

Department of Civil Engineering

Indian Institute of Technology Delhi

Revised curriculum for Master of Technology in Construction Technology and Management (CEC) programme

This document summarises the proposed revision in the curriculum of the Master of Technology in Construction Technology and Management (CEC) programme at Department of Civil Engineering, IIT Delhi.

The proposed revised programme is shown in the table below.

Table 1: Breakup of credit structure in the proposed M.Tech. programmes

	<i>Core (course)</i>	<i>Core (project)</i>	<i>Programme Elective</i>	<i>Total</i>
<i>Proposed</i>	16.5	21	16.5	54

Table 2: Semester-wise distribution of courses and credits in the proposed CEC M.Tech. programme (credits in brackets)

<i>Semester I (13.5 credits)</i>	<i>Semester II (13.5 credits)</i>
Construction Project Management (3) Quantitative Methods in Construction Management (3) Computational Laboratory for Constr. Management (1.5) Programme Elective I and II (6) Seminar in Construction Technology and Management I (0)	Construction Economics and Finance (3) Construction Practices and Equipments (3) Construction Contract Management (3) Programme Elective III (3) Seminar in Construction Technology and Management II (0)
<i>Semester III (15 credits)</i>	<i>Semester IV (12 credits)</i>
Major Project Part I (CEC) (9) Programme Electives IV and V (3 + 3)	Major Project Part II (CEC) (12)
<i>* Only for Civil Engineering background students</i> <i># Only for Electrical Engineering background students</i> <i>## Only for Mechanical Engineering background students</i>	

The proposed list of core courses for the students with Civil Engineering background are as listed below.

- CVL772 Construction Project Management (3 credits)
- CVL773 Quantitative Methods in Construction Management (3 credits)
- CVL774 Construction Contract Management (3 credits)
- CVL775 Construction Economics and Finance (3 credits)
- CVL776 Construction Practices and Equipment (3 credits)

- CVP772 Computational Laboratory for Constr. Management (1.5 credits)
- CVD772 Major Project Part-I (CEC) (9 credits)
- CVD773 Major Project Part-II (CEC) (12 credits)
- CVS771 Seminar in Construction Technology and Management I (0-0-2, Audit)
- CVS772 Seminar in Construction Technology and Management II (0-0-2, Audit)

The stream-wise compulsory electives for the programme are listed below.

- CVL771 Advanced Concrete Technology* (3 credits)
- EEL771 Power System Protection[#] (3 credits)
- ITL709 Maintenance Planning and Control^{##} (3 credits)

** For Civil Engineering background students*

For Electrical Engineering background students

For Mechanical Engineering background students

The proposed list of programme electives for the students with all backgrounds are as listed below.

- CVP771 Construction Technology Laboratory (1.5 credits)
- EELXXX Electrical Systems for Construction Industries
- MELXXX Industrial Engineering Systems (1-0-4, 3 credits)
- MEL754 Operations Planning and Control (3-0-0, 3 credits)
- MELXXX Logistics (3-0-0, 3 credits)
- MELXXX Quality Systems (3-0-0, 3 credits)
- MELXXX Reliability Engineering (3-0-0, 3 credits)
- MELXXX Service System Design (2-0-2, 3 credits)
- MELXXX Supply Chain Management (3-0-0, 3 credits)
- MELXXX Value Engineering and Life Cycle Costing (3-0-0, 3 credits)
- SML705 Human Resource Management Systems (1.5-0-0, 1.5 credits)
- SML822 International Business (3-0-0, 3 credits)

The proposed list of programme electives for the students with Civil Engineering background are as listed below.

- CVL702 Ground Improvement and Geosynthetics (3 credits)
- CVL777 Building Science (3 credits)
- CVL778 Building Services and Maintenance Management (3 credits)
- CVL765 Concrete Mechanics (3 credits)
- CVL871 Durability and Repair of Concrete Structures (3 credits)
- CVL779 Formwork for Concrete Structures (3 credits)
- CVL873 Fire Engineering and Design (3 credits)
- CVL872 Infrastructure Development and Management (3 credits)
- CVL874 Quality and Safety in Construction (3 credits)
- CVL875 Sustainable Materials and Green Buildings (3 credits)

- CVS771 Independent Study (3 credits)
- CVD771 Minor Project (3 credits)

The proposed list of programme electives for the CEC students with Electrical Engineering background is as below.

