

**University Of California, Berkeley
Department of Mechanical Engineering**

ME 160 – Ocean Engineering Seminar, 2 Units

Undergraduate Course

Syllabus

CATALOG DESCRIPTION:

Lectures on new developments in ocean, offshore, and arctic engineering.

COURSE PREREQUISITES:

None.

TEXTBOOK(S) AND/OR OTHER REQUIRED MATERIAL:

None.

COURSE OBJECTIVES:

To provide exposure of the field of ocean engineering, arctic engineering and related subject areas to students at undergraduate level with intention to show the broad and interdisciplinary nature of this field, particularly recent or new developments.

DESIRED COURSE OUTCOMES

Students will learn of new developments in ocean, offshore, and arctic engineering, connecting much of what is learned in other courses to practical applications and active research topics.

TOPICS COVERED:

Speakers are to be arranged by the engineering faculty, coordinated by an instructor in charge with volunteered faculty hosts for seminars. Topics can fall into the context of: ocean processes, ocean systems, machines operating in the ocean, aspects of engineering, scientific, marketing, or economic issues of the above. Ocean can be taken as the physical environment of deep oceans, estuary, near-shore, arctic and possibly the meteorological ocean. Invited speakers will be hosted by a faculty member of the College to foster faculty and student interests in new development in research and engineering issues.

CLASS/LABORATORY SCHEDULE:

15 weeks - 2 hours of lecture per week & time to prepare report

CONTRIBUTION OF THE COURSE TO MEETING THE PROFESSIONAL COMPONENT

Enables students to see talks by leading experts from academia and industry. To inspire these students interested in ocean engineering and fluid dynamics. The seminars themselves with top quality invited speakers from

across the country will hopefully help ignite a more intense passion for learning. Having these students attend this E201 seminar-series can only benefit them, and assist us as we try to encourage them in their studies.

RELATIONSHIP OF THE COURSE TO ABET PROGRAM OUTCOMES

- (f) an understanding of professional and ethical responsibility
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (i) a recognition of the need for, and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues

ASSESSMENT OF STUDENT PROGRESS TOWARD COURSE OBJECTIVES

Attendance: 50% (must attend 75% of the seminars to pass)

Report: 50% (submission of proper report required to pass)

I.e. to pass, must both submit a proper report and attend 75% of seminars.

Report Details:

- Minimum length will be 4 pages. It must summarize at least 2/3 of the seminar talks (same as minimum attendance requirements).
- Summaries must explain what the presented work was about, what was the presenter's discovery, how/if it relates to other engineering topics the student has encountered.
- Point of report is to show student paid attention, thought about what was said at the seminar and learned from the seminar talks.
- Report assigned from start (1st week) of semester and due Monday of Final Exam Week.

SAMPLE OF WEEKLY AGENDA:

Spring semester, every Friday 2-4pm, different OE talk. Example of spring 2018 schedule:

Date Speaker (Affiliation) "Title"

Jan. 20: *Visit-Day & Open Lab Tour: (Host: Ocean Group)*

Jan. 26: *Prof. Ronald W. Yeung, UC Berkeley, "Ocean Renewable Energy - Modeling & Efficiency" (Host: Prof. S. Mäkiharju)*

Feb. 2: *Dr. Jelena Vidic-Perunovic (Doris Inc., Houston) "Engineering Advanced Marine Systems: Challenges Imposed by Emergent Structural Behavior" (host: Prof. R. Alam)*

Feb. 9: *Antoine Peiffer (Principle Power Inc.), "WindFloat, enabling a paradigm shift for the renewable energy market in California" (host: Prof. R. W. Yeung)*

Feb. 16: *Prof. Olivier Coutier-Delgousha (ENSAM & Virginia Tech.), "Cavitation & bubbles: investigation of the physical mechanisms by joint experimental and numerical approaches." (host: Prof. S. Mäkiharju)*

Feb. 23: *Prof. Evan Variano (UC Berkeley) "Biased motion of ellipsoidal particles in turbulent suspensions, including active particles." (host: Prof. S. Mäkiharju)*

Mar. 2: *Prof. David R. Dowling (U. of Michigan) "Out-of-Band Underwater Acoustics" (host: Prof. S. Mäkiharju)*

Mar. 9: *Prof. Kevin Maki (U. of Michigan), "Prediction of Ship Structural Response when Operating in Extreme Seas" (host: Prof. S. Mäkiharju)*

Mar. 16: *Prof. Carolyn Judge (U.S. Naval Academy), "Model Testing of High-Speed Planing Craft" (host: Prof. S. Mäkiharju)*

Mar. 23: *Chris Willert, (DLR) "High-Speed Particle Image Velocimetry for the Efficient Measurement of*

Turbulence Statistics: apg boundary layer piv” (host: Prof. S. Mäkiharju)

Mar. 30: Spring Recess week

April 6: TBA

April 13: TBA

April 20: Prof. Ali Mani (Stanford University) “TBD” (host: Prof. S. Mäkiharju)

April 27: Dr. Nimish Pujara (UC Berkeley) “TBD” (host: Prof. S. Mäkiharju)

May 4: RRR Week (no seminar)

ROOMSHARE INFORMATION:

This course will be room shared with Engineering 201.

PERSON(S) WHO PREPARED THIS DESCRIPTION

Asst. Prof. Simo A. Mäkiharju & Assc.Prof. Reza M. Alam,
2/27/2018

ABBREVIATED TRANSCRIPT TITLE (19 SPACES MAXIMUM): OCEAN ENGR SEMINAR

TIE CODE: SEM

GRADING: P/NP

SEMESTER OFFERED: Spring

COURSES THAT WILL RESTRICT CREDIT:

INSTRUCTORS: S.A. Mäkiharju, and R. Alam (host the seminar series)

DURATION OF COURSE: 14 Weeks

EST. TOTAL NUMBER OF REQUIRED HRS OF STUDENT WORK PER WEEK: Varies

IS COURSE REPEATABLE FOR CREDIT? Yes

CROSSLIST: None