School of Civil and Environmental Engineering

Term 1, 2020

CVEN9640 COASTAL ENGINEERING (distance mode)

COURSE DETAILS

Units of Credit	6
Contact hours	4 hours per week online (generally 2 - 3 hours presentation of new concepts & materials, followed by case studies, practice exercises, etc)
Distance Delivery	All course and assignment materials, plus weekly videos (viewable in own time) are distributed online via Moodle. **IT IS ESSENTIAL THAT ALL STUDENTS REGULARLY ACCESS THEIR OFFICIAL UNSW EMAIL ACCOUNT THROUGHOUT THE SEMESTER FOR ADDITIONAL INFORMATION AND COURSE UPDATES**
Course Coordinator and Co-Lecturer	Professor Ian Turner email: ian.turner@unsw.edu.au office: room 302, Civil & Environmental Engineering Building phone: 80719800 (Water Research Laboratory, Manly Vale)
Co-Lecturer	Dr Kristen Splinter email: k.splinter@unsw.edu.au office: room 313, Civil & Environmental Engineering Building phone: 80719845 (Water Research Laboratory, Manly Vale)

INFORMATION ABOUT THE COURSE

Note that this course is taught in conjunction with the on-campus postgraduate course CVEN9640

HANDBOOK DESCRIPTION

See link to virtual handbook:

http://www.handbook.unsw.edu.au/postgraduate/courses/2020/CVEN9640.html

OBJECTIVES

This course aims to develop an appreciation of theory of periodic waves in coastal waters, wave growth, refraction, diffraction, shoaling and breaking processes, and to introduce aspects of the measurement, analysis and prediction of waves. Coastal and beach processes are introduced, including tides, storms, currents and elevated water levels, beach morphology, coastal hazards and onshore/alongshore sediment transport. The course will also provide students with theory of wave forces on coastal and ocean structures, with hands-on application to practical engineering design of breakwaters, seawalls, and a range of other marine structures.

List of programme attributes:

- An in-depth engagement with the relevant disciplinary knowledge in its inter-disciplinary context
- Capacity for analytical and critical thinking and for creative problem solving
- Ability to engage independent and reflective learning
- Information literacy
- Skills for collaborative and multi-disciplinary work
- A respect for ethical practice and social responsibility
- Skills for effective communication

TEACHING STRATEGIES

Private Study	• Review lecture material and textbook • Do set problems and assignments • Reflect on class problems and assignments • Download materials from Moodle
Recorded Lectures	• Find out what you must learn • Case studies • Follow worked examples • Hear announcements on course changes
Practice Exercises	• Be guided by Lecturer/Demonstrator • Practice solving set problems • Ask questions
Assessments **(hand in assignments, exam)**	• Demonstrate your knowledge and skills • Demonstrate higher understanding and problem solving
Field Trip	• Site inspections, to set studies in context

Please note that all lecture and other materials for this course are distributed electronically via Moodle. All communication with distance learning (off-campus) students through the Trimester will be via official UNSW email account. Weekly on-campus lectures will be recorded each week and made available via Moodle.

EXPECTED LEARNING OUTCOMES

At the end of this course, students should be familiar with the coastal engineering approach to wave measurement, analysis, growth and propagation from deep to shallow water; have gained an understanding of beach morphology, coastal hazards and sediment onshore/offshore transport; and developed competence in applying standard coastal engineering approach to calculating wave and current forces on coastal and ocean structures with particular attention to practical performance of breakwaters and seawalls, piles, floating marine units, and solid, slatted or partial depth vertical walls.

This course is designed to address the learning outcomes below and the corresponding Engineers Australia Stage 1 Competency Standards for Professional Engineers as shown. The full list of Stage 1 Competency Standards may be found in Appendix A.

After successfully completing this course, you should be able to:

Learning Outcome		**EA Stage 1 Competencies**
1.	Learn the underlying assumptions and be able to apply the theory of periodic waves in coastal waters, wave growth, refraction, diffraction, shoaling and breaking processes, and to introduce aspects of the measurement, analysis and prediction of waves.	PE1.1 PE1.2 PE1.3 PE2.1
2.	Be introduced to coastal and beach processes, including tides, storms, currents and elevated water levels, beach morphology, coastal hazards	PE1.6 PE 1.4 PE3.1
3.	Learn the fundamental drivers of onshore/alongshore sediment transport in the coastal zone, and be able to apply to a case-study numerical modelling application.	PE1.1 PE1.2 PE1.5 PE2.2 PE3.2
4.	Theory of wave forces on coastal and ocean structures, with hands-on application to practical engineering design of breakwaters, seawalls, and a range of other marine structures	PE1.1 PE1.3 PE2.1 PE3.2 PE3.4

For each hour of contact it is expected that you will put in at least 1.5 hours of private study.

COURSE PROGRAM

TERM 1, 2020

Please refer to Moodle for detailed information about specific content each week

Week	Lecturer	Topic	Assessments Due
1	Ian Turner	Waves I	
2	Ian Turner	Waves II	
3	Ian Turner	Beaches, Hazards, Climate Change	Assignment #1 (Online)
4	Kristen Splinter	Sediment Transport I	
5	Kristen Splinter	Sediment Transport II	
6		**NO CLASSES THIS WEEK**	
7	Ian Turner	Breakwaters and Revetments I	Assignment #2 (Report - Turnitin)
8	Ian Turner	**SITE INSPECTIONS** (off-campus)	
9	Ian Turner	Breakwaters and Revetments II & Beach Nourishment	
10	Kristen Splinter	Coastal/Marine Structures	Assignment #3 (Report - Turnitin)

ASSESSMENT

The three assignments (1 x online/timed quiz; 2 x hand-in reports) provide the opportunity for students to develop and demonstrate their understanding across the 3 main themes of this course: waves, sediment transport and coastal structures.

The open book exam enables students to demonstrate their gained knowledge and understanding across the breadth of materials covered in the course.

Supplementary Examinations for Term 1 2020 will be held on Monday 25th – Friday 29st May (inclusive) should you be required to sit one. You are required to be available during these dates. Please do not to make any personal or travel arrangements during this period.

Special Note for all Distance/Short Courses:

All Distance/Short course mode students are expected to sit their final examination on Kensington campus (Sydney). If you reside further than 40 km from the Kensington campus, and you wish to sit your exam externally (by distance), you must register for an external exam by the UNIVERSITY CENSUS DATE (Term 1: 15th March; Term 2: 28th June, Term 3: 11th October) more information found here

Details of each assessment component, the marks assigned to it, the criteria by which marks will be assigned, and the dates of submission are set out below.

Item	Length	Weighting	Learning outcomes assessed	Assessment Criteria	Due date and submission requirements	Deadline for absolute fail (0%)	Marks returned
1. Assignment #1	*2-hour online quiz*	*10%*	*PE1.1 PE1.2 PE1.3 PE2.1*	*This assignment is designed to capture how well the student understands the course material to the use and appropriate application of linear and other wave theories. Marks are given for correct answers and summed up to form an assignment grade. Specific marking criteria are provided with the assignment.*	*Online quiz in week 3. Available for 24 hrs; one attempt permitted, and once commenced a maximum of 2 hours to complete. Further details to be provided on Moodle and in class.*	*N/A Must be completed online within the specified 24hrs period – refer Moodle for further details*	*Week 4*
2. Assignment #2	*~10-page report*	*20%*	*PE1.1 PE1.2 PE2.2 PE3.2*	*This assignment is designed to capture how well the student understands the course material relating to sediment transport processes. Marks are given for correct answers and summed up to form an assignment grade. Specific marking criteria are provided with the assignment.*	*Due Week 7 – refer assignment sheet that is available in Moodle for further details. To be submitted via Moodle (Turnitin).*	*1 week after due date*	*Week 9*
3. Assignment #3	*~10 page report*	*20%*	*PE1.1 PE1.2 PE1.5 PE2.2 PE3.2*	*This assignment is designed to capture how well the student understands the course material relating to design of coastal breakwater and revetment structures. Marks are given for correct answers and summed up to form an assignment grade. Specific marking criteria are provided with the assignment.*	*Due Week 10 – refer assignment sheet that is available in Moodle for further details. To be submitted via Moodle (Turnitin).*	*1 week after due date*	*Week 12*
4. Exam	*2 hours*	*50%*	*As above*	*The final examination is open book, and is designed to capture the student's knowledge of the breadth of materials covered in this course. The marks for each individual question are indicated on the exam.*	*Exam Period.*		

