

UNIVERSITY OF
WOLLONGONG



Subject Outline

ENVI922

**Scientific Basis of
Environmental
Management**

**Faculty of Science,
Medicine and Health**

**School of Earth and
Environmental
Sciences**

Spring

2013

Subject Outline

Subject code:	ENVI922
Subject name:	Scientific Basis of Environmental Management
Credit points:	12
Pre/co-requisites:	Must be enrolled in Environmental Science Postgraduate program or MSc (Coastal Planning)
Mode of delivery:	On Campus
Delivery location:	Wollongong

Version history

4th edition	Samuel Marx, School of SEES, Faculty of SMAH, UOW	2013
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Errol Mclean	-	-	errol@uow.edu.au	By appointment

Subject Information

Outline

This subject covers topics designed to give students a comprehensive overview of the scientific basis of environmental management. The subject will adopt a multi-disciplinary approach to the scientific understanding of how environmental systems work and show how an appreciation of such knowledge leads to the development of appropriate management strategies for these systems. While there will be some emphasis on the Australian situation, much of the material is applicable in any country. The systems to be covered include rivers, coasts, biological/ecological systems soils and climate/atmospheric science. Case studies from Australia, South-East Asia and the Pacific Islands in addition to other locations will be included. As part of the subject, students will complete projects carried out in team to facilitate the development of interdisciplinary skills and an appreciation of the benefits of teamwork in addressing environmental management issues.

Pre-requisites: Approved entry to MEnvSc degree

Credit Points: 12 cp

Textbooks: None specified. There are numerous books in the Library on material covered in this subject.

School Student Support

School Office (Wendy Weeks, Denise Alsop) Room 41.154 Tel 02 4221 3721

School Manager and OH&S Sandra Chapman Room 41.154B Tel 02 4221 4483

Student Liaison Officer Marina McGlenn Room 41.G29 Tel 02 4221 4396

University support services

Disability Liaison Officer 3rd floor, UniCentre building 02 4221 3445

Learning Resource Centre <http://www.uow.edu.au/student/services/ld>

Woolyungah Indigenous Centre <http://www.uow.edu.au/wic/index.html>

Library

Telephone 02 4221 3548 <http://www.library.uow.edu.au>

Purchasing of books - UniShop

Telephone 02 4221 8050

Email unishop@uow.edu.au

Facsimile 02 4221 8055

Web <http://unishop.uow.edu.au/>

Learning Outcomes

Through successful completion of this subject students should be able to:

- carry out a scientific investigation of a given environmental management issue individually or in a team context
- carry out an initial assessment of a data set relating to environmental management, e.g., water quality, soil survey, ecological survey, including aspects like data quality and completeness.
- show an understanding of the linkages between an understanding of the major ecological processes in a given area and the development of appropriate management systems.
- describe the major processes occurring in the atmosphere, the oceans, lakes, rivers and estuaries
- explain the unique properties of water and their importance in environmental processes
- describe the major features of soils and explain the role of soils as a medium for environmental processes
- list the major types and sources of hazardous wastes and explain the properties of such materials that creates the hazards
- describe the major processes that occur in river catchments and explain how the concept of total catchment management builds on these processes
- describe how coral reefs are formed and explain their importance as ecosystems
- describe the major features of mangrove and other wetland systems and explain their ecological importance

Students will acquire the following statistical, information, computer and academic literacy as a result of explicit teaching / learning activities in this subject:

- Use of Library literature search facilities, e.g., in the preparation of a report on a topic of significance in environmental management
- Critical evaluation of information available from a range of internet and traditional sources
- Articulate, justify, argue and distinguish fact from opinion in environmental science information

- Explore issues within existing knowledge including written and oral analysis
- Formulate clear concise questions based on information needs
- Summarise current understanding, and critically comment on current environmental issues
- Apply problem solving strategies in situations where the problem and desired solution are evident
- Develop the capacity to read and develop a basic understanding in a new discipline relating to environmental science
- Identify the ethical dimensions of an environmental management issue
- Introduction to Endnote as a reference database
- Preparation and Management of Word, Excel and PowerPoint documents

Graduate Qualities

Valuable qualities gained by UOW graduates are essential for gaining employment and making an important contribution to society and their chosen field – further information is available at <http://www.uow.edu.au/about/teaching/qualities/>

Engagement in this subject will contribute to each student’s development of the following UOW Graduate Qualities:

Informed

- Comprehensive knowledge of an area of Science and well-developed skills in using relevant technologies
- Awareness of the international context in which advances in Science are made and applied

Independent learners

- Critical thinking skills
- Scientific approach to the acquisition, analysis, and interpretation of data

Independence in seeking to extend knowledge through ongoing research, enquiry and reflection

- Problem solvers
- Application of creative, logical and critical thinking to scientific problems

Effective communicators

- Well-developed written, oral & aural communication
- Effective collaboration and teamwork across a range of settings and cultures

Responsible

- Ethical decision making
- Respect for diverse opinions, professions, and cultures

Lecture Times

Day	Time	Room
Monday	1.30–5:30 pm	1-G04
Tuesday	2.30–4:30 pm	41-202

Study Time

Students should note that UOW policy equates 1 credit point with 2 hours of study per week that includes lectures and tutorials. For example, in a 6 credit point subject, a total of 12 hours of study per week is expected.

Recommended Readings

The items listed below are suggested readings; it is neither anticipated nor expected that you will read all of them or even refer to them all. The list is provided to assist you in gathering additional information about topics covered in the course. Some of the materials may not be available in the UOW Library.

