

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

Civil Engineering Department

Multi Point Entry and Credit System
(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 softwares 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 MCVC, 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

CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

1. 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.

2. 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 .

3. 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 utilised for revision in that term

4. Course Categories:

- Foundation(1)
- Core(2)
- Allied(3)
- Applied(4)
- Specialised(5)
- Number of courses for a programme – 35 – 37.

CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

- Number of courses for award of class – 9
- 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

5. 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.

1. 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.

9. CURRICULUM IMPLEMENTATION STRATEGY:

- Members of the faculty shall continuously undergo Induction Training Programme, Content upgrading programme conducted by ISTE, NITTTTR 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.

CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

- 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 Books 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.

CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

What is Civil Engineering?

Civil engineering is a professional engineering discipline that deals with the planning, design, construction and maintenance of the physical and naturally built environment, including works such as buildings, roads, dams, canals, effluent treatment plants etc. The Various sub- disciplines are material science, geotechnical engineering, surveying, construction, water resource engineering, transportation engineering, environmental engineering, structural engineering and project management.

Aim of a civil engineering fraternity is to improve the standard of life of human beings by providing physical means for human activities. The existence of creations of civil engineer can be felt from building, roads, dams, canals & all structures. A Civil engineer learns and works with the nature. He integrates the knowledge of physical sciences, mathematics, sociology and management by providing solutions to challenges posed by the society and nature. It is one of the oldest discipline addressing basic needs of water, shelter and food. It grooms civilization by providing the basic infrastructure for the businesses, industries, and organizations dealing with health, education and entertainment.

New challenges of sustainable development, maintaining ecological balance with ever increasing demand for the physical means from the society can be mitigated by adopting clean technologies, eco friendly materials and advanced knowledge based decision system with integration with other engineering disciplines. Therefore the scope of civil engineering has crossed all physical, socio-political and technological boundaries. The leadership, team work, good human engineering with sound technical bias will be the key elements in making of a civil engineer.

CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

PROGRAMME : DIPLOMA IN CIVIL ENGINEERING

| SR NO | CATEGORY | COURSE CODE | COURSE TITLE | PREREQ/TE | C/O | Teaching SCHEME | | | Examination Scheme | | | | | | |
|-------|------------|-------------|-------------------------------|-----------|-----|-----------------|----|----|--------------------|-----|-----|------|-----|----|----|
| | | | | | | L | P | C | TH | TT | PR | OR | TW | | |
| 1 | Foundation | ROSC07 01 | Basic Mathematics | ROSC07 01 | C | 4 | 0 | 4 | 80 | 20 | | | | 25 | |
| 2 | | ROSC07 02 | Engineering Mathematics | | | 4 | 0 | 4 | 80 | 20 | | | | | 25 |
| 3 | | ROSC07 03 | Basic Physics | | | 3 | 2 | 5 | 80 | 20 | | | | | 25 |
| 4 | | ROSC07 05 | Basic Chemistry | | | 3 | 2 | 5 | 80 | 20 | | | | | 50 |
| 5 | | ROSC07 06 | Applied Science | | | 4 | 4 | 8 | | | | | | | 50 |
| 6 | | ROSC07 07 | Technical English | | | 2 | 2 | 4 | 80 | 20 | | | | | 25 |
| 7 | | ROSC07 08 | Communication Skills | | | 1 | 2 | 3 | | | | | | | 50 |
| 8 | | ROCE01 01 | Office Automation and CAD | | | 1 | 4 | 5 | | | | 50@ | | | 50 |
| 9 | | ROME02 03 | Engineering Graphic Skills | | | 2 | 4 | 6 | | | | 50@ | | | 50 |
| | | TOTAL | | | | 24 | 20 | 44 | 400 | 100 | 100 | 50 | 275 | | |
| 1 | Allied | ROAM01 01 | Engineering Mechanics | | C | 4 | 2 | 6 | 80 | 20 | | | 25 | | |
| 2 | | ROAM01 02 | Strength Of Materials | | C | 4 | 2 | 6 | 80 | 20 | | | 25 | | |
| 3 | | ROCE01 03 | Building Materials & Workshop | | C | 2 | 4 | 6 | | | | 50 @ | 50 | | |
| | | TOTAL | | | | 10 | 8 | 18 | 160 | 40 | 0 | 50 | 100 | | |
| 1 | Core | ROCE01 01 | Building Drawing | | C | 2 | 4 | 6 | | | 50 | | 50 | | |
| 2 | | ROCE01 02 | Civil Engg. Drawing | ROCE01 01 | C | 1 | 4 | 5 | | | 50 | | 50 | | |
| 3 | | ROCE01 03 | Building Construction | | C | 3 | 2 | 5 | 80 | 20 | | | 25 | | |
| 4 | | ROCE01 04 | Building Services | | C | 3 | 2 | 5 | 80 | 20 | | | 50 | | |
| 5 | | ROCE01 05 | Construction Technology | ROCE01 03 | C | 4 | 2 | 6 | 80 | 20 | | | 50 | | |
| 6 | | ROCE01 06 | Surveying - I | | C | 3 | 4 | 7 | 80 | 20 | 50 | | 50 | | |
| 7 | | ROCE01 07 | Surveying - II | ROCE01 06 | C | 3 | 4 | 7 | 80 | 20 | 25 | | 50 | | |
| 8 | | ROCE01 08 | Hydraulics | | C | 4 | 2 | 6 | 80 | 20 | | | 50 | | |
| 9 | | ROAM01 09 | Theory of Structures | ROAM01 02 | C | 4 | 4 | 8 | 80 | 20 | | | 25 | | |
| 10 | | ROAM01 00 | Concrete Technology | | C | 3 | 2 | 5 | 80 | 20 | | | 25 | | |
| 11 | | ROAM01 01 | Geotechnical Engineering | | C | 3 | 2 | 5 | 80 | 20 | | | 50 | | |
| | | TOTAL | | | | 35 | 28 | 61 | 720 | 180 | 175 | 25 | 450 | | |

CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

PROGRAMME : DIPLOMA IN CIVIL ENGINEERING

| SR NO | CATEGORY | COURSE CODE | COURSE TITLE | PREREQUISITE | Teaching SCHEME | | | Examination Scheme | | | | | |
|-------|----------|-------------|------------------------------------|--------------|-----------------|-----------|------------|--------------------|------------|------------|------------|------------|-------------|
| | | | | | L | P | C | TH | TT | PR | OR | TW | |
| 1 | | RI0CE41 01 | Railway Bridge & Tunnel Engg. | C | 3 | 0 | 3 | 80 | 20 | | | | 50 |
| 2 | | RI0CE41 02 | Road Engineering | C | 3 | 2 | 5 | 80 | 20 | | | | 25 |
| 3 | | RI0CE41 03 | Public Health Engg. | C | 3 | 2 | 5 | 80 | 20 | | | | 25 |
| 4 | | RI0CE41 04 | Irrigation Engg. | C | 3 | 2 | 5 | 80 | 20 | | | | 25 |
| 5 | | RI0CE41 05 | Quantity Surveying | C | 2 | 4 | 6 | | | 50 | | | 50 |
| 6 | | RI0CE41 06 | Civil Engg. g. Valuation & Costing | C | 4 | 2 | 6 | 80 | 20 | | 25 | | 50 |
| 7 | | RI0CE41 07 | Project Management | C | 4 | 2 | 6 | 80 | 20 | | 50 | | 50 |
| 8 | | RI0CE41 08 | Project Work | C | 0 | 4 | 4 | | | | | | 100 |
| 9 | | RI0AM41 09 | Design of R.C.C. Structures | C | 3 | 2 | 5 | 80 | 20 | | | | 50 |
| 10 | | RI0AM41 10 | Design of Steel Structures | C | 3 | 2 | 5 | 80 | 20 | | | | 50 |
| | | | TOTAL | | 28 | 22 | 50 | 640 | 160 | 50 | 75 | 50 | 450 |
| 1 | | RI0CE5101 | Advanced Construction Techniques | RI0CE31 05 | 4 | 2 | 6 | 80 | 20 | | 25 | | 25 |
| 2 | | RI0CE51 02 | Construction Management | RI0CE31 05 | 4 | 2 | 6 | 80 | 20 | | 25 | | 25 |
| 3 | | RI0CE51 03 | Advanced Surveying | RI0CE31 07 | 4 | 2 | 6 | 80 | 20 | | 25 | | 25 |
| 4 | | RI0CE51 04 | Township Planning | RI0CE31 02 | 4 | 2 | 6 | 80 | 20 | | 25 | | 25 |
| 5 | | RI0AM51 05 | Prestressed Concrete | RI0AM31 09 | 4 | 2 | 6 | 80 | 20 | | 25 | | 25 |
| 6 | | RI0AM51 06 | Advanced Structural Design | RI0AM31 09 | 4 | 2 | 6 | 80 | 20 | | 25 | | 25 |
| | | | TOTAL | | 8 | 4 | 12 | 160 | 40 | 0 | 50 | 50 | 50 |
| | | | GRAND TOTAL | | 103 | 82 | 185 | 2080 | 520 | 525 | 250 | 525 | 1325 |

CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

PROGRAMME : DIPLOMA IN CIVIL ENGINEERING

SUMMARY OF MPECS 2010 SCHEME

| Sr NO | Category | No of Courses | | | Teaching Scheme | | | | Examination Scheme | | | | Total |
|----------|--------------------|---------------|----------|--|-----------------|-----------|------------|-------------|--------------------|-------------|------------|-------------|-------------|
| | | C | O | | L | P | C | TH | TT | PR | OR | TW | |
| 1 | Foundation | 9 | 0 | | 24 | 20 | 44 | 400 | 100 | 100 | 50 | 275 | 925 |
| 2 | Allied | 3 | 0 | | 10 | 8 | 18 | 160 | 40 | 0 | 50 | 100 | 350 |
| 3 | Core | 11 | 0 | | 33 | 28 | 61 | 720 | 180 | 175 | 25 | 450 | 1550 |
| 4 | Applied | 10 | 0 | | 28 | 22 | 50 | 640 | 160 | 50 | 75 | 450 | 1325 |
| 5 | Specialised | 0 | 2 | | 8 | 4 | 12 | 160 | 40 | 0 | 50 | 50 | 300 |
| | Total | 33 | 2 | | 103 | 82 | 185 | 2080 | 520 | 525 | 200 | 1375 | 4500 |
| | Grand Total | 35 | | | 185 | | 185 | 2600 | | 1900 | | | 4500 |

TOTAL NO. OF COURSES TO COMPULSORY + 2 OPTIONAL = 35.

TOTAL NO. OF THEORY EXAMINATIONS = 26.

TOTAL NO. OF PRACTICAL/ORAL EXAMINATIONS = 13.

