MARS 5001: Coastal Environments and Processes
Semester 1, 2015 | 6 Credit Points | Coordinator: A/Prof Ana Vila-Concejo

1. INTRODUCTION

This unit of study explains the major coastal processes and systems that are relevant to coastal zone management. These include rocky coasts, beaches, barriers and dunes, and estuaries and inlets. The interactions between these processes and systems that are most relevant to coastal management are highlighted, including coastal hazards such as beach erosion, dune migration, bluff retreat, coastal flooding and inlet closure/opening. Anthropogenic impacts are also analysed. The unit is presented in lectures, practical workshops, and field excursions, the latter enabling each system to be examined first hand.

2. LEARNING OUTCOMES

This unit covers basic information needed to understand a range of coastal environments and processes. Understanding the different types of coasts and how they evolve under different conditions is a powerful tool for coastal managers, marine and environmental scientists, and engineers. Students will:

1. learn about beach systems and global change;
2. learn about the controlling mechanisms that define the characteristics of a given beach;
3. learn the importance of dunes and barriers, how they form and how they evolve;
4. learn basic theory about forcing mechanisms, including waves and currents and how they are related to the morphology of the coast;
5. learn the concept of coastal morphodynamics;
6. learn the basics about coastal inlets.
7. learn about climate change and related coastal response and management

This unit also covers other general skills that are not specific to this unit of study students but that will be essential skills for the professional development of a scientific career: Students will:

8. learn how to efficiently keep a field notebook
9. learn techniques for data analyses and representation
10. learn how to setup, run and analyse data using a numerical model
11. learn scientific writing
12. learn scientific presentation; and
13. learn to scientifically discuss the work of their peers

This unit provides a good starting point for those students wanting to undertake further studies in Coastal Management (MARS5004), Coral Reefs (MARS5006 and MARS5007), and research in Coastal Management (MARS5005).

3. TEACHING STAFF AND CONTACT DETAILS

Dr Ana Vila-Concejo (AVC)  
Room 421  
Madsen Building (F09)  
Tel: 9351 5190  
Email: ana.vilaconcejo@sydney.edu.au  
Student enquiry hours: by appointment.

Dr Jak McCarroll (JM)  
Room 423  
Madsen Building (F09)  
Email: jak.mccarroll@sydney.edu.au  
Student enquiry hours: by appointment.

Dr Tristan Salles (TS)  
Room 454  
Madsen Building (F09)  
Tel: 8627 4123  
Email: tristan.salles@sydney.edu.au  
Student enquiry hours: by appointment.

4. CLASS TIMES
Lectures and practicals will be conducted from 10 am to 1pm in Madsen 301 on Wednesdays. Lectures will generally be given in the first half of the session, with practical exercises in the second half.

5. **ASSESSMENT TASKS**

*Please read this section together with the weekly schedule (section 6)*

<table>
<thead>
<tr>
<th>Task</th>
<th>% mark</th>
<th>Due</th>
<th>Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>35</td>
<td>Week 4 – Individual field notebooks from Maroubra fieldtrip in Week 3 to be presented. (no grade but negative 5% if not presented)</td>
<td>1, 2, 3, 4, 5, 7, 8, 9, 11, 12, 13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Week 8 – Group presentation, individually marked. (10%)</td>
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<tr>
<td></td>
<td></td>
<td>Week 9 - Monday - Group report. (15%)</td>
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<tr>
<td></td>
<td></td>
<td>Week 9 – Friday – Individual Graphical abstract (10%)</td>
<td></td>
</tr>
<tr>
<td>Numerical modelling exercises 1-3</td>
<td>30</td>
<td>Weeks 10, 11, 12 – Students submit three practical exercises based on the numerical modelling labs, containing their data analysis and interpretation.</td>
<td>4, 5, 7, 9, 10, 11, 12</td>
</tr>
<tr>
<td>Exam</td>
<td>35</td>
<td>Week 13</td>
<td>ALL</td>
</tr>
</tbody>
</table>

Each task is assessed according to the general grading scheme below, in accordance with the University of Sydney Academic Board Resolutions on the Assessment and Examination of Coursework. Final grades are defined by the Academic Board Assessment Policy. These achievement levels are described below. Details of the policy are available on the University’s ‘Policy Online’ website http://sydney.edu.au/policies/showdoc.aspx?recnum=PDOC2012/266&RendNum=0