PENALTIES FOR LATE SUBMISSIONS

Late work will be penalised at the rate of 10% per day after the due time and date have expired. Students who perform poorly in the assignments and practical exercises are recommended to discuss progress with the Lecturer during the Term.

Applying for special consideration: https://student.unsw.edu.au/special-consideration

Note: *The Coordinator and/or Lecturer reserves the right to adjust the final scores by scaling if agreed to by the Head of School.*

RELEVANT RESOURCES

Specific references will be provided at times during the subject. However, the following are recommended as generally useful.

- *Shore Protection Manual*, 2 volumes, US Army Coastal Engineering Research Center, 4th Edition, 1984.
- Coastal Engineering Manual (CEM) – down load individual chapters for free at (use the search term: 'coastal'): http://www.publications.usace.army.mil/USACE-Publications/Engineer-Manuals/

****** ADDITIONAL TEXTS WILL BE DISCUSSED IN CLASS *******

DATES TO NOTE

Refer to MyUNSW for Important Dates available at:

https://student.unsw.edu.au/dates

PLAGIARISM

Beware! An assignment that includes plagiarised material will receive a 0% Fail, and students who plagiarise may fail the course. Students who plagiarise are also liable to disciplinary action, including exclusion from enrolment.

Plagiarism is the use of another person's work or ideas as if they were your own. When it is necessary or desirable to use other people's material you should adequately acknowledge whose words or ideas they are and where you found them (giving the complete reference details, including page number(s)). The Learning Centre provides further information on what constitutes Plagiarism at:

https://student.unsw.edu.au/plagiarism

ACADEMIC ADVICE

(Formerly known as Common School Information)

For information about:

- Notes on assessments and plagiarism,
- School policy on Supplementary exams,
- Special Considerations: student.unsw.edu.au/special-consideration
- Solutions to Problems,
- Year Managers and Grievance Officer of Teaching and Learning Committee, and
- CEVSOC.

Refer to Academic Advice on the School website available at:

https://www.engineering.unsw.edu.au/civil-engineering/student-resources/policies-procedures-and-forms/academic-advice

Appendix A: Engineers Australia (EA) Competencies

Stage 1 Competencies for Professional Engineers

	Program Intended Learning Outcomes
PE1: Knowledge and Skill Base	PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals
	PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing
	PE1.3 In-depth understanding of specialist bodies of knowledge
	PE1.4 Discernment of knowledge development and research directions
	PE1.5 Knowledge of engineering design practice
	PE1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice
PE2: Engineering Application Ability	PE2.1 Application of established engineering methods to complex problem solving
	PE2.2 Fluent application of engineering techniques, tools and resources
	PE2.3 Application of systematic engineering synthesis and design processes
	PE2.4 Application of systematic approaches to the conduct and management of engineering projects
PE3: Professional and Personal Attributes	PE3.1 Ethical conduct and professional accountability
	PE3.2 Effective oral and written communication (professional and lay domains)
	PE3.3 Creative, innovative and pro-active demeanour
	PE3.4 Professional use and management of information
	PE3.5 Orderly management of self, and professional conduct
	PE3.6 Effective team membership and team leadership