

# MUJ Faculty of Engineering: BTech Civil Engineering (160 Credits)

## New Curriculum Semester-wise Schema

First Semester		
Code	Course Name	Cr
CY10XX	Engineering Chemistry + Lab	3
MA10XX	Mathematics 1	3
EC10XX	Basic Electrical Engineering	3
CV10XX	Essentials of Civil Engineering	3
CE10XX	Biology for Engineers	2
CS10XX	Computer Programming+ Lab	4
XX10XX	Arduino, IoT Fab Lab	1
XXXXXX	Constitution of India	1
<b>First Semester Credits</b>		<b>20</b>

Second Semester		
Code	Course Name	Cr
PY1001	Engineering Physics + Lab	4
MA20XX	Mathematics 2	3
	Environmental Studies	2
	Basic Mechanical Engineering	3
	Basic Electronics	3
	Creativity & Innovation Lab	2
	Engineering Graphics	1
	Technical Writing Clinic 1	1
DA10XX	Universal Human Values	1
<b>Second Semester Credits</b>		<b>20</b>

Third Semester		
Code	Course Name	Cr
CY10XX	Statistics & Probability	3
XX21XX	Department Core 1	3
XX21XX	Department Core 2	3
XX21XX	Department Core 3	3
	Department Core 4	3
XX21XX	Economics	3
XX31XX	University Elective 1	3
	Lab 1	1
	Lab 2	1
	Self-Study or Project	1
<b>Third Semester Credits</b>		<b>24</b>

Fourth Semester		
Code	Course Name	Cr
XX22XX	Management	3
XX22XX	Department Core 5	4
XX22XX	Department Core 6	4
XX22XX	Flexi Core 1	4
XX41XX	Program Elective 1	3
XX41XX	University Elective 2	3
	Lab 3	1
	Lab 4	1
	Project Based Learning 1	1
<b>Fourth Semester Credits</b>		<b>24</b>

Fifth Semester		
Code	Course Name	Cr
	Department Core 7	4
	Department Core 8	4
	Flexi Core 2	4
	Program Elective 2	3
	Program Elective 3	3
	University Elective 3	3
	Lab 5	1
	Lab 6	1
	Project Based Learning 2	1
<b>Fifth Semester Credits</b>		<b>24</b>

Sixth Semester		
Code	Course Name	Cr
	Department Core 9	4
	Flexi Core 3	4
	Program Elective 4	3
	Program Elective 5	3
	University Elective 4	3
	Technical Writing Clinic 2	1
	Lab 7	1
	Lab 8	1
	Res, Innov & Entrepreneurship	3
<b>Sixth Semester Credits</b>		<b>23</b>

Seventh Semester		
Code	Course Name	Cr
	University Elective 5	3
	Program Elective 6	3
	Program Elective 7	3
	Program Elec 8 / Univ Elect 6	3
	Internship (Industry/ Research)	1
<b>Seventh Semester Credits</b>		<b>13</b>

Eighth Semester		
Code	Course Name	Cr
	Major Project	12
<b>Eighth Semester Credits</b>		<b>12</b>

## **Proposed List of Courses offered by the Department of Civil Engineering**

### **Proposed Department Core Courses**

1. Building Materials & Construction Technology
2. Surveying + Surveying Practice
3. Fluid Mechanics
4. Strength of Materials
5. Structural Analysis
6. Environmental Engineering
7. Geotechnical Engineering
8. Transportation Engineering
9. Water Resources Engineering

### **Proposed Flexi- Courses**

1. FC1: Geomatics
2. FC1: Construction Project Management
3. FC1: Data Structures and Algorithms
4. FC2: Design of Reinforced Concrete Structures
5. FC2: Solid and Liquid Waste Management
6. FC2: Object Oriented Programming
7. FC3: Applied Geotechnical Engineering
8. FC3: Design of Steel Structures

### **Proposed Department Program Electives**

1. Hydraulics and Hydraulic Machines
2. Computational Hydraulics
3. Ground Improvement Techniques

4. Rock Mechanics and Underground Excavation
5. Urban Transportation Planning
6. Traffic Systems and Engineering
7. Hydrological Analysis
8. Waste Resource Planning and management

### **Focus Areas offered by Department of Civil Engineering**

#### **Focus Area 1: Structural Engineering**

1. Concrete Technology (PE1) (IEC)
2. Advanced Concrete Technology (PE2)
3. Advanced Design of Reinforced Concrete Structures (PE4)
4. Repair and Rehabilitation of Structures (PE3)
5. Finite Element Analysis (PE5)
6. Earthquake Resistant Design of Structures (PE6)
7. Design of Pre-stressed Concrete Structures (PE7)
8. Bridge Engineering (PE8)

#### **Focus Area 2: Environmental Engineering**

1. Environmental Impact Assessment (PE 2) (IEC)
2. Air Pollution and Control (PE2)
3. Solid and Hazardous Waste Management (PE3)
4. Industrial Wastewater Treatment (PE4)

5. Sanitation Technology (PE7)

#### **Focus Area 3: Geoinformatics**

1. Remote Sensing and GIS (PE 1)
2. Photogrammetry (PE 3)
3. Geographic Information System (PE 5)
4. Programming for GIS (PE 6)

#### **Focus Area 4: Construction Management**

1. Lean Construction Technologies (PE 2)
2. Construction Equipment Management (PE 3)
3. Construction Laws and Arbitration (PE 4)
4. Valuation (PE 5) (IEC)
5. Contract Management (PE 6)
6. Building Information Modelling (PE 7) (IEC)
7. Professional Practice (PE 8)

#### **Proposed Department University Electives.**

1. Environmental Impact Assessment
2. Building Planning
3. Geographical Information System
4. Environmental Management
5. Solid Waste Management
6. Rural Water Supply and Sanitation
7. Remote Sensing and GIS
8. Integrated Waste Management for a Smart City
9. Introduction to Multimodal Urban Transportation Systems