Indian Institute of Technology, Kanpur
New Course Proposal

1. Course No: CEXXX — 716

2. Course Title: Project Management and Control

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

Duration of Course: Full Semester Course

4. Proposing Department: Civil Engineering

5. Proposing instructor: Chirag Kothari

Level of the course (students who can take this course): PhD, Masters, and UG 3rd or 4th year.

6. Course Description

(A) Objectives:

A construction project requires significant investment in terms of time, money, and resources. This necessitates a need for effective construction project management skills that facilitate completing the projects within the stipulated time and budget limits while adhering to safety and quality standards. This course aims to equip students with the skills required for planning, scheduling, budgeting, coordinating, and supervising large-scale projects. Specific objectives include:

- To introduce students to basic project management concepts with a focus on applications in Civil engineering.
- To expose students to complexities involved in managing large-scale construction projects and provide them with the right tools and methods to manage these complexities.
- To provide students with a platform to sharpen the skills learned by applying these concepts on a real-life construction project.

(B) Course contents

Sr. No.	Broad Title	Topics	No. of Lectures*
1	Introduction to Project Management	What is a project? How are projects organized? Project life cycle and stakeholders Types of project plans – time/schedule, cost, material, plant and machinery, money	3

2	Project scheduling – Time management	Time management – Overview Activities, durations, and work breakdown structure Quantity estimation Network diagrams Fundamentals of scheduling Development of baseline schedules, Gantt chart, Critical path method, Precedence diagram method, Earned value method	12
3	Cost management	Preparing cost estimates Determining the working capital required for a project Project financing plan	4
3	Resource management	Material plan, Plant & machinery (P&M) plan, Workforce plan Resource scheduling, resource levelling, and schedule crashing Impact of levelling & crashing on direct and indirect costs; Time-cost trade-off	10
4	Project monitoring and control	Progress monitoring basics, daily progress reports, standard progress reports, data requirements	2
5	Updating and revising project schedules	Need for revising project plans, Revising project plans.	2
6	Uncertainty in project schedules	Concept of uncertainty Program Evaluation and Review Technique (PERT)	2
7	Construction contract evaluation with respect to Project Controls - Identifying construction claims	Delay analysis. Identifying construction claims. Delay Quantification Methods & Techniques	4

*50-minute lecture each, total of 39 lectures

(C) Prerequisites, if any: Instructor consent

(D) Short summary for including in the Courses of Study Booklet:

The course starts with an overview of project management discussing what is a project, who are the project stakeholders, the role of the project manager, the planning stages, and organizational structure. With this background and emphasis on construction projects, the course dives into introducing Construction project management, fundamentals of project planning and scheduling – Work breakdown structure (WBS), Network diagrams, Critical path method (CPM), Program evaluation and review technique (PERT), Precedence diagramming method (PDM), Earned Value Method (EVM) are discussed. Other aspects of project management such as cost management, resource management, quality management, and stakeholder management are also covered. Resource management on construction projects is discussed in detail (includes resource planning, resource allocation, resource levelling, and crashing of networks). Further, the importance of monitoring and control on construction projects is discussed including progress reporting requirements and methods for revising project plans. Lastly, construction contracts are reviewed through a project controls lens to learn how to perform delay analysis and identify construction claims.

7) Recommended textbooks/references

- James O'Brien and Fredric L. Plotnick, *"CPM in Construction Management"*, 8th edition, McGraw Hill
- Jha K.N., *"Construction Project Management- theory and practice"*, 2nd edition
- Srinath L.S., *"PERT and CPM, Principles and applications"*, 3rd edition
- Saleh Mubarak, *"Construction project scheduling and control"*, 2nd edition

8) Other remarks: This full course will replace the existing modular course offered by the Civil engineering department - CE641a: Project Management)

Dated: 17th April 2024

Proposer: Chirag Kothari

DPGC Convener: Chinmoy Kolay

The course is approved/not approved.

Chairman, SPGC
Dated:

PGDesk-IITK-DOAA

From: DPGC, CE <dpgcce@iitk.ac.in>
Sent: 22 May 2024 09:06
To: spgc@iitk.ac.in
Cc: pgdesk@iitk.ac.in; 'Chirag Kothari'
Subject: FW: New course - Project Management and Control from CE

Dear Prof. Mohapatra:
The proposal for a new course on Project Management and Control from CE was circulated to acadstaff on 28 April. We have not received any comments to date. Therefore, I request you to consider the proposal for further processing.
Thank you,
Chinmoy

From: Chirag Kothari <ckothari@iitk.ac.in>
Sent: Wednesday, May 22, 2024 8:18 AM
To: DPGC, CE <dpgcce@iitk.ac.in>
Subject: Re: New course - Project Management and Control from CE

Dear DPGC,

I have not received any comments/feedback on this course request. Can you please take it forward.

