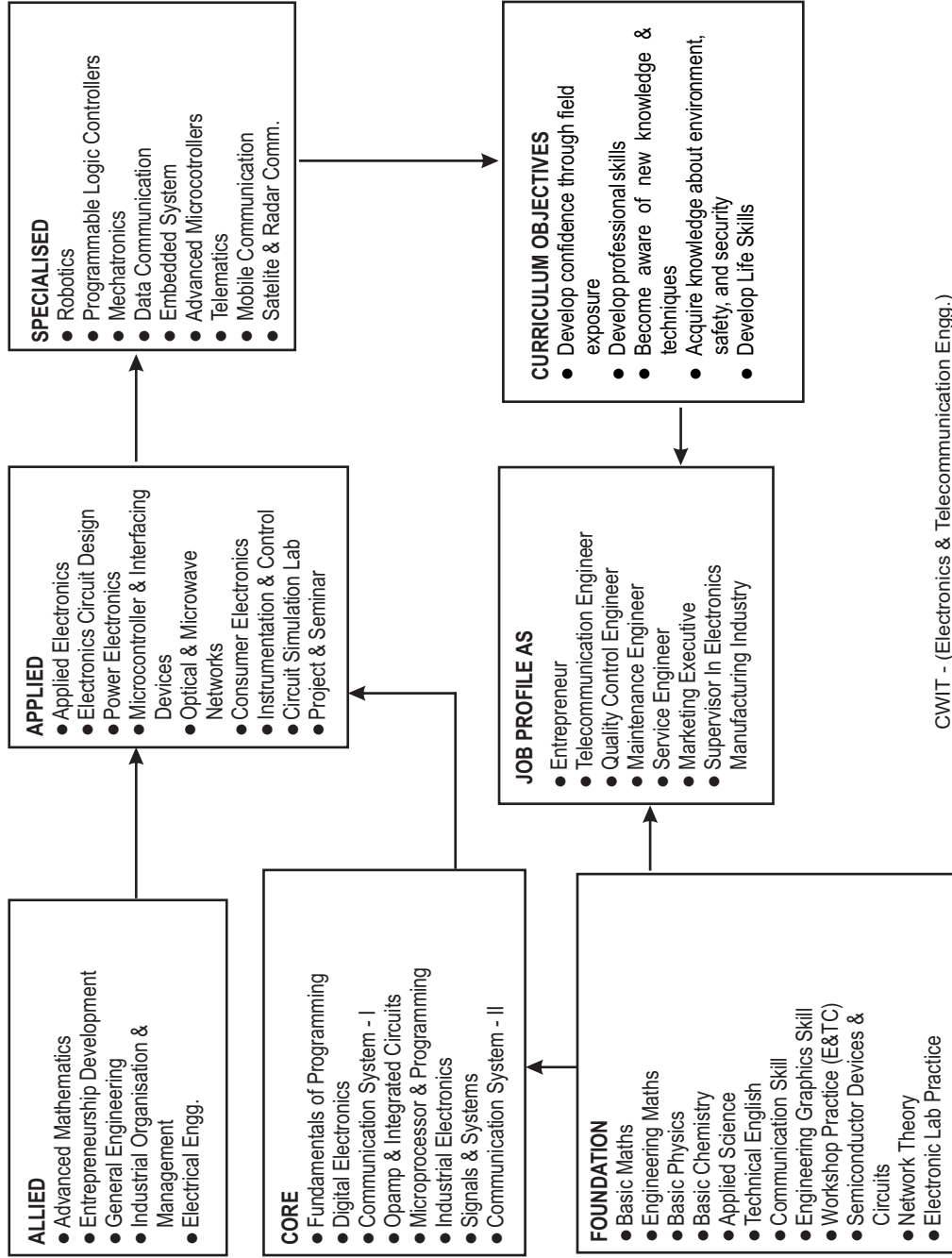
SR. NO.	CATEGORY	NO. OF COURSES		TEACHING SCHEME			EXAMINATION SCHEME				
		COMP.	OPT.	L	P	CREDITS	TH+TT	PR	OR	TW	TOTAL
1	FOUNDATION	12	-	31	24	55	700	50	-	475	1225
2	ALLIED	03	01	13	04	17	300	-	50	100	450
3	CORE	08	-	30	16	46	700	100	-	325	1125
4	APPLIED	09	-	27	22	49	500	50	150	400	1100
5	SPECIALISED	-	03	12	06	18	300	150	-	150	600
TOTAL		52	04	113	72	185	2500	350	200	1450	4500