THEORY CREDITS THEORY CREDIT RATIO : 44

THEORY MARKS THEORY MARKS : 58 : 42

CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

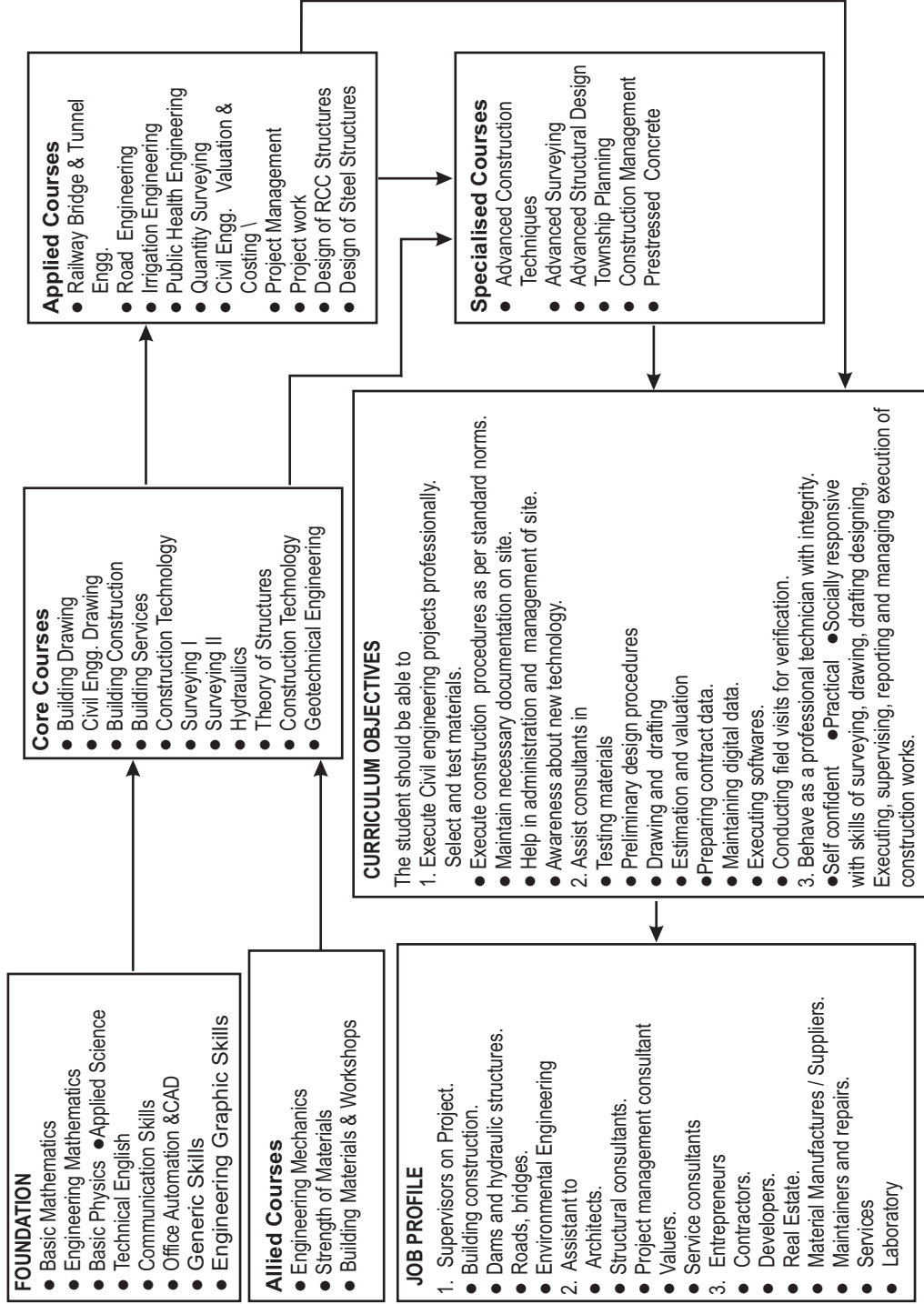
PROGRAMME : DIPLOMA IN CIVIL ENGINEERING LIST OF COURSES FOR CLASS DECLARATION

| Sr NO | CATEGORY | COURSE CODE | COURSE | L | P | C | TH | TT | PR/OR | TW |
|-------|-------------|-------------|---------------------------------|-----------|-----------|-----------|------------|------------|------------|------------|
| 1 | Core | RI0CE31 0 5 | Construction Technology | 4 | 2 | 6 | 80 | 20 | | 50 |
| 2 | Core | RI0CE31 0 7 | Surveying -II | 3 | 4 | 7 | 80 | 20 | 25 | 50 |
| 3 | Core | RI0CE31 0 8 | Hydraulics | 4 | 2 | 6 | 80 | 20 | | 50 |
| 4 | Applied | RI0CE41 0 6 | Civil Engg. Valuation & Costing | 4 | 2 | 6 | 80 | 20 | 25 | 50 |
| 5 | Applied | RI0CE41 0 7 | Project Management | 4 | 2 | 6 | 80 | 20 | | 50 |
| 6 | Applied | RI0CE41 0 8 | Project Work | 0 | 4 | 4 | | | 50 | 100 |
| 7 | Applied | RI0AM41 0 9 | Design of R.C. C. Structures | 3 | 2 | 5 | 80 | 20 | | 50 |
| 8 | Specialised | | Elective - I | 4 | 2 | 6 | 80 | 20 | 25 | 25 |
| 9 | Specialised | | Elective - II | 4 | 2 | 6 | 80 | 20 | 25 | 25 |
| | | | TOTAL | 50 | 22 | 52 | 640 | 160 | 150 | 450 |