- EEL700 Linear Systems Theory (3-0-0, 3 credits)
- EEL712 Digital Communications (3-0-0, 3 credits)
- EEL750 Modelling of Electrical Machines (3-0-0, 3 credits)
- EEL751 Power Electronic Converters (3-0-0, 3 credits)
- EEL752 Electric Drive System (3-0-0, 3 credits)
- EEL753 Physical Phenomena in Electrical Machines (3-0-0, 3 credits)
- EEL754 Permanent Magnet Machines (3-0-0, 3 credits)
- EEL755 Variable Reluctance Machines (3-0-0, 3 credits)
- EEL756 Special Electrical Machines (3-0-0, 3 credits)
- EEL757 Energy Efficient Motors (3-0-0, 3 credits)
- EEL758 Power Quality (3-0-0, 3 credits)
- EEL759 Power Electronic Converters for Renewable Energy Systems (3-0-0, 3 credits)
- EEL760 Switched Mode Power Conversion (3-0-0, 3 credits)
- EEL761 Power Electronics for Utility Interface (3-0-0, 3 credits)
- EEL762 Intelligent Motor Controllers (3-0-0, 3 credits)
- EEL763 Advanced Electric Drives (3-0-0, 3 credits)
- EEL764 Electric Vehicles (3-0-0, 3 credits)
- EEL765 Smart Grid Technology (3-0-0, 3 credits)
- EEL766 Appliance Systems (3-0-0, 3 credits)
- EEL767 Mechatronics (3-0-0, 3 credits)
- EEL770 Power System Analysis (3-0-0, 3 credits)
- EEL772 Planning and operation of Smart grid (3-0-0, 3 credits)
- EEL773 High Voltage DC Transmission (3-0-0, 3 credits)
- EEL774 Flexible AC Transmission system (3-0-0, 3 credits)
- EEL775 Power System Dynamics and Control (3-0-0, 3 credits)
- EEL776 Power System Optimization (3-0-0, 3 credits)
- EEL777 Power System operation and control (3-0-0, 3 credits)
- EEL778 Dynamic Modelling And Control of Sustainable Energy Systems (3-0-0, 3 credits)
- EEL850 Digital Control of Power Electronics and Drive Systems (3-0-0, 3 credits)
- EEL851 Computer Aided Design of Electrical Machines (3-0-0, 3 credits)
- EEL852 Condition Monitoring of Electrical Machines (3-0-0, 3 credits)
- EEL853 Advanced Topics in Electrical Machines (3-0-0, 3 credits)
- EEL854 Selected Topics in Electrical Machines (3-0-0, 3 credits)
- EEL855 High Power Converters (3-0-0, 3 credits)

- EEL856 Computer Aided Design of Power Electronic Systems (3-0-0, 3 credits)
- EEL857 Advanced Topics in Power Electronics (3-0-0, 3 credits)
- EEL858 Selected Topics in Power Electronics (3-0-0, 3 credits)
- EEL859 Advanced Topics in Electric Drives (3-0-0, 3 credits)
- EEL860 Selected Topics in Electric Drives (3-0-0, 3 credits)
- EEL870 Restructured Power System (3-0-0, 3 credits)
- EEL871 Distribution System Operation and planning (3-0-0, 3 credits)
- EEL872 Selected Topics in Power System (3-0-0, 3 credits)
- EEL873 Power System Transient (3-0-0, 3 credits)
- EEL874 Power System Reliability (3-0-0, 3 credits)
- EEL875 Load and wind forecasting (3-0-0, 3 credits)
- EEP850 Electrical Machines Laboratory (0-0-3, 1.5 credits)
- EEP851 Power Electronics Laboratory (0-0-3, 1.5 credits)
- EEP852 Electrical Drives Laboratory (0-0-3, 1.5 credits)
- EEP853 DSP Based Control of Power Electronics and Drives Laboratory (0-0-3, 1.5 credits)
- EEP854 Electrical Machines CAD Laboratory (0-1-4, 3 credits)
- EEP855 Smart Grids Laboratory (0-1-4, 3 credits)
- EEP870 Power System Lab 1 (0-1-4, 3 credits)
- EEP871 Power System Lab 2 (0-1-4, 3 credits)
- ESL718 Power Generation, Transmission and Distribution (3-0-0, 3 credits)
- ESL740 Non-Conventional Sources of Energy (3-0-0, 3 credits)
- ESL732 Bioconversion and Processing of Waste (3-0-0, 3 credits)
- ESL738 Power System Planning & Operation (3-0-0, 3 credits)
- ESL736 Power from Renewables & Environmental Impacts (3-0-0, 3 credits)
- ESL768 Wind and Small Hydro Energy Systems (3-0-0, 3 credits)
- ESL770 Solar Energy Utilization (3-0-0, 3 credits)
- ESL734 Nuclear Energy (3-0-0, 3 credits)
- ESL870 Fusion Energy (3-0-0, 3 credits)
- ESL746 Hydrogen Energy (3-0-0, 3 credits)
- MELXXX Mechatronic Product Design (3-0-2, 4 credits)

The proposed list of programme electives for the CEC students with Mechanical Engineering background is as below. More courses will be added to this later.

- ITL752 Bulk Materials Handling (2-0-2, 3 credits)
- MELXXX Air Conditioning
- MELXXX Refrigeration and Air Conditioning Technologies
- MELXXX Quality Systems
- MELXXX Operations Planning and Control
- MELXXX Design and Metallurgy of Welded Joints
- MELXXX Welding Science and Technology

- MELXXX Refrigeration Systems and Components Design
- MELXXX Maintenance Management
- MELXXX Supply Chain Management
- MELXXX Value engineering and life cycle costing
- MELXXX Welding Science and Technology (3-0-2, 4 credits)
- MELXXX Advanced Machining Processes (3-0-0, 3 credits)
- MELXXX Advances in metal forming (3-0-0, 3 credits)
- MELXXX Automation in Manufacturing (3-0-2, 4 credits)
- MELXXX Computer Aided Manufacturing (3-0-2, 4 credits)
- MELXXX Casting Technology (3-0-0, 3 credits)
- MELXXX Design and Metallurgy of Welded Joints (3-0-2, 4 credits)
- MELXXX Injection Moulding and Mold Design (2-0-2, 3 credits)
- MELXXX Machining Processes and Analysis (3-0-2, 4 credits)
- MELXXX Mechatronic Product Design (3-0-2, 4 credits)
- MELXXX Metal Forming Analysis (3-0-2, 4 credits)
- MELXXX Processing and Mechanics of Composite Materials (3-0-2, 4 credits)
- MELXXX Surface Engineering (3-0-0, 3 credits)
- MELXXX Manufacturing Informatics (3-1-0, 4 credits)