Total no. of courses to be completed = 36 ; Compulsory courses = 32 + Optional courses = 04

N o. of courses ha  
 ving theory exam = 25  
 N o. of Practical  
 + Oral examination = 10 + 02 = 12  
 Credit Ratio ; Theory : Practical = 61 : 39  
 Marks Ratio ; Theory : Practical = 55 : 45

# CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

## LINK DIAGRAM FOR ELECTRONICS & TELECOMMUNICATION ENGINEERING



CWIT - (Electronics & Telecommunication Engg.)

# CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

## PROGRAMME : DIPLOMA IN ELECTRONICS & TELECOMMUNICATION ENGINEERING

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SR.NO.	CATEGORY	COURSE CODE	COURSE TITLE	PAGE NO.
01	FOUNDATION COURSES	R10SC1701	Basic Maths	01
02		R10SC1702	Engineering Maths	05
03		R10SC1703	Basic Physics	08
04		R10SC1705	Basic Chemistry	12
05		R10SC1706	Applied Science	17
06		R10SC1707	Technical English	22
07		R10SC1708	Communication Skill	25
08		R10EX1501	Semiconductor Devices & Circuits	28
09		R10EX1502	Network Theory	32
10		R10EX1503	Electronics Lab Practice	35
11		R10ME1202	Engineering Graphics Skill	40
12		R10ME1209	Workshop Practice (E & TC)	43
13	ALLIED COURSES	R10ME2203	Industrial Organisation & Management	45
14		R10ME2205	Entrepreneurship Development	48
15		R10EE2304	Electrical Engineering	51
16		R10ME2602	General Engineering	55
17		R10SC2701	Advanced Maths	57
18	CORE COURSES	R10EX3501	Fundamentals Of Programming	60
19		R10EX3502	Digital Electronics	64
20		R10EX3503	Communication System-I	68
21		R10EX3504	Opamp & Integrated Circuit	72
22		R10EX3505	Microprocessor And Programming	76
23		R10EX3506	Industrial Electronics	80
24		R10EX3507	Signals And Systems	84
25		R10EX3508	Communication System-II	87

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## PROGRAMME : DIPLOMA IN ELECTRONICS & TELECOMMUNICATION ENGINEERING

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SR.NO.	CATEGORY	COURSE CODE	COURSE TITLE	PAGE NO.
26	<b>APPLIED COURSES</b>	R10EX4501	Applied Electronics	91
27		R10EX4502	Electronics Circuit Design	95
28		R10EX4503	Power Electronics	98
29		R10EX4504	Microcontroller & Interfacing Devices	103
30		R10EX4505	Optical And Microwave System	106
31		R10EX4506	Consumer Electronics	109
32		R10EX4507	Instrumentation & Control	112
33		R10EX4508	Circuit Simulation Lab	116
34		R10EX4509	Project & Seminar	119
35		<b>SPECIALISED COURSES</b>	R10EX5501	Robotics
36	R10EX5502		Programmable Logic Controllers	124
37	R10EX5503		Mechatronics	127
38	R10EX5504		Data Communication	131
39	R10EX5505		Embedded Systems	135
40	R10EX5506		Advanced Microcontrollers	138
41	R10EX5507		Telematics	141
42	R10EX5508		Mobile Communication	144
43	R10EX5509		Satellite And Radar Communication	147