ENVS117

Biophysical Environments

S1 Day 2018

Dept of Environmental Sciences

Contents

General Information

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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 unit covers the terrestrial, coastal, and atmospheric environments. A key focus is on linking theory, field, modelling and analysis skills. The unit includes taking on-site measurements in the local area of water and river health, and climate. The fundamentals of spatial 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, numeracy and analysis

To demonstrate skills in science communication, including using the library, writing and critique of literature

To demonstrate the use of Spatial Information Science tools in biological and physical environments

Assessment Tasks

Name	Weighting	Hurdle	Due
Quizzes	10%	No	Weeks 1, 3, 6, 9, 12
Assignment 1 (Terrestrial)	15%	No	Week 4 - 23rd March
Assignment 2 (Coastal)	15%	No	Week 7 - 13th April
Assignment 3 (Atmospheric)	15%	No	Week 10 - 18th May

Name	Weighting	Hurdle	Due
Assignment 4 (SIS tools)	15%	No	Week 13 - 8th June
Final Exam	30%	No	TBA

Quizzes

Due: **Weeks 1, 3, 6, 9, 12**
Weighting: **10%**

There will be 5 assessable quizzes, each worth 2%. These will be undertaken online through iLearn. There is a quiz on library and scientific writing skills, followed by 1 quiz for each of the four modules.

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, numeracy and analysis
- To demonstrate skills in science communication, including using the library, writing and critique of literature
- To demonstrate the use of Spatial Information Science tools in biological and physical environments

Assignment 1 (Terrestrial)

Due: **Week 4 - 23rd March**
Weighting: **15%**

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. Instructions 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, numeracy and analysis

- To demonstrate skills in science communication, including using the library, writing and critique of literature

Assignment 2 (Coastal)

Due: **Week 7 - 13th April**
Weighting: **15%**

You will use the skills in Matlab that you learned in the practicals 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, numeracy and analysis
- To demonstrate skills in science communication, including using the library, writing and critique of literature

Assignment 3 (Atmospheric)

Due: **Week 10 - 18th May**
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. 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, numeracy and analysis
- To demonstrate skills in science communication, including using the library, writing and critique of literature

Assignment 4 (SIS tools)

Due: **Week 13 - 8th June**
Weighting: **15%**

This assignment will test your ability to use Geographic Information Systems (GIS) and spatial information science to visualise biophysical environments.

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 develop skills in field data collection, numeracy and analysis
- To demonstrate the use of Spatial Information Science tools in biological and physical environments

Final Exam

Due: **TBA**
Weighting: **30%**

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 develop skills in field data collection, numeracy and analysis
- To demonstrate skills in science communication, including using the library, writing and critique of literature
- To demonstrate the use of Spatial Information Science tools in biological and physical environments

Delivery and Resources

CLASSES

Delivery:

Day, External

Organisation of the unit

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

Following this, there are four broad modules:

- Module 1 Weeks 1 - 4 The Terrestrial Environment
- Module 2 Weeks 4 - 7 The Coastal Environment
- Module 3 Weeks 8-10 The Atmospheric Environment
- Module 4 Weeks 10-13 SIS tools for Visualising Biophysical Environment

We will finish up with a lecture giving important exam information and study tips.

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 10 hours per week to a 3 credit point unit like ENVS117.

We strongly encourage you to attend the lectures in person. Illustrative and audio material from the lectures are also available from the ENVS117 web site: https://ilearn.mq.edu.au

Each week, beginning Week 1, 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 ENVS117 UNIT DIARY TO FIND OUT WHERE EACH WEEK’S PRACTICAL IS LOCATED. The practicals 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 ENVS117 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 ENVS117 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 should attend the on-campus sessions on Sunday 18th March.

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 this day 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 Sunday.

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 the external prac session (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 ENVS117. 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 ENVS117 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 ENVS117 to enter the unit.

Once You Have Reached the ENVS117 Home Page

All the material used in ENVS117 will be presented via the web site. For those familiar with the internet, finding your way through the ENVS117 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 ENVS117 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 ENVS117 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 ENVS117, 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 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.

If you receive special consideration for the final exam, a supplementary exam will be scheduled in the interval between the regular exam period and the start of the next session. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. You can check the supplementary exam information page on FSE101 in iLearn (bit.ly/FSESupp) for dates, and approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

WHAT IS REQUIRED TO COMPLETE THIS UNIT

SATISFACTORILY?

You must receive a grade of at least 50% to pass.

The Faculty Board has resolved that **from S1 2018 all 100-level units in the Faculty of Science and Engineering will have a compulsory (hurdle) requirement on participation in tutorials, practicals and laboratories**.

- It is participation not attendance (i.e., staff member will be observing the students participation during practicals)
- It's a hurdle requirement (e.g. 10 out 12 practicals are mandatory attendance).

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	12	24
Quizzes			3
Assignment 1			10
Assignment 2			20
Assignment 3			15
Assignment 4			15
Out of class study	3	15	39
Total for semester			150
Per week (15 weeks)			**10**

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
General description of the level of attainment	Has not yet reached the desired standard. A **Fail** grade (or under some circumstances a **Conceded Pass**) would be given.	Has reached basic academic standards. A **Pass** grade would be awarded.	Has completely reached the standards expected. A **Credit** would be awarded.	Has gone beytond the expected standed. A grade of **Distinction** or **High Distinction** would be awarded.
Knowledge and understanding	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.
Analysis	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.
Information literacy	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.
Communication and writing skills	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 AN UP TO DATE AND DOWNLOADABLE COPY OF THE UNIT DIARY AND MAPS FOR PRACTICAL FIELD SITES

Week	Lecturer	Lecture Topic	Practical Topic (and location)	Assignment and on-campus session dates
w1 26/2	MR	Introduction	**Practical 1 (online):** Library skills & scientific writing. This is a self-direced exercise - you can use the prac room during your practical time or do this practical from home (MR)	**Quiz A (Library)**: To be completed during the practical.
w1 1/3	TR	*The terrestrial environment* I – What is geomorphology?		
w2 5/3	TR	*The terrestrial environment* II – Soils and water in the landscape	**Practical 2 (field):** Flood peak flows **–** surveying and field analyses (meet at the lake behind the U@MQ Building - see map on next page and in prac notes) (TR)	
w2 8/3	TR	*The terrestrial environment* III – Catchments and flooding in river systems		
w3 12/3	TR	*The terrestrial environment* IV – Fluvial pattern and diversity	**Practical 3 (prac room):** Flood peak flows **–** data analysis in prac room (TR)	**Quiz B (Terrestrial environment)**: Due date: Friday 16th March **On-campus session** for external students on **Sunday 18th March** (River & Atmospheric modules – TR + GE)
w3 15/3	TR	*The terrestrial environment* V – Anthropogenic modifications to catchments and rivers: Lane Cove since 1770		
w4 19/3	TR	*The terrestrial environment* VI - Urban streams and river health	**Practical 4 (field):** Learning about stream sediments & geomorphic mapping (**meet at Browns Waterhole** – see map on next page and in prac notes) (TR)	**Assignment 1 (Terrestrial environment)**: Due date: Friday 23rd March.
w4 22/3	MR	*The coastal environment* I – Air crash – Ocean forensics		
w5 26/3	MR	*The coastal environment* II – Waves	**Practical 5 (online):** Exploring oceans. This is self directed exercise – you can use the prac room during your practical time or do this practical from home (MR)	
w5 29/3	SG	*The coastal environment* III – Tides		
w6 2/4	-	*Easter Monday* *No lectures / No practicals*	**Practical 6 (prac room):** Introduction to Matlab (MR)	**Quiz C (*Coastal environment*).** Due date: Friday 6th April
w6 5/4	MR	*The coastal environment* IV – Coastal geomorphology		

w7 9/4	MR	*The coastal environment* V – Coastal processes	**Practical 7 (prac room):** Wave practical (MR)	**Assignment 2 (Coastal environment)**. Due date: Friday 13th April
w7 12/4	MR	*The coastal environment* VI - Estuarine processes		
MID-SEMESTER BREAK– Monday 16th April to Friday 27th April				
w8 30/4	GE	*The atmospheric environment* I – Introduction to climate science	**Practical 8 (field):** Microclimatic field measurements (GE)	
w8 3/5	GE	*The atmospheric environment* I – Atmospheric properties and weather		
w9 7/5	GE	*The atmospheric environment* III –Micro-climates	**Practical 9 (prac room):** Analysing field microclimate (GE)	**Quiz D (Atmospheric environment)**. Due date:Friday 11th May.
w9 10/5	GE	*The atmospheric environment* IV – Meso-scale processes		
w10 14/5	GE	*The atmospheric environment* V – Air pollution	**Practical 10 (online):** Weather map practical (GE)	**Assignment 3 (Atmospheric environment).** Due date: Friday 18th May
w10 17/5	MM	*Visualising the environment* I - Introduction to spatial information science		
w11 21/5	MM	*Visualising the environment* II – Introduction to geographic information systems (GIS)	**Practical 11 (prac room):** Introduction of ArcMap in ArcGIS	
w11 24/5	MM	*Visualising the environment* III - Spatial data collection		
w12 28/5	MM	*Visualising the environment* IV - Cartography	**Practical 12 (prac room):** Basic GIS queries and mapping	**Quiz E (Visualising the environment).** Due date: Friday 1st June.
w12 31/5	MM	*Visualising the environment* V - Spatial Queries		
w13 4/6	MM	*Visualising the environment* VI - Earth Observations	**No practical class – Time for exam study**	**Assignment 4 (*Visualising the environment*).** Due date: Friday 8th June

w6 7/6	MR	Conclusions, future study, exam info and preparation		

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Undergraduate students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/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/study/getting-started/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.

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) 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

IT Help

For help with University computer systems and technology, visit 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, numeracy and analysis
- To demonstrate skills in science communication, including using the library, writing and critique of literature

Assessment tasks

- Assignment 1 (Terrestrial)
- Assignment 2 (Coastal)
- Assignment 3 (Atmospheric)
- Assignment 4 (SIS tools)

- 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, numeracy and analysis
- To demonstrate skills in science communication, including using the library, writing and critique of literature
- To demonstrate the use of Spatial Information Science tools in biological and physical environments

Assessment tasks

- Assignment 1 (Terrestrial)
- Assignment 3 (Atmospheric)
- 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, numeracy and analysis
- To demonstrate skills in science communication, including using the library, writing and critique of literature
- To demonstrate the use of Spatial Information Science tools in biological and physical environments

Assessment tasks

- Assignment 1 (Terrestrial)
- Assignment 3 (Atmospheric)
- 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, numeracy and analysis
- To demonstrate skills in science communication, including using the library, writing and critique of literature
- To demonstrate the use of Spatial Information Science tools in biological and physical environments

Assessment tasks

- Quizzes
- Assignment 1 (Terrestrial)
- Assignment 2 (Coastal)
- Assignment 3 (Atmospheric)
- Assignment 4 (SIS tools)
- 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, numeracy and analysis
- To demonstrate skills in science communication, including using the library, writing and critique of literature
- To demonstrate the use of Spatial Information Science tools in biological and physical environments

Assessment tasks

- Quizzes
- Assignment 1 (Terrestrial)
- Assignment 2 (Coastal)
- Assignment 3 (Atmospheric)
- Assignment 4 (SIS tools)
- 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, numeracy and analysis
- To demonstrate skills in science communication, including using the library, writing and critique of literature

- To demonstrate the use of Spatial Information Science tools in biological and physical environments

Assessment tasks

- Quizzes
- Assignment 1 (Terrestrial)
- Assignment 2 (Coastal)
- Assignment 3 (Atmospheric)
- Assignment 4 (SIS tools)
- 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, numeracy and analysis
- To demonstrate skills in science communication, including using the library, writing and critique of literature

Assessment tasks

- Assignment 1 (Terrestrial)
- Assignment 3 (Atmospheric)
- 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 skills in science communication, including using the library, writing and critique of literature

Assessment tasks

- Assignment 1 (Terrestrial)
- Assignment 3 (Atmospheric)
- 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 1 (Terrestrial)
- Assignment 3 (Atmospheric)
- Final Exam

Unit specific graduate capabilities

Unit specific graduate capabilities

Graduate capability	Indicators of development in ENVS117

1. A student who has *Discipline Specific Knowledge and Skills*	· Identifies key terms and describe aspects of the oceans, coast, rivers and air · Constructs a critical evaluation of current scientific knowledge on how rivers, oceans and air operate within the biophysical environment. · Highlights and suggest explanations for impacts of humans on the biophysical environment. · Prepares, analyses and adequately describes scientific data that is collected in the field. · Understands the basics of Spatial Information Science Understands the basics of data analysis using computer programming language
2. A student who has *Critical, Analytical and Integrative Thinking*	· Develops an understanding of scientific method. · Competently accesses, uses, critiques and synthesises scientific literature. · Uses appropriate techniques to present scientific data in assignments. · Applies geo-scientific principles to understanding the world and makes recommendations on how the environment can be better managed. · Competently uses information technology applications for analyzing spatial information. · Interprets empirical data to assess biophysical issues.
3. A student who has *Problem Solving and Research Capability*	· Carries out accurate field data collection and procedures within groups. · Applies knowledge of the biophysical environment to assess environmental problems. · Describes and interprets maps, databases, graphs and tables. · Analyses data using appropriate graphical and numerical techniques. · Draws conclusions from the results of data analysis, while recognizing limitations of data sets. · Draws connections across rivers, oceans, and air and spatial information fields of knowledge in the biophysical environment.
4. A student who is *Creative and Innovative*	· Develops means of presenting and synthesizing data in a creative way. · Generates alternative options and innovative solutions to environmental problems. · Constructs cohesive arguments on biophysical science and issues. · Considers problems of water use, climate change and ocean interactions from new perspectives.

5. A student who has *Effective Communication*	· Demonstrates scientific report writing skills. · Has a clear writing style with correct grammar and spelling. · Uses technical and discipline-specific language and terms. · Demonstrates scientific citation and referencing skills. · Presents data in a range of numerical, graphical and map formats. · Presents ideas clearly with supporting evidence from the literature. · Engages in online and verbal communication with peers on issues in the biophysical environment.
6. A student who is an *Engaged and Ethical Local and Global citizen*	· Engages in issues of environmental degradation and sustainability. · Engages in scientifically honest use of group data with integrity.
7. A student who is *Socially and Environmentally Active and Responsible*	· Identifies how individuals use biophysical resources and place that in a regional context. · Articulates recommendations for better managing biophysical environments. · Is able to work with peers to collect data collaboratively.
8. A student who has *Capable of Professional and Personal Judgement and Initiative*	· Adequately follows instructions, particularly in field contexts. · Applies and adapts scientific knowledge to the real world. · Describes complex environmental systems.
9. A student who has *Commitment to Continuous Learning*	· Demonstrates effective time management skills by submitting good quality assignments on time and attending all lectures and practical classes. · Reflects on their own performance by evaluating feedback from teaching staff and integrating that into subsequent assessment tasks · Shows evidence of reading scientific literature beyond that presented as recommended reading.