<table>
<thead>
<tr>
<th>Grade</th>
<th>% range</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>High Distinction (HD)</td>
<td>85-100</td>
<td>At HD level, a student demonstrates a flair for the subject and comprehensive knowledge and understanding of the unit material. A ‘High Distinction’ reflects exceptional achievement and is awarded to a student who demonstrates the ability to apply subject knowledge to novel situations.</td>
</tr>
<tr>
<td>Distinction (D)</td>
<td>75-84</td>
<td>At D level, a student demonstrates an aptitude for the subject and a solid knowledge and understanding of the unit material. A ‘Distinction’ reflects excellent achievement and is awarded to a student who demonstrates an ability to apply the key ideas of the subject.</td>
</tr>
<tr>
<td>Credit (C)</td>
<td>65-74</td>
<td>At CR level, a student demonstrates a good command and knowledge of the unit material. A ‘Credit’ reflects solid achievement and is awarded to a student who has a broad understanding of the unit material but has not fully developed the ability to apply the key ideas of the subject.</td>
</tr>
<tr>
<td>Pass (P)</td>
<td>50-64</td>
<td>At P level, a student demonstrates proficiency in the unit material. A ‘Pass’ reflects satisfactory achievement and is awarded to a student who has threshold knowledge of the subject.</td>
</tr>
<tr>
<td>Fail (F)</td>
<td>0-49</td>
<td></td>
</tr>
<tr>
<td>Absent Fail (AF)</td>
<td>-</td>
<td>A student is given an absent fail mark due to non-submission of compulsory work (or non-attendance at compulsory labs, etc) as well as failure to attend an examination</td>
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</tbody>
</table>

Unless mitigated by an approved Special Consideration (see 10.2, below), the following conditions constitute an automatic failure for the course:

- failure to maintain a satisfactory attendance record in practicals; or
• failure to sit any of the in-class tests without satisfactory explanation.

DEADLINES AND ATTENDANCE

Assessment tasks must be submitted by deadlines. Failing to meet these deadlines will incur mark deductions of 10% of the total mark available for every day past the due date (days late includes Saturdays, Sundays and public holidays).

The closing date for submission of assessment tasks is up to 14 days after the deadline unless otherwise indicated (refer to USYD Learning and Teaching Policy, Section 24 2(b)(vi) at http://sydney.edu.au/policies/showdoc.aspx?recnum=PD0C2015/401&RendNum=0).

Absences from all scheduled practical sessions, tutorials and case studies must be explained and supported by appropriate documentation.

Please note that the Faculty of Science has a minimum 80% attendance requirement for a student to pass any unit of study.

6. STUDY COMMITMENT

5.1: Lectures

The lecture program is built around the main themes of coastal environments and processes. Research led teaching will mean that students will learn about and possibly get involved in some of the research undertaken within the Geocoastal Group of the School of Geosciences.

Some of the lectures will require the students to do some work before the lecture is delivered. This might include readings or exercises.

It is expected that students attend all lectures and participate in the class by asking and answering questions.

5.2: Practical exercises

Practical exercises will be completed by each student as part of the course. These exercises are directly relevant to the lecture material and are compulsory. They will provide students with real data to analyse and with realistic problems to solve. Each exercise will be introduced to the students in class with all the relevant data and information available via Sydney E-Learning (Blackboard). There will be question and answer sessions on each practical exercise in a class following the introduction of the exercise.

5.3: Field Trip

Some of the lectures will be undertaken on a location to be announced near the beach so the students can observe first-hand the morphologies and processes explained during the lectures. More information and options on transport will be given in the first lecture.

5.4: eLearning (Blackboard)

An eLearning site (‘Blackboard’) will be used as part of this course. Announcements, data, forms, handouts, and lecture material will be accessible through the eLearning site. Students are advised to monitor the Discussion Board to keep abreast of announcements and to participate in online class discussions. Any announcements made in class will be posted to the Discussion board and, therefore, it is your responsibility to check it regularly.

Please note that your UniKey login name and password will be printed on your initial confirmation of enrolment. If you have lost your password, either contact the ICT helpdesk at support@usyd.edu.au or take some photo ID to one of the ICT Computer Access Labs.
<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Other activities and Comments</th>
<th>Assessments / Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wk 1, Wed 2 Mar Madsen 301 10am-1pm</td>
<td>L1 - Intro to beach systems and global change; Wave dominated coasts (AVC)</td>
<td>Welcome Housekeeping Presenting Assignment 1</td>
<td></td>
</tr>
<tr>
<td>Wk 2, Wed 9 Mar</td>
<td><strong>NO LECTURES INTERNATIONAL CONFERENCE</strong></td>
<td>ICS2016 <a href="http://ics2016.org/">http://ics2016.org/</a></td>
<td></td>
</tr>
<tr>
<td>Wk 3, Wed 16 Mar MAROUBRA BEACH</td>
<td>FIELDTRIP (JM, TF)</td>
<td>BEACH FIELDTRIP: SURVEYING TECHNIQUES (JM, TF)</td>
<td>Assignment 1 starts AVC OTIRS</td>
</tr>
<tr>
<td>Wk 4, Wed 23 Mar Madsen 301 10am-1pm</td>
<td>L2 - Introduction to waves and coastal processes (AVC)</td>
<td>Tutorial on beach data processing (JM+AVC)</td>
<td></td>
</tr>
<tr>
<td>Wk 5, Wed 6 Apr Madsen 336 10am-1pm</td>
<td>L3 – Surf zone currents and other coastal processes (JM)</td>
<td>Tutorial on beach data processing (JM+AVC)</td>
<td></td>
</tr>
<tr>
<td>Wk 6, Wed 13 Apr</td>
<td><strong>NO LECTURES OR PRACTICAL</strong></td>
<td>MARSS006/5007, GEOS3009 @ HERON</td>
<td></td>
</tr>
<tr>
<td>Wk 7, Wed 20 Apr Madsen 301 10am-1pm</td>
<td>L4 – Coastal Environments: Estuaries and Inlets (AVC)</td>
<td>Tutorial on beach data processing (JM+AVC)</td>
<td></td>
</tr>
<tr>
<td>Wk 8, Wed 27 Apr Madsen 301 10am-1pm</td>
<td><strong>PRESENTATIONS ASSIGNMENT 1</strong></td>
<td>All lecturers and tutors to be present, feedback is to be incorporated into final submission.</td>
<td></td>
</tr>
<tr>
<td>Wk 9, Wed 4 May Madsen 301 10am-1pm</td>
<td>L5 – Numerical modelling I (TS)</td>
<td>Modelling exercise I (TS) Accessing global data sources</td>
<td>Assignment 1 REPORT due, Mon 2 May, 5pm Assignment 1 GRAPHICAL ABSTRACT due, Fri 6 May, 5pm</td>
</tr>
<tr>
<td>Wk 10, Wed 11 May Madsen 301 10am-1pm</td>
<td>L6 – Numerical modelling II (TS)</td>
<td>Modelling exercise II (TS) Xbeach 1D</td>
<td>Model Exercise I due Mon 9 May, 5pm</td>
</tr>
<tr>
<td>Wk 11, Wed 18 May Madsen 301 10am-1pm</td>
<td>L7 – Numerical modelling III (TS)</td>
<td>Modelling exercise III (TS) Xbeach 2D</td>
<td>Model Exercise II due Mon 16 May, 5pm</td>
</tr>
<tr>
<td>Wk 12, Wed 25 May Madsen 301 10am-1pm</td>
<td>L8 – Reefs (AVC)</td>
<td>Questions and general review</td>
<td>Model Exercise III due Mon 23 May, 5pm</td>
</tr>
<tr>
<td>Wk 13, Wed 1 June Madsen 336</td>
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<td>EXAM (details TBC)</td>
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7. RESOURCES

There is no prescribed text for MARS 5001. Rather, students are expected to read a number of sections in textbooks and some scientific papers. Readings will be provided through the e-Learning website.

Some recommended books include:


8. LEARNING AND TEACHING POLICIES

8.1 Plagiarism and Academic Honesty

Plagiarism means the dishonest use of another’s material. It is serious misconduct to plagiarise. The University’s rules on plagiarism are outlined in the Academic Board Policy on Dishonesty and Plagiarism, available through the University’s online policy portal at [http://fmweb01.ucc.usyd.edu.au/policy](http://fmweb01.ucc.usyd.edu.au/policy).

The rules make a distinction between negligent plagiarism (defined as: innocently, recklessly or carelessly presenting another person’s work as one’s own without acknowledgement of the source) and dishonest plagiarism (defined as: knowingly presenting another person’s work as one’s own without acknowledgement of the source).

In cases of negligent plagiarism, it is usually the case that students will be required to resubmit their work. In cases of dishonest plagiarism, the School of Geosciences reserves the right to impose the full degree of sanctions on students, which includes automatic failure for the unit of study.

To avoid plagiarizing, you should always quote the source of material, or paraphrase it in your own words.

All students taking MARS 5001 will have to take and pass the Academic Honesty test provided in the “Outline and other admin stuff” folder in LMS.

When submitting work for assessment MARS 5001 you will be required to submit a cover sheet that includes a signed declaration of the originality of your work. Relevant documents will be available through the e-Learning site and MUST accompany all submitted materials. These documents aim to focus your attention on the issue of plagiarism. If you any questions about what constitutes plagiarism ask one of the lecturers.

- The University of Sydney provides access to an Academic Honesty Educational Module. Please consider taking it to clarify academic plagiarism.
- The University of Sydney mandates the use of TURNITIN therefore all formal written assessments are to be submitted in LMS through Turnitin.

9. USEFUL CONTACTS AND RESOURCES

10.1: Counselling, illness and misadventure

For many, being an undergraduate student is a period of transition – leaving home, mixing with new groups of people, and coping with the very different routines and regimentations of University life. It is often a very difficult period.

The University of Sydney Counselling Service provides free and confidential support to students. Male and female; registered psychologists are available who can provide counselling on a range of issues relating to life and study, including time management, motivation, stress, communicating with lecturers, depression, self-esteem, family issues, relationship difficulties, grief and bereavement, anxiety, traumatic experiences, social fears, sexuality concerns, eating disorders and problems with drugs and alcohol.
The counselling service also holds regular Workshops on topics such as ‘Getting Organised’, ‘Managing Mood’, ‘Relaxation and Meditation’ and ‘Assertive Communication Skills’. See: http://www.usyd.edu.au/stuserv/counselling/work.shtml

10.2: Special consideration

Students are entitled to claim ‘Special Consideration’ if genuine illness or misadventure impacts upon their academic performance (such as sit an inability to sit any of the in-class tests, hand in material on time, or if you miss classes). All applications for Special Consideration in MARS 5001 must be processed officially through both the Faculty of Science (regardless of the student’s particular faculty) and the School of Geosciences. The Faculty of Science official guidelines can be found at the Faculty website: http://sydney.edu.au/science/cstudent/ug/forms.shtml#special_consideration

Please note that you need to apply for special consideration within 3 working days of the deadline/exam/tutorial. Do not apply late.

Process to follow:

a) Students obtain a Special Consideration Pack from the Faculty of Science website. This pack includes all instructions needed to fill out the documentation correctly.

b) The completed application must then be stamped by the Faculty of Science prior to its submission to the School of Geosciences. Students then bring the completed forms to the Lead Tutor for processing.

c) Nikki Montenegro will check that the forms have been completed correctly, and will then forward them to the academic in charge of the Unit of Study.

d) The decision will be recorded on the student file in the Faculty of Science, who will then notify the student by email of the decision. Copies of all completed forms will be kept in-confidence by the School of Geosciences for future reference.

10.3: Learning Centres

The Learning Centre (http://sydney.edu.au/stuserv/learning_centre/index.shtml) offers a wide range of courses intended to develop the generic skills required for success at University, and was established to assist students achieve their academic potential. They also offer workshops for undergraduate students from non-English speaking backgrounds.

10.4: Geosoc

GEOSOC is the student society open to all undergraduate and postgraduate students, and provides support and information to students in the School. usgs.geosoc@gmail.com

10.5: Follow our news on social media and let us know if you would like to collaborate.

School of Geosciences https://www.facebook.com/sydneyunigeo/?fref=ts
Geocoastal Research Group website http://grgusyd.org/