ENVS117

Biophysical Environments

S1 External 2019

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

General Assessment Information

Assessment Criteria

Assessment at Macquarie University is standards-based, as outlined in the Assessment Policy. This means that your work in ENVS117 will be assessed against clear criteria, and these criteria will be made available when the assessment tasks are released to you on iLearn.

Submission of Assessments

Your two major assignments in ENVS117 must be submitted online through Turnitin. Links for the submission of each assignment will be available on iLearn. Your quizzes are to be completed on iLearn, and your exam must be sat in person during the formal examination period. The due

dates for all assessment tasks are not negotiable. If you have commitments that will significantly impact your study during the session then you must plan for this in advance as part of an effective individual study plan and you may need to contact the unit convenor for advice.

Hurdle Requirement

A hurdle requirement is an activity for which a minimum level of performance or participation is a condition of passing the unit (see the Assessment Policy). ***In ENVS117, the hurdle requirement is that each student attends and satisfactorily completes nine (9) out of the eleven (11) practical classes offered***. For internal students this means attending and fully completing your scheduled classes each week. For external students, the hurdle is the same but your practical classes will be held during two on-campus sessions and online. Failure to meet the hurdle requirement will result in failure of the unit.

Marking of Assessments

Your two major assignments will be marked through Turnitin and feedback will be noted on the assignment. ***Do not*** submit your assignments via email or in hard copy. Your grades will be returned using the Grades Report on iLearn. Grades from your quizzes and the exam will also be made available on iLearn.

Due to the large number of students in ENVS117 (>250), we aim to return your assignments with feedback within three weeks of the date that you submit your assignment, and before your next assignment is due. We appreciate your patience and will advise you through iLearn when your marked assignments and feedback are available for viewing.

Penalties for Late Assessments

The penalty for late submission of assessments in ENVS117 is ***ten percent (10 %) of the assessment value per day***, calculated from the due time and date. This means that if the assignment is worth a total of 30 marks (or 30 % of the unit) you will lose 3 marks for each day late. This is a hefty penalty designed to make you aware of the importance of organising yourself around assessment due dates. The penalty will be applied over weekdays and weekends unless you have been granted an extension by the lecturer responsible for the assignment prior to the due date.

Extensions for Assessments

To obtain an extension for an assessment task, you will need to follow the formal process as outlined in the Special Consideration Policy, and you must provide appropriate supporting documentation (e.g. medical certificate - see advice for Special Consideration requests). The final decision regarding the granting of an extension and/or a late penalty lies with the unit convenor/lecturer responsible for the assignment. Permission for extension must be sought ***well before the due date*** unless this is absolutely impossible. 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.

Exams

Details of exam conditions and timetables can be found at the Exams and Results portal. It is very important to note that the final exam period includes weekdays and weekends and all

students (including international exchange students) are expected to present themselves for the ENVS117 exam at the time and place designated in the exam timetable. The timetable will be available in Draft form approximately eight weeks before the commencement of the exams and in Final form four weeks before the commencement of exams.

For unavoidable disruptions during exams, you should apply for Special Consideration as soon as possible. If a Supplementary Examination is granted as a result of the Special Consideration process, the exam time will be scheduled ***after the conclusion of the official examination period*** and you will receive an individual notification one week prior to the exam with the exact date and time of the Supplementary Examination. 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. You are required to download your room and seat number from the exam website before the exam.

Assessment Tasks

Name	Weighting	Hurdle	Due
Quizzes	10%	No	5pm Fri. Weeks 1, 3, 7, 10, 13
Assignment 1	30%	No	9am 1/4/19
Assignment 2	30%	No	IN 9am 27/5/19; EX 9am 3/6/19
Final Exam	30%	No	TBA

Quizzes

Due: **5pm Fri. Weeks 1, 3, 7, 10, 13**
Weighting: **10%**

There are 5 assessable quizzes, each worth 2%. These will be undertaken online through 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 demonstrate the use of Spatial Information Science tools in biological and physical environments

Assignment 1

Due: **9am 1/4/19**
Weighting: **30%**

This assignment tests your ability to conduct research, collect, analyse and interpret data, and to write a scientific report supported by appropriate literature. Full instructions will be posted on iLearn and notified in lectures.

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

Due: **IN 9am 27/5/19; EX 9am 3/6/19**
Weighting: **30%**

This assignment tests your ability to use Geographic Information Systems (GIS) and spatial information science to visualise biophysical environments, and to interpret a climate-related dataset. Full instructions will be posted on iLearn and notified in lectures.

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

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 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

The class timetable for ENVS117 can be found through the Timetable portal.

A detailed class schedule with lecture and practical topics, assessment due dates, etc. will be made available to all enrolled students through iLearn.

