

CEE4411 Construction Engineering and Emerging Technologies (2011, 2nd semester)

Course Contents: This course is designed to introduce students traditional construction methods and emerging technologies for civil engineering. Such subjects as bridge construction, tunnel construction, earth moving, construction equipment, construction estimation, earned value method, building information modeling, and sensing and automation technologies are discussed.

Course Objectives: To be determined by the class and **refined as the course evolves.**

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Lectures: Tue. 11:00 – 11:50 a.m. ; Thu. 2:00 – 3:50 a.m. (Room: B043)

Website: When announced, class materials can be downloaded from
<http://aim.yonsei.ac.kr> , <http://web.yonsei.ac.kr/coral>

Term Project: This project is intended to give students opportunities to devise new methodologies to improve existing construction practices. Each group is composed of three or four members. Students are encouraged to develop their own topics, but potential topics will also be provided by the instructor on request.

The report needs to include:

- Introduction: background, objectives, and scope
- Literature review
- Detailed methodology and body of work
- Findings and conclusions
- Recommendations
- Acknowledgements
- References

The report will be presented to the class in the last week of the semester. Grades will be based on content and presentation.

Text: The following texts will be used as a reference in the course. But there is no required text book:

- Information technology for construction managers, architects and engineers, 1st Edition by Trefor Williams, Publisher: Delmar Cengage Learning, ISBN 1418039586
- Construction Management, 3rd Edition by Daniel W. Halpin, ISBN 0471661732
- Construction Methods and Management, 7/E, S.W. Nunnally, ISBN978013171658
- Construction Machinery, by E. Budny, M Chlosta, H.J. Meyer and M. J. Skibniewski (Chapter 14 of "Springer Handbook of Mechanical Engineering", PDF is available)

Course Schedule: A tentative schedule of topics to be covered is attached.

Grading: Grade components will be weighted as follows in computation of the final course grade:

Homework	25%
Midterm exam	25%
Term project	50%

Policies:

Academic Dishonesty

- The University's regulations (Code of Student Behaviour) apply.
- No plagiarism; No cheating.

Homework

- Homework should be legible and well organized to receive full credit.

Class Participation and Attendance

- As the University's regulations stated, students will serve their interests best by regular attendance. Those who choose not to attend must assume whatever risks are involved.

Class Schedule

Date	Topic
09-01 - 09-07	Introduction of construction engineering and emerging technologies
09-08 - 09-14	Bridge construction methods I;
09-15 - 09-21	Bridge construction methods II; industry guest lecture I
09-22 - 09-28	Industry guest lecture II; tunnel construction methods I
09-29 - 10-05	Tunnel construction methods II
10-06 - 10-12	Construction estimating & earned value method
10-13 - 10-19	Building information modeling (BIM)
10-20 - 10-26	Midterm exam
10-27 - 11-02	Earthmoving materials & operations
11-03 - 11-09	Construction equipment I (Excavating & Lifting)
11-10 - 11-16	Construction equipment II (Loading & Hauling)
11-17 - 11-23	Overview on construction automation and robot
11-24 - 11-30	Needs assessment for construction automation
12-01 - 12-07	Introduction to Robotics Student Presentation (Cranes) : 1) Mobile cranes 2) Portable Cranes 3) Tower Cranes I 4) Tower Cranes II
12-08 - 12-14	Student Presentation (Automation) : 5) Automation of Earthwork 6) Concrete work 7) Masonry work, Cranes, Material Handling 8) Finishing Work 9) Road work, Tunneling 10) Demolition Work, etc Contour Crafting
12-15 - 12-21	Term project presentation