

Indian Institute of Technology, Kanpur

New Course Proposal

1. Course No: CE642*

2. Course Title: Laboratory Course in Infrastructure Engineering and Management

3. Per Week: Lectures: 1.5 (L), Tutorial: 0 (T), Laboratory: 4.5 (P), Additional Hours: 0
Credits: (3*L+0*T +P+A): 9 credits

Course will be conducted in two 3-hour slots: Slot 1 (1.5hr Lecture + 1.5hr Lab) + Slot 2 (3hrs Lab)

4. Duration of Course: Full Semester Course

5. Proposing Department: Civil Engineering

6. Proposing instructor: Chirag Kothari, Prof. Sudhir Misra

Level of the course (students who can take this course): PhD and Masters

***Note:** This proposal aims to revise the content of the existing course titled Laboratory Course in Infrastructure Engineering and Management (CE642).

Objective

The objective of this course is to provide hands-on experience for students in the different area of Infrastructure Engineering and Management. The laboratory course will focus on four broad areas: a) Project Management Software: Computational exercises relevant to project management and controls (MSP, Primavera, AutoCAD). b) Quantity Estimation and Planning: Quantity estimation & take-off, Bar bending schedule, planning & design of formwork. c) Productivity Measurement and Assessment: Productivity calculation & workforce estimation, Construction equipment and machinery estimation. d) Construction Engineering: Site layout planning, Quality and safety planning and relevant tools, Applications and need of Building Information Modelling (BIM) in Construction projects, Experiments related to Repair and Rehabilitation of Concrete

Content[#]

Broad Areas	Topics	Venue	Lecture hours	Lab hours
Quantity estimation & planning	Quantity estimation & take-off, Bar bending schedule	IEM Lab (ESB-1 707)	3	18
Productivity measurement and assessment	Productivity calculation & workforce estimation, Introduction to construction equipment and machinery; Plant & machinery estimation.	IEM Lab (ESB-1 707)	2	12

Project Management (Software-based)	Utilising Project management software to develop baselines schedules, preparing financing plan, develop resource plan, resource levelling and allocation, progress reporting, updating and revising schedules	Varun Lab (WLE)	4	24
Construction Engineering	<p>Site layout planning</p> <p>Planning & design of formwork – concept of cycle time etc.</p> <p>Safety and Quality: Quality tools, quality planning, safety equipment, PPEs, safety training.</p> <p>Safety and Quality: Quality tools, quality planning, safety equipment, PPEs, safety training.</p> <p>Experiments related to Repair and Rehabilitation of Concrete: Advanced concrete construction; Non-destructive testing & Non-destructive examination.</p>	IEM Lab (ESB-1 707)	4	24
		Total Hours	13	78

#The above breakdown of lab exercises is indicative. There might be slight deviation depending on the availability of resources in the IEM Lab.

References and suggested reading

Instruction in lectures will largely focus on the science and engineering that is in the background of a particular laboratory exercise. Appropriate reading material (guides, manuals etc.) will be provided to students before they carry out the exercises.

Dated: 27th September 2024

Proposer: Chirag Kothari & Sudhir Misra

DPGC Convener:

The course is approved/not approved.

Chairman, SPGC
Dated: