



# ENVS117

## Biophysical Environments

S1 Day 2016

*Dept of Environmental Sciences*

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#### **Disclaimer**

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## General Information

### Unit convenor and teaching staff

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### Credit points

3

### Prerequisites

### Corequisites

### Co-badged status

This unit is co-badged with ENVS602 Special Topic in Environment A: Biophysical Environments

### Unit description

This unit focuses on regional and local scale environmental processes and provides a balance with global scale processes taught in GEOS112 and ENV118. This course covers water and river health, coastal oceanography and morphology, and climate. A key focus is on linking theory, field, modelling and analysis skills. The course includes taking on-site measurements in the local area of water and river health, and climate. The fundamentals of geographic information science (GIS) are also introduced to aid an understanding of the integrated biophysical environment. Issues of change and human impacts on biophysical environments are examined. This unit is fundamental to all natural sciences, but particularly environmental science and ecology. The content is relevant for various environmental science and management careers including environmental consultancies, and local and state government, where many environmental science students find employment.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

- To assess some complex interactions between the atmosphere, land surface, and water in sustaining the Earth's Biophysical Environment
- To understand key physical environmental processes and human interaction/modification
- To develop skills in field data collection and analysis
- To demonstrate scientific method in writing and critique of literature
- To understand the basics of Spatial Information Science

## Assessment Tasks

Name	Weighting	Due
<a href="#"><u>Assignment 1</u></a>	5%	Friday 18th March
<a href="#"><u>Assignment 2</u></a>	20%	Tuesday 26th April
<a href="#"><u>Assignment 3</u></a>	15%	Friday 13th May
<a href="#"><u>Assignment 4</u></a>	15%	Friday 3rd June
<a href="#"><u>Final Exam</u></a>	45%	TBA

### Assignment 1

Due: **Friday 18th March**

Weighting: **5%**

Using the skills you have learned and developed from Lecture 2, Practical 1, and your independent study, this assignment tests your skills in:

- 1) finding information on the library website,
- 2) referencing and citation
- 3) reading and interpreting scientific figures and tables
- 4) sections in scientific reports and papers

The online quiz will be posted on iLearn.

On successful completion you will be able to:

- To demonstrate scientific method in writing and critique of literature

## Assignment 2

Due: **Tuesday 26th April**

Weighting: **20%**

This assignment tests your ability to design a research project, collect data, analyse data, write a scientific report and use appropriate literature on a topic related to the Rivers module.

Assignment 2 will be posted on iLearn and notified in Lectures and on the General Discussion Forum on iLearn.

On successful completion you will be able to:

- To assess some complex interactions between the atmosphere, land surface, and water in sustaining the Earth's Biophysical Environment
- To understand key physical environmental processes and human interaction/modification
- To develop skills in field data collection and analysis
- To demonstrate scientific method in writing and critique of literature

## Assignment 3

Due: **Friday 13th May**

Weighting: **15%**

You will use the skills in Matlab that you learned in Practical 5 to complete this assignment. This assignment tests your ability to use simple computer programming language and basic mathematics to understand the physical processes of ocean waves. The assignment will be assessed online and will be posted on iLearn.

On successful completion you will be able to:

- To assess some complex interactions between the atmosphere, land surface, and water in sustaining the Earth's Biophysical Environment
- To understand key physical environmental processes and human interaction/modification
- To develop skills in field data collection and analysis
- To demonstrate scientific method in writing and critique of literature

## Assignment 4

Due: **Friday 3rd June**

Weighting: **15%**

This assignment will test your ability to retain and learn information from the Air module lectures as well as your ability to write a concise summary on a climate-related topic.

There will be two quizzes to complete, then a written component.

Quiz 1 will be worth 1.5 % and is due Monday 9th May at 10 am.

Quiz 2 will be worth 3.5 % and will be completed in the practical class in week 11.

The written component will be worth 10 %, is submitted online through Turnitin in iLearn, and is due Friday 3rd June.

These three components add together to make up the 15% weighting for Assignment 3.

Assignment 3 will be discussed in lectures and information posted on iLearn.

On successful completion you will be able to:

- To assess some complex interactions between the atmosphere, land surface, and water in sustaining the Earth's Biophysical Environment
- To understand key physical environmental processes and human interaction/modification
- To develop skills in field data collection and analysis
- To demonstrate scientific method in writing and critique of literature

## Final Exam

Due: **TBA**

Weighting: **45%**

The final exam will be two hours and covers all material in the lectures and practical classes.

On successful completion you will be able to:

- To assess some complex interactions between the atmosphere, land surface, and water in sustaining the Earth's Biophysical Environment
- To understand key physical environmental processes and human interaction/modification
- To demonstrate scientific method in writing and critique of literature
- To understand the basics of Spatial Information Science

## Delivery and Resources

### CLASSES

**Delivery:**

Day, External

**Organisation of the unit**

This unit starts with an introduction to the uni, and to scientific communication and writing.

Following this, there are three broad modules:

- Module 1 Weeks 2 - 5 Rivers
- Module 2 Weeks 5 - 8 Oceans
- Module 3 Weeks 8 - 11 Air

and we will finish up with two weeks of Spatial Information Science, synthesis and review.

### **Internal students: A summary of what you have to do**

There are two lectures each week. You also need to enroll for a specific practical class. The University expects that you devote at least 9 hours per week, in total, to a 3 credit point unit like ENV5117.

#### Lectures

There are TWO lectures each week.

We strongly encourage you to attend the lectures in person. Illustrative and audio material from the lectures are also available from the ENV5117 web site: <https://ilearn.mq.edu.au>

#### Weekly Practicals

Each week, beginning Week 2, you'll be expected to complete a practical. These 2-hour "hands-on" classes will be in the computer laboratory or in the field. LOOK TO THE ENV5117 UNIT DIARY TO FIND OUT WHERE EACH WEEK'S PRACTICAL IS LOCATED. The practicals are compulsory and are designed to help you work towards the assessable assignments, to allow you to build on lectures, reading and other material, and to develop some valuable generic and discipline-specific skills.

### **External students: A summary of what you have to do**

You must listen to two iLectures that will be recorded and made available each week (click on the Echo360 icon on the right of the ENV5117 iLearn page). To get the most out of them you're advised to look at the online lecture slides while listening.

External students must be able to access the Internet in order to view and listen to the lectures. Skill in using the internet is an important generic skill that all students completing ENV5117 will develop general competence in. If you do not have internet access from home or work, most local libraries have access, and of course there is always access on-campus.

In addition you must attend (compulsory) two on-campus sessions on Sunday 20th March and Sunday 29th May.

Information and an itinerary will be released closer to the date on the iLearn discussion page for this unit. On-campus sessions tend to run from 8:30am to 5:00pm. On both days you are going to spend some time outdoors in the field, so ensure you have sturdy footwear (no sandals or thongs), sunscreen, a hat and a rainjacket. Lunch and snacks for both days are your own responsibility. There is often no food outlets available on-campus on Sundays.

These are the only occasions we'll meet face-to-face, so you need to be fully prepared in order to obtain the maximum benefit. In the weeks prior to the on-campus sessions, listen to all the

lectures available and do any recommended reading. You're encouraged to look at the online practicals before you come on-campus but these will be addressed more thoroughly during those face-to-face sessions. It should be obvious that if you try to start the unit on Sunday 20th March (without reading and listening to the lectures beforehand), your final grade will suffer. The unit starts in Week One of Semester One, and as it is a 3 credit point unit, you should spend an average of 9 hours per week on it (listening to lectures, reading, pracs, on-campus sessions, assignments, exam preparations etc.).

## REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

**Recommended reading for this unit** There is no set textbook for this unit, but there are recommended readings for each module which are noted on iLearn under each module.

## UNIT WEBPAGE AND TECHNOLOGY USED AND REQUIRED

**This unit will use:**

iLearn, Echo360

### **Computer based learning: iLearn instructions**

There are essential computer-based components in ENV5117. These include lectures recorded digitally as mp3 files (in Echo360), many of the weekly practical exercises and an electronic "Discussions" system for communicating with staff and other students in this unit. You can undertake this work from the Computer Labs (when not booked for classes) or in the library, from selected computers in the Library or from offcampus via the Internet.

If you're unsure of how to connect to the internet or use the computer system, help can be obtained at: <http://students.mq.edu.au/support/>.

### **How To Use The ENV5117 Unit iLearn website**

Once your browser is open, go to the menu bar at the top of the screen click in the address bar and type in the address <https://ilearn.mq.edu.au/login> To log in you will need your MQID which was mailed to you after you enrolled.

Once your identity has been established, you may be presented with a list of all the Online units you have access to. Click on ENV5117 to enter the unit.

### **Once You Have Reached the ENV5117 Home Page**

All the material used in ENV5117 will be presented via the web site. For those familiar with the internet, finding your way through the ENV5117 material will be straightforward. For others, once you get the hang of it, it should not be too difficult.

Experiment a while: you won't damage anything!

Please note that at the beginning of semester our rolls are often incomplete (due to late transfers and changes of enrolment). In the first week of semester, if your name is missing from the enrolment list, you will be refused access to the system. Try a couple of times, to make sure you

have not made a typing error (remember your username and password are CaSe SeNsItIvE). If later in the semester you suddenly find that your access to the ENV5117 iLearn web site has been mysteriously barred, it is probably because your Student Services Fee has not been paid (this is imposed by the University Administration, not the ENV5117 staff).

### General Discussion Forum

The "General Discussion Forum" link on the unit's homepage is a communication system between you and the rest of the class (a bit like an electronic tutorial or bulletin board). In ENV5117, we use it to discuss important issues and to resolve problems. It is compulsory that you read every posting to the discussion facility because important administration and academic information will be transacted there and only there - it is your responsibility to stay up-to-date. This is particularly important for External students.

## ASSIGNMENTS & GRADING

### Penalties for late assignments

Assignments must be completed and submitted, on time and in full, in order to receive credit.

**Penalties for late assignments** will be a minimum of 10% per day or part thereof, beginning at the scheduled submission time.

These deadlines and penalties *will be imposed*. Allowing some students to hand in assignments late is unfair to those who meet the deadlines.

The deadlines for assignments are not negotiable. Only a medical certificate or a letter with appropriate supporting documents outlining other serious, extenuating circumstances can be used to submit an assignment after the due date without penalty. Vague medical certificates are unconvincing – they must indicate *how* the illness impacted your ability to perform the assignment on time. Work commitments are not accepted under any circumstance. You are required to manage your time effectively. If you have commitments that take you away from study you must plan for this in advance as part of an effective individual study plan.

### Assignment submission

You must complete all three assignments in order to be to complete the unit successfully. Please note that **you are *required* to keep a backup copy of the final version of your assignment.**

All assignments must be submitted to the appropriate assignment link in iLearn. Please note ALL ASSIGNMENTS ARE TO BE SUBMITTED ONLINE. This means no cover sheets, no need to come in to uni to submit your assignment, etc. Detailed information about how to submit your assignment through Turnitin within iLearn will be posted on the unit home page and the General Discussion Forum.

All assignments are to be submitted by midnight on the date specified and will be electronically time stamped.

**External Students** must also submit all assignments **through iLearn**, following the same



protocols as outlined above for internal students.

### Extension requests

Permission for extension must be sought from the **lecturer responsible for that assignment well before the due date** unless this is absolutely impossible. No extensions are given within 3 working days of the assignment due date. Requests in the days immediately prior to or on the due date will not be accepted. Let us know of problems in advance or as soon as possible, not after the event: we are likely to be much more sympathetic and flexible in our requirements if you follow this advice. Formal requests should be made through the special consideration process (see below).

### Returning Assessment Tasks

We will endeavour to return your assignments within three teaching weeks of the submission date. However, please keep in mind that this is a large class and so it can take substantial time to mark assignments. Scientific reports can take up to 30 minutes each to mark. This means for a class of 160, 48 hours is spent marking your assignments. Lecturers have multiple classes and research commitments in any given semester, so please be patient.

Assignments will be returned through iLearn, and an announcement posted so that you know when the marking has been completed. Detailed instructions on how to access your grades and feedback will be posted on the General Discussion Forum.

### Examination conditions

The University Examination period for First Half Year units is in June each year. You are expected to be at the examination at the time and place designated in the University Examination Timetable. The timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in Final form approximately four weeks before the commencement of the examinations - see <http://www.timetables.mq.edu.au/exam>. The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. **Work and travel are NOT** grounds for special consideration. **DO NOT book holidays during the exam period** as you will not be allowed to take the exam at another time and you will be given a Fail grade.

For unavoidable disruption, you should apply for Special Consideration. If a Supplementary Examination is granted as a result of the Special Consideration process the examination will be scheduled **after the conclusion** of the official examination period. Note that **it is Macquarie University policy not to set early examinations** - all students are expected to ensure that they are available until the final day of the official examination period (1st July 2016). You are required to download your room and seat number from this website before the exam. You will be required to show your student ID on entering the exam room, so don't forget it! No mobile phones or bags are permitted in the exam room.

## WHAT IS REQUIRED TO COMPLETE THIS UNIT

## SATISFACTORILY?

### ENVS117 Attendance requirements

You are required to submit all pieces of assessment, sit the final exam and attend all practical sessions to receive a Passing grade for this unit. Rolls are taken at the beginning of each practical class.

### Workload requirements and course rubric

Workload for units at Macquarie University is based on a minimum of 3 hours per credit point per week to receive a Pass grade (including 2 x weeks in mid-semester break). For ENVS117 this means you are expected to work at least 9 hours per week on this course to receive a Pass grade. Obviously this is dependent on the speed at which you learn and your ability to study effectively. You may find you need to spend extra time on different parts of the course content. Depending on when assignments are due, this workload will be spread over the semester. It is critical that you manage your time effectively throughout the semester and around other courses and commitments you may have. A guide of hours required to receive a Pass grade is outlined below. However, keep in mind, grades are awarded on a demonstration of understanding and ability, not on effort!

Activity	Hours Per Teaching Week	# weeks	Hours Per Semester
Lectures	2	13	26
Practicals	2	11	22
Assignment 1			5
Assignment 2			20
Assignment 3			15
Assignment 4			15
Out of class study	2	15	30
<b>Total for semester</b>			<b>133</b>
<b>Per week (15 weeks)</b>			<b>8.87</b>

In ENVS117 we expect quality in your assignments and a level of knowledge and comprehension of course content that sets the foundations for further study in Environmental Science (at 200-level and beyond). Grades for each assessment task and the unit as a whole will be awarded according to the following general criteria (course rubric):

	Developing	Functional	Proficient	Advanced
<b>General description of the level of attainment</b>	Has not yet reached the desired standard. A <b>Fail</b> grade (or under some circumstances a <b>Conceded Pass</b> ) would be given.	Has reached basic academic standards. A <b>Pass</b> grade would be awarded.	Has completely reached the standards expected. A <b>Credit</b> would be awarded.	Has gone beyond the expected standard. A grade of <b>Distinction</b> or <b>High Distinction</b> would be awarded.
<b>Knowledge and understanding</b>	Limited understanding of required concepts and knowledge.	Can accurately reproduce required facts, but has limited depth of understanding of basic concepts.	Exhibits breadth and depth of understanding. Uses terminology accurately in new contexts and transfers ideas to new situations.	Exhibits breadth and depth of understanding of concepts. Can engage in productive critical reflection.
<b>Analysis</b>	Data analysis skills are limited.	Data analysis skills are largely descriptive with limited capacity to combine multiple factors.	Can synthesise data and critique the value and importance of scientific arguments.	Data analysis is sophisticated and is capable of placing examples in context of big ideas, problems and solutions.
<b>Information literacy</b>	Uses immediately available information without discretion.	Can select useful information. Does not always discriminate between types of sources of information.	Independently selects useful information and can discriminate between types of sources of information.	Independently selects useful information and can critically discriminate between types of sources of information.
<b>Communication and writing skills</b>	Poor written communication skills (e.g. spelling and grammar). Does not demonstrate an understanding of what is expected in assignment writing and presentation.	Communicates ideas adequately in writing. Adheres to most basic requirements for written work and assignment presentation.	Communicates effectively and clearly in writing. Adheres to all expectations of assignment writing and presentation.	Communicates adeptly in writing. Adheres to all expectations of assignment writing and presentation.

## Unit Schedule

PLEASE SEE ILEARN FOR A DOWNLOADABLE COPY OF THE ENV5117 UNIT DIARY AND MAPS FOR PRACTICAL FIELD SITES

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

New Assessment Policy in effect from Session 2 2016 <http://mq.edu.au/policy/docs/assessm>

[ent/policy\\_2016.html](#). For more information visit [http://students.mq.edu.au/events/2016/07/19/new\\_assessment\\_policy\\_in\\_place\\_from\\_session\\_2/](http://students.mq.edu.au/events/2016/07/19/new_assessment_policy_in_place_from_session_2/)

Assessment Policy prior to Session 2 2016 <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy prior to Session 2 2016 <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Complaint Management Procedure for Students and Members of the Public [http://www.mq.edu.au/policy/docs/complaint\\_management/procedure.html](http://www.mq.edu.au/policy/docs/complaint_management/procedure.html)

Disruption to Studies Policy [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html) *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: [https://students.mq.edu.au/support/student\\_conduct/](https://students.mq.edu.au/support/student_conduct/)

## Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au).

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

### Learning outcomes

- To understand key physical environmental processes and human interaction/modification
- To develop skills in field data collection and analysis
- To demonstrate scientific method in writing and critique of literature

### Assessment tasks

- Assignment 1
- Assignment 2
- Assignment 3
- Assignment 4
- Final Exam

### Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

## Learning outcomes

- To understand key physical environmental processes and human interaction/modification
- To develop skills in field data collection and analysis
- To demonstrate scientific method in writing and critique of literature
- To understand the basics of Spatial Information Science

## Assessment tasks

- Assignment 1
- Assignment 2
- Assignment 4
- Final Exam

## Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

## Learning outcomes

- To develop skills in field data collection and analysis
- To demonstrate scientific method in writing and critique of literature
- To understand the basics of Spatial Information Science

## Assessment tasks

- Assignment 1
- Assignment 2
- Assignment 4
- Final Exam

## Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary

solutions to problems.

This graduate capability is supported by:

## **Learning outcomes**

- To assess some complex interactions between the atmosphere, land surface, and water in sustaining the Earth's Biophysical Environment
- To understand key physical environmental processes and human interaction/modification
- To develop skills in field data collection and analysis
- To demonstrate scientific method in writing and critique of literature
- To understand the basics of Spatial Information Science

## **Assessment tasks**

- Assignment 1
- Assignment 2
- Assignment 3
- Assignment 4
- Final Exam

## **Critical, Analytical and Integrative Thinking**

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

## **Learning outcomes**

- To assess some complex interactions between the atmosphere, land surface, and water in sustaining the Earth's Biophysical Environment
- To understand key physical environmental processes and human interaction/modification
- To develop skills in field data collection and analysis
- To demonstrate scientific method in writing and critique of literature
- To understand the basics of Spatial Information Science

## **Assessment tasks**

- Assignment 1
- Assignment 2

- Assignment 3
- Assignment 4
- Final Exam

## Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

### Learning outcomes

- To assess some complex interactions between the atmosphere, land surface, and water in sustaining the Earth's Biophysical Environment
- To understand key physical environmental processes and human interaction/modification
- To develop skills in field data collection and analysis
- To demonstrate scientific method in writing and critique of literature
- To understand the basics of Spatial Information Science

### Assessment tasks

- Assignment 1
- Assignment 2
- Assignment 3
- Assignment 4
- Final Exam

## Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

### Learning outcomes

- To develop skills in field data collection and analysis
- To demonstrate scientific method in writing and critique of literature



## Assessment tasks

- Assignment 1
- Assignment 2
- Assignment 4
- Final Exam

## Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

### Learning outcomes

- To understand key physical environmental processes and human interaction/modification
- To demonstrate scientific method in writing and critique of literature

## Assessment tasks

- Assignment 1
- Assignment 2
- Assignment 4
- Final Exam

## Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

### Learning outcomes

- To assess some complex interactions between the atmosphere, land surface, and water in sustaining the Earth's Biophysical Environment
- To understand key physical environmental processes and human interaction/modification

## Assessment tasks

- Assignment 2
- Assignment 4
- Final Exam

## Unit specific graduate capabilities

### Unit specific graduate capabilities

Graduate capability	Indicators of development in ENV5117
1. A student who has <i>Discipline Specific Knowledge and Skills</i>	<ul style="list-style-type: none"> <li>• Identifies key terms and describe aspects of the oceans, coast, rivers and air</li> <li>• Constructs a critical evaluation of current scientific knowledge on how rivers, oceans and air operate within the biophysical environment.</li> <li>• Highlights and suggest explanations for impacts of humans on the biophysical environment.</li> <li>• Prepares, analyses and adequately describes scientific data that is collected in the field.</li> <li>• Understands the basics of Spatial Information Science</li> <li>• Understands the basics of data analysis using computer programming language</li> </ul>
2. A student who has <i>Critical, Analytical and Integrative Thinking</i>	<ul style="list-style-type: none"> <li>• Develops an understanding of scientific method.</li> <li>• Competently accesses, uses, critiques and synthesises scientific literature.</li> <li>• Uses appropriate techniques to present scientific data in assignments.</li> <li>• Applies geo-scientific principles to understanding the world and makes recommendations on how the environment can be better managed.</li> <li>• Competently uses information technology applications for analyzing spatial information.</li> <li>• Interprets empirical data to assess biophysical issues.</li> </ul>
3. A student who has <i>Problem Solving and Research Capability</i>	<ul style="list-style-type: none"> <li>• Carries out accurate field data collection and procedures within groups.</li> <li>• Applies knowledge of the biophysical environment to assess environmental problems.</li> <li>• Describes and interprets maps, databases, graphs and tables.</li> <li>• Analyses data using appropriate graphical and numerical techniques.</li> <li>• Draws conclusions from the results of data analysis, while recognizing limitations of data sets.</li> <li>• Draws connections across rivers, oceans, and air and spatial information fields of knowledge in the biophysical environment.</li> </ul>

<p>4. A student who is <i>Creative and Innovative</i></p>	<ul style="list-style-type: none"> <li>· Develops means of presenting and synthesizing data in a creative way.</li> <li>· Generates alternative options and innovative solutions to environmental problems.</li> <li>· Constructs cohesive arguments on biophysical science and issues.</li> <li>· Considers problems of water use, climate change and ocean interactions from new perspectives.</li> </ul>
<p>5. A student who has <i>Effective Communication</i></p>	<ul style="list-style-type: none"> <li>· Demonstrates scientific report writing skills.</li> <li>· Has a clear writing style with correct grammar and spelling.</li> <li>· Uses technical and discipline-specific language and terms.</li> <li>· Demonstrates scientific citation and referencing skills.</li> <li>· Presents data in a range of numerical, graphical and map formats.</li> <li>· Presents ideas clearly with supporting evidence from the literature.</li> <li>· Engages in online and verbal communication with peers on issues in the biophysical environment.</li> </ul>
<p>6. A student who is an <i>Engaged and Ethical Local and Global citizen</i></p>	<ul style="list-style-type: none"> <li>· Engages in issues of environmental degradation and sustainability.</li> <li>· Engages in scientifically honest use of group data with integrity.</li> </ul>
<p>7. A student who is <i>Socially and Environmentally Active and Responsible</i></p>	<ul style="list-style-type: none"> <li>· Identifies how individuals use biophysical resources and place that in a regional context.</li> <li>· Articulates recommendations for better managing biophysical environments.</li> <li>· Is able to work with peers to collect data collaboratively.</li> </ul>
<p>8. A student who has <i>Capable of Professional and Personal Judgement and Initiative</i></p>	<ul style="list-style-type: none"> <li>· Adequately follows instructions, particularly in field contexts.</li> <li>· Applies and adapts scientific knowledge to the real world.</li> <li>· Describes complex environmental systems.</li> </ul>
<p>9. A student who has <i>Commitment to Continuous Learning</i></p>	<ul style="list-style-type: none"> <li>· Demonstrates effective time management skills by submitting good quality assignments on time and attending all lectures and practical classes.</li> <li>· Reflects on their own performance by evaluating feedback from teaching staff and integrating that into subsequent assessment tasks</li> <li>· Shows evidence of reading scientific literature beyond that presented as recommended reading.</li> </ul>

## Changes since First Published

Date	Description
01/03/2016	Changed incorrect due date for 1 assignment