Best regards,
Chirag Kothari

From: DPGC, CE <dpgcce@iitk.ac.in>
Sent: Sunday, April 28, 2024 4:35:56 PM
To: acadstaff@lists.iitk.ac.in <acadstaff@lists.iitk.ac.in>
Cc: Chirag Kothari <ckothari@iitk.ac.in>; courses@iitk.ac.in <courses@iitk.ac.in>; pgdesk@iitk.ac.in <pgdesk@iitk.ac.in>; 'Kjit' <kjit@iitk.ac.in>
Subject: New course - Project Management and Control from CE

Dear All:
A proposal for a new course on Project Management and Control from the CE Dept. is available at https://iitk.ac.in/doaa/data/NewCourses/Course-proposal-CEXXX-Project-management-and-control.pdf.
Please send your comments, if any, by 20 May 2024 to ckothari@iitk.ac.in with a copy to dpgcce@iitk.ac.in.
Thank you,
Chinmoy

Chinmoy Kolay, Ph.D.
Assistant Professor & Convener, DPGC
Department of Civil Engineering
Indian Institute of Technology Kanpur
Kanpur 208016, India
Email: ckolay@iitk.ac.in

CE

Scan/532
06/06/24

INDIAN INSTITUTE OF TECHNOLOGY KANPUR
POSTGRADUATE OFFICE

No. A(P)/IITK/course approval/
June 5, 2024

The Convener, DPGC
Departments of CE/SEE/PHY
IIT Kanpur

I am directed to communicate the concurrence of the SPGC (2023-24) in its 9th meeting held on 28/05/2024 for the approval of new PG course proposal. After detailed discussion the following courses were approved.

Course No	Title	Credits	Instructor	SPGC /Decision
CE716	Project Management and Control	3-0-0-0-9	Dr. Chirag Kothari	Approved
CE718	Water resources systems analysis	3-0-0-0-9	Dr. Tushar Apurv	Approved
CE719	Hydrometeorology	3-0-0-0-9	Dr. Tushar Apurv	Approved
SEE631	Sustainable Forest Management	3-0-0-0-9	Dr. Ashish Garg	Approved
PHY685	Introduction To Quantum Field Theory	3-0-0-0-11	Dr. Arjun Bagchi	Approved

Joint Registrar
Academic Affairs

CC: OARS (DOAA Office) For necessary action

MINUTES
FOR THE 9th MEETING OF THE SENATE POSTGRADUATE COMMITTEE (2023-24) TO BE HELD ON May 28, 2024 (TUESDAY) AT 02:00P.M.
DOAA CONFERENCE ROOM (208), ACADEMIC AFFAIRS BUILDING

Members present:

Prof(s): P M Mohite (AE), Vishal Agarwal (CHE), Chinmoy Koley (CE), Ark Verma (CGS), Abheejeet Mohapatra (EE), T H Syed (ES), Feroz Hassan (HSS), Amit Shukla (DoMS), Santanu De (ME), Niraj Chawake in place of Sudhanshu S Singh (MSE), Subhajit Dutta (MATH), Laltu Chandra (SEE), Sagar Chakrabarty (PHY), Sharvari Nadkarni Ghosh (SPASE), Piyush Rai (CSE).

Members Absent: Prof(s), Suresh Kumar (BSBE), Ashis Kumar Patra (CHM), J Ramkumar (DES), Shilpi Gupta (PSE), Vasudha Jain (ECO), Sri Sivakumar (MSP), Pankaj Wahi (NET)

Student representative:

Parthadhwaj Konduparty (22106009), Shivam Nigam (19112264), Harsha Prasad (21106270), Kartik Rout(20218267),

Item requiring SPGC Approval:

a) **Conversion from MSR/MTech to PhD Program:**

S.No	Roll No	Name	Dept	Prog	Supervisor and DPGC Recommendation	SPGC Recommendation/Decision
01-	22101403	Anil S Karthik	AE	MSR	Recommended	Approved to be reported to Senate
02-	22104065	Nilesh Pandey	EE	MTech	Recommended	Approved to be reported to Senate
03-	22118003	Aditya Gautam	BSBE	MTech	Recommended	Approved to be reported to Senate
04-	22101058	Sai Rohith Thaviti	AE	MTech	Recommended	Approved to be reported to Senate

*Students has completed course and CPI requirement as per clause 4.6 of PG Manual

b) **New course approval:-**

Course No	Title	Credits	Instructor	SPGC /Decision
CE716	Project Management and Control	3-0-0-0-9	Dr. Chirag Kothari	Approved
CE718	Water resources systems analysis	3-0-0-0-9	Dr. Tushar Apurv	Approved
CE719	Hydrometeorology	3-0-0-0-9	Dr. Tushar Apurv	Approved
SEE631	Sustainable Forest Management	3-0-0-0-9	Dr. Ashish Garg	Approved
PHY685	Introduction To Quantum Field Theory	3-0-0-0-11	Dr. Arjun Bagchi	Approved

Items requiring SPGC recommendation for Senate considerations:

a) **Conversion Programme Full Time to Part Time-recommended**

S.No	Roll No	Name	Dept	Prog	Supervisor and DPGC Recommendation	SPGC Recommendation /Decision
1	20227263	Soumyajit Bhunia	ECO	PhD	Recommended	Recommended
2	19104275	Rahul Bapusaheb Kodag	EE	PhD	Recommended	Recommended
3	17214263	Sanjeev Newar	DoMS	PhD	Recommended	Recommended subject to submission of a proper thesis plan by student, duly approved by the thesis supervisor and DPGC

Abheejeet Mohapatra 31/5/24