Fully Online Courses. Available to UCLA and Non-UCLA Students, Professionals

Session A8: Meets from June 21 – August 13, 2021: Duration 8 weeks

C&EE M20. Introduction to Computer Programming with MATLAB

Instructor: Gao, E.X.   Email: edwardxianggao@gmail.com

(Same as Mechanical and Aerospace Engineering M20) Lecture, two hours; discussion, two hours; laboratory, two hours; outside study, six hours. Requisite: Mathematics 33A. Fundamentals of computer programming taught in the context of MATLAB computing environment. Basic data types and control structures. Input/output. Functions. Data visualization. MATLAB-based data structures. Development of efficient codes. Introduction to object-oriented programming. Examples and exercises from engineering, mathematics, and physical sciences. Letter grading.

C&EE 103. Applied Numerical Computing & Modeling in Civil and Env. Engineering

Instructor: Ruter, M.   Email: marcus.ruter@ucla.edu

Lecture, four hours; discussion, two hours; outside study, six hours. Requisites: course M20 (or Computer Science 31), Mathematics 33B or Mechanical and Aerospace Engineering 82 (either may be taken concurrently). Introduction to numerical computing with specific applications in civil and environmental engineering. Topics include error and computer arithmetic, root finding, curve fitting, numerical integration and differentiation, solution of systems of linear and nonlinear equations, numerical solution of ordinary and partial differential equations. Letter grading.

C&EE 110. Introduction to Probability & Statistics for Engineers

Instructor: Burton, H.J.   Email: hvburton@ucla.edu

Lecture, four hours; discussion, one hour (when scheduled); outside study, seven hours. Requisites: Mathematics 32A, 33A. Recommended: course M20. Introduction to fundamental concepts and applications of probability and statistics in civil engineering, with a focus on how these concepts are used in experimental design and sampling, data analysis, risk and reliability analysis, and project design under uncertainty. Topics include basic probability concepts, random variables and analytical probability distributions, functions of random variables, estimating parameters from observational data, regression, hypothesis testing, and Bayesian concepts. Letter grading.

C&EE 148. Wood & Timber Design

Instructor: Ahlberg, Eric   Email: eahlberg@ucla.edu

Lecture, four hours; discussion, two hours; outside study, six hours. Recommended requisites: courses 108, 135A. Properties and behavior of wood and wood products; analysis and design of wood and timber structural members subjected to flexural, shear, and axial stresses; connections, fasteners, and detailing; and light-framed wood shear walls and diaphragms. Students will understand the basic properties and behavior of wood. Students will also understand wood material design methods based on the National Design Specification for Wood and ASCE-7, connection and lateral resistance design. Letter grading.

Fully Online Courses. Available to UCLA, Non-UCLA Students, and Professionals

Session A8: Meets from June 21 – August 13, 2021: Duration 8 weeks

C&EE 188, Lecture 880. Introduction to Virtual Design and Construction

Instructor: Reames, Lucas   Email: lucas_reames@trimble.com

This course will provide students with a foundational understanding of Virtual Design and Construction (VDC) principles. Participants will learn how VDC can be used to solve current industry-wide challenges related to project delays, cost overruns and risks to the quality-of-work. The course will focus on workflows and techniques used by various stakeholders, including planners, designers, engineers, builders and facilities managers. New business models, including Integrated Project Delivery (IPD) and technologies, such as Artificial Intelligence (AI), will be used to illustrate areas for future growth and advanced uses of Virtual Design and Construction.

C&EE 188, Lecture 881. Building Information Modeling and Execution Planning

Instructor: Aparicio, German   Email: german_aparicio@trimble.com

It is becoming increasingly difficult to keep up with changing needs of the design and construction of complex building and infrastructural projects. Together Building Information Modeling (BIM) and Virtual Design and Construction (VDC) practices bring the ability to better manage the complexities and risk of a project, drive performance and efficiencies before a project is realized. This course will explore topics related to Building Information Modeling, Virtual Design and Construction Technologies and Execution Planning. In this course, students will gain knowledge and insight into the use of BIM Software, Best Practices and Standards used by industry worldwide.

C&EE 188, Lecture 882. Advanced Construction Engineering & Management

Instructor: Tokdemir, Onur   Email: Tokdemir@gmail.com

The goal for this course is for students to learn the application of project planning techniques through the use of digital technologies, including Building Information Modelling (Autodesk Navisworks), Scheduling (Oracle Primavera) and Artificial Intelligence. Project scheduling, forecasting, communications required for project cost and scheduling control will be covered. The study of various tools and techniques for construction management information systems, resource planning, quality management, future of construction management will also be discussed.