TOTAL THEORY CREDITS : TOTAL THEORY MARKS 800
TOTAL PRACTICAL CREDITS: TOTAL NON THEORY MARKS 600

THEORY TO PRACTICAL CREDIT RATIO : 57 : 43
THEORY MARKS TO NON THEORY MARKS RATIO : 45

LINK DIAGRAM FOR CIVIL ENGINEERING



CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

PROGRAMME : DIPLOMA IN CIVIL ENGINEERING

• INDEX •

| 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 | | R10CE1101 | Office Automation & CAD | 28 |
| 09 | | R10ME1203 | Engineering Graphics Skill | 32 |
| 10 | | ALLIED COURSES | R10AM2101 | Engineering Mechanics |
| 11 | R10AM2102 | | Strength Of Materials | 38 |
| 12 | R10CE2103 | | Building Material & Workshop | 42 |
| 13 | CORE COURSES | R10CE3101 | Building Drawing | 46 |
| 14 | | R10CE3102 | Civil Engineering Drawing | 50 |
| 15 | | R10CE3103 | Building Constructions | 54 |
| 16 | | R10CE3104 | Building Services | 59 |
| 17 | | R10CE3105 | Construction Technology | 62 |
| 18 | | R10CE3106 | Surveying - I | 65 |
| 19 | | R10CE3107 | Surveying - II | 70 |
| 20 | | R10CE3108 | Hydraulics | 75 |
| 21 | | R10AM3109 | Theory of Structure | 78 |
| 22 | | R10AM3110 | Concrete Technology | 81 |
| 23 | | R10AM3111 | Geotechnical Engineering | 84 |

CUSROW WADIA INSTITUTE OF TECHNOLOGY, PUNE 1

PROGRAMME : DIPLOMA IN CIVIL ENGINEERING

• INDEX •

| SR.NO. | CATEGORY | COURSE CODE | COURSE TITLE | PAGE NO. | |
|--------|-----------------|---------------------|---------------------------------------------------|----------------------------------|-----|
| 24 | APPLIED COURSES | R10CE4101 | Railway, Bridge and Tunnel Engineering | 87 | |
| 25 | | R10CE4102 | Road Engineering | 91 | |
| 26 | | R10CE4103 | Public Health Engineering | 96 | |
| 27 | | R10CE4104 | Irrigation Engineering | 100 | |
| 28 | | R10CE4105 | Quantity Surveying | 103 | |
| 29 | | R10CE4106 | Civil Engineering Estimation, Valuation & Costing | 107 | |
| 30 | | R10CE4107 | Project Management | 111 | |
| 31 | | R10CE4108 | Project Work | 115 | |
| 32 | | R10CE4109 | Design of RCC Structures | 118 | |
| 33 | | R10CE4201 | Design of Steel Structures | 120 | |
| 34 | | SPECIALISED COURSES | R10CE5101 | Advanced Construction Techniques | 123 |
| 35 | | | R10CE5102 | Construction Management | 126 |
| 36 | | | R10CE5103 | Advance Surviving | 130 |
| 37 | R10CE5104 | | Township Planning | 136 | |
| 38 | R10AM5105 | | Prestressed Concrete | 139 | |
| 39 | R10AM5106 | | Advance Structural Design | 142 | |