ENVS117 is taught via lectures, practical classes, readings, and assessment tasks. Students must make regular use of iLearn to access teaching and learning materials, to submit assessment tasks, to stay in touch with the unit, to contact lecturers and tutors, and to discuss issues and concepts with classmates.

We also recommend that you follow current developments in the multidisciplinary field of environmental science and management by staying abreast of the news.

Unit Organisation

This unit starts with an introductory lecture and an overview of library and scientific writing skills. Following this, there are four modules:

- Module 1 Water in the Terrestrial Environment (weeks 1 - 3)
- Module 2 The Coastal Environment (weeks 3 - 7)
- Module 3 Visualising the Environment (weeks 8-10)
- Module 4 The Atmospheric Environment (weeks 10-13)

We conclude the unit with an important unit summary lecture, including exam information and study tips.

Internal Students: a summary of what you need to do

We expect you to attend two 1-hour lectures and one 2-hour practical class each week (unless that day/week is marked in the schedule as having no class). We expect you to devote 9 hours per week (on average) to a 3 credit point unit like ENVS117, which means that you should spend 5 additional hours per week (on average) working towards completion of assessments, readings, etc. for ENVS117 outside of your face-to-face classes.

We strongly encourage you to attend the lectures in person. Illustrative and audio material from the lectures are also available on iLearn.

You must attend the practical classes in person - this is part of the hurdle requirement that stipulates that you must satisfactorily complete 9 out of the 11 practical classes to pass this unit. Practicals run from weeks 1 to 13, but please note that there are no practical classes in weeks 7 or 10.

The 2-hour "hands-on" practical classes will be held either in the computer laboratory or in the field (i.e. outside!). They are designed to help you work towards the major assignments, to allow you to build on your understanding of core material from lectures, readings and other activities, and to develop some valuable generic and discipline-specific skills. Meet in your usual practical classroom every week then proceed with your tutor to the field when required, unless directed otherwise via iLearn. Look to the ENVS117 class schedule on iLearn to find out whether you need field equipment (e.g. enclosed shoes, hat/raincoat, water bottle, etc.) for your class.

External Students: a summary of what you need to do

We expect you to 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 lecture slides provided on iLearn while listening. Obviously, you will require access to the internet to regularly access iLearn in order to complete this unit. In total, we expect you to devote 9 hours per week (on average) to a 3 credit point unit like ENVS117.

We also expect you to complete online practicals each week that they are run, and to attend two on-campus sessions - this is part of the hurdle requirement that stipulates that you must satisfactorily complete 9 out of the 11 practical classes to pass this unit.

The two on-campus sessions will be held on **Sunday 17th March** and **Sunday 26th May**, and will run from **9.00 am - 4 pm**. Information and an itinerary for each on-campus session will be released on iLearn. You will spend some time outdoors in the field, so ensure you have sturdy, enclosed footwear (no sandals or thongs), sunscreen, a hat and a raincoat. Water, 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 complete the recommended readings. You're encouraged to look at the online practicals before you come on campus but these will be addressed during those face-to-face sessions.

Required and Recommended Texts and/or Materials

There is no set textbook for this unit, but there are recommended readings for each module as noted on iLearn.

Technology Used and Required

This unit will use iLearn and Echo360. See the Instructions on how to log in to iLearn and the iLearn quick guides for students which will help you:

- Getting started - Find out how to navigate and familiarise yourself with the iLearn

environment

- Activities - Learn how to effectively complete the activities required of you in iLearn
- Assignments and Gradebook - Find out how to submit assessments and view your grades using iLearn
- Online study tips - Studying online is a unique experience, learn how to navigate it here
- Discussion forums - Explore the different types, and features of discussion forums in iLearn
- Lecture recordings - Find out how to access lectures online, as well as the features available to you

Computer-Based Learning

There are essential computer-based components of ENVS117, including lectures recorded digitally as .mp3 files (in Echo360), many of the weekly practical exercises, and online discussion forums for communicating with staff and other students in this unit. You can undertake this work from off-campus or on-campus, including through the computer labs (when they are not booked for classes) or in the Library. 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/.

Please note that at the beginning of semester our rolls are often incomplete (due to late transfers and changes of enrollment). In the first week of semester, if your name is missing from the enrollment 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 online tutorial or bulletin board). In ENVS117, we use it to discuss important issues and to resolve problems. You are expected to read every posting to the discussion forum because important administrative and academic information will be posted there - it is your responsibility to stay up-to-date. This is particularly important for External students. Unit-wide announcements may also be shared in very important circumstances.

What is Required to Complete This Unit Satisfactorily?

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

You must complete the hurdle requirement. 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. Participation is not simply attendance - 9 out 11 practicals require your attendance and satisfactory completion.

You should complete the full unit workload. We expect you to work 9 hours per week on this

unit. Obviously this is dependent on the speed at which you learn and your ability to study effectively. You may 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 session and work around other units and commitments you may have. A guide of hours typically 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 time or effort!

Activity	Hours Per Teaching Week	No. of Weeks	Hours Per Session
Lectures	2	12.5	25
Practicals	2	11	22
Quizzes			3
Assignment 1			25
Assignment 2			25
Other (out of class study, reading, exam revision, etc.)	2.3	15	35
Total for semester			135
Per week (15 weeks)			**9**

You should understand and perform according to the general unit criteria. 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 beyond the expected standard. 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

Week	Lecture Date	Lecture Topics	Practical Classes	Assessment Tasks and On-campus Sessions	Staff
Module 1 – Water in the Terrestrial Environment					
1	**25 Feb** **27 Feb**	**L1** Unit introduction: biophysical environments **L2** Soil and water in the landscape	**P1** Library skills and scientific writing (*online*)	**Quiz A (2%)** due 17:00 Friday 1 March	TR KF
2	**4 Mar** **6 Mar**	**L3** Catchments and runoff **L4** Stormflow and flooding	**P2** Flood peak flows – surveying (*field*)		KF KF
3	**11 Mar** **13 Mar**	**L5** Fluvial patterns and diversity **L6** Anthropogenic modifications to catchments and rivers	**P3** Flood peak flows – data analysis (*lab*)	**Quiz B (2%)** due 17:00 Friday 15 March **On-campus day 1 (external students)** 9:00 – 16:00Sunday 17 March	KF KF
Module 2 – The Coastal Environment					
4	**18 Mar** **20 Mar**	**L7** Urban streams and aquatic health **L8** Wetlands and estuaries	**P4** Water quality (*field*)		TR* TR*

5	**25 Mar** **27 Mar**	**L9** Coastal geomorphology **L10** Coastal processes	**P5** Introduction to Matlab (*lab*)		TR* TR*
6	**1 Apr** **3 Apr**	**L11** Waves **L12** Tides	**P6** Exploring oceans (*online*)	**Assignment 1 (30%)** due 9:00 Monday 1 April	TR* TR*
7	**8 Apr** ***10 Apr***	**L13** Ocean circulation and forensics ***L14*** *No Lecture*	*No practical classes*	**Quiz C (2%)** due 17:00 Friday 12 April	TR*
Mid-session Break					
Module 3 – Visualising the Environment					
8	**29 Apr** **1 May**	**L15** Introduction to spatial information science **L16** Geographic information systems	**P7** Introduction to ArcMap in ArcGIS (*lab*)		MM MM
9	**6 May** **8 May**	**L17** Spatial data collection **L18** Cartography	**P8** Basic GIS queries and map generation (*lab*)		MM MM
10	**13 May** **15 May**	**L19** Spatial queries **L20** Earth Observations	*No practical classes*	**Quiz D (2%)** due 17:00 Friday 17 May	MM MC
Module 4 – The Atmospheric Environment					
11	**20 May** **22 May**	**L21** Introduction to the atmospheric environment **L22** Atmospheric energy and the structure of the atmosphere	**P9** Microclimatic measurements (*field*)	**On-campus day 2 (external students)** 9:00 – 16:00 Sunday 26 May	PB PB
12	**27 May** **29 May**	**L23** Water in the atmospheric environment **L24** Air flow in the atmospheric environment	**P10** Analysing field microclimate (*lab*)	**Assignment 2 (30%)** due INTERNALS 9:00 Mon 27 May EXTERNALS 9:00 Mon 3 June	PB PB
13	**3 Jun** **5 Jun**	**L25** Urban climate and air quality **L26** Unit review and exam advice	**P11** Weather mapping (*lab*)	**Quiz E (2%)** due 17:00 Friday 7 June **Final exam (30%)** TBC in final exam period	PB TR
Final Examination Period					

TR = Dr Tim Ralph **KF** = Prof. Kirstie Fryirs **MM** = Dr Maina Mbui **MC** = Dr Michael Chang **PB** = A/Prof. Paul Beggs

** Note: TR will be on parental leave, to be replaced by another lecturer*

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 published on platform other than eStudent, (eg. iLearn, Coursera etc.) 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 or if you are a Global MBA student contact globalmba.support@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

If you are a Global MBA student contact globalmba.support@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
- To demonstrate the use of Spatial Information Science tools in biological and physical environments

Assessment tasks

- Assignment 1
- Assignment 2

- 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

- Quizzes
- Assignment 1
- Assignment 2

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

- Quizzes
- Assignment 1
- Assignment 2

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
- Assignment 2
- 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
- Assignment 2
- 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
- Assignment 2
- 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
- To demonstrate the use of Spatial Information Science tools in biological and physical environments

Assessment tasks

- Assignment 1
- Assignment 2
- 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
- Assignment 2

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 task

- Assignment 1

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.