General

- Australian Academy of Science, 1994. *Environmental Science*. AAS, Canberra, 465p.
- Conacher, A.J. and Connacher, J., 2000. *Environmental Planning and Management in Australia*, Oxford University Press, Melbourne, 460 p.
- Australian Academy of Science, 1994. *Environmental Science*. AAS, Canberra, 465 p. CALL NUMBER 304.2/209.
- Bourliere, F. (Editor) 1983. *Tropical Savannas*. Ecosystems of the World 13. Elsevier, Amsterdam. CALL NUMBER 574.526/2.
- Conacher, A.J. and Conacher, J. 2000. *Environmental Planning and management in Australia*. Oxford University Press, Melbourne, 460 p. CALL NUMBER 333.760994/12
- Cicin-Sain, B. and Knecht, R.W. 1998. *Integrated Coastal and Ocean Management*. Island Press, Washington, DC. CALL NUMBER 313.917.48.
- Dubinsky, Z. (Editor) 1990. *Coral Reefs*. Elsevier, Amsterdam. 550 p. CALL NUMBER 574.526/2.
- Ellis, D. 1989. *Environments at Risk*. Springer-Verlag, Berlin, 329 p. CALL NUMBER 363.7/48.

- Ives, J.D. and Barry, J.D. (Editors) 1974. *Arctic and Alpine Environments*. Methuen, London, 999 p. CALL NUMBER 574.50998/2.
- Libes, S. 1992. *An Introduction to Marine Biogeochemistry*. Wiley, New York, 734 p. CALL NUMBER 551.4601/27.
- McLusky, D.S. and Elliott, M. 2004. *The Estuarine Ecosystem*, Third Edition. Oxford Univeristy Press, Oxford. 217 p. CALL NUMBER 574.526365/17.
- Manahan, S.E. 1990. *Hazardous Waste Chemistry, Toxicology and Treatment*. Lewis Publishers, Chelsea, Michigan, 378 p. CALL NUMBER 628.42/2.
- O'Riordan, T. (Editor) 1995. *Environmental Science for Environmental Management*. Longman Scientific and Technical, Harlow, 369 p. CALL NUMBER 363.7/93.
- Pereira, H.C. 1989. *Policy and Practice in the Management of Tropical Watersheds*. Westview Press, Boulder, 237 p. CALL NUMBER 333.9115/7.
- Taub, F.B. (Editor) 1984. *Lakes and Reservoirs*. Elsevier, Amsterdam, 398 p. CALL NUMBER 574.526/2.
- Walker, B.H. (Editor) 1979. *Management of Semi-arid Ecosystems*. Elsevier, Amsterdam, 398 p. CALL NUMBER 333.73/10.
- Waring, R.H. and Schlesinger, W.H. 1985. *Forest Ecosystems: concepts and management*. Academic Press, Orlando, 340 p. CALL NUMBER 574.52642/10.
- Williams, M. (Editor) 1991. *Wetlands: a Threatened Landscape*. Blackwells, Oxford, 449 p. CALL NUMBER 333.918/3
- Libes, S. 1992. *An Introduction to Marine Biogeochemistry*. Wiley, New York, 734 p.
- McMichael, A.J. 1993. *Planetary Overload*. Cambridge University Press, 352 p.
- Miller, G.T. 2003. *Living in the Environment*. 13th Edition, Brooks/Cole, Belmont California.
- National Heritage Trust, 2002. *Australia's Natural Resources 1997-2002 and Beyond*. National Land and Water Resources Audit, Canberra, 141 p.
- Nisbet, E.G., 1991. *Leaving Eden: To protect and manage the Earth*. Cambridge University Press, 358 p.
- O'Riordan, T. (Editor) 1995. *Environmental Science for Environmental Management*. Longman Scientific and Technical, Harlow, 369 p.
- Sturman, A.P., Tapper, N.J., 1996, *The weather and climate of Australia and New Zealand*, Oxford University Press, Melbourne, 476 p.
- Brierley, G.J., Fryirs, K.A., 2005, *Geomorphology and river management: application of the river style sframework*. Blackwell Publishers, USA.
- Goudie, A., 1995, *The changing Earth: rates of geomorphological processes*. Blackwell, Oxford.
- Huggett RJ 2005 *Environmental Change: The Evolving Ecosphere (2nd ed.)*. Routledge England.
- Goudie, A., 2001, *The nature of the environment (4th ed)*. Blackwell Publishers, P. 560.

WATER

Benson, S. and Siebert, E. 1992. *J.Am. Chem. Soc.*, **114**, 4269

Chahine, M.T. 1992. The hydrological cycle and its influence on climate. *Nature*, **359**,373-380.

OCEANS

Brown, J. *et al* (Open University Oceanography Course Team) 1989.

The Ocean Basins: Their Structure and Evolution

Seawater: Its Composition, Properties and Behaviour

Ocean Circulation

Waves, Tides and Shallow-Water Processes

Chester, R. 1990. *Marine Geochemistry*. Unwin Hyman, London, 698 p.

Cromwell, D. 2000. Ocean circulation. *New Scientist*, Inside Science Item 130, Centre pages, 20 May 2000, 4 p.

ATMOSPHERE

Bernstein, et al., 2007, Climate Change Synthesis Report, In Climate Change 2007: Synthesis Report, IPCC, 25-73.

Molina, M.J. and Rowland, F.S. 1974. Stratospheric sink for chlorofluoromethanes: chlorine atom-catalysed destruction of ozone. *Nature*, **249**, 810-812.

Nisbet, E.G. 1991. *Leaving Eden*. Cambridge Univ Press, Cambridge, chapters 2, 3 and pp 302-306.

Sturman, A.P. and Tapper. N.J. 2006. The weather and climate of Australia and New Zealand. Oxford University Press, Melbourne, Australia. 560pp. Mitchell, J.B.F., 1989: The greenhouse effect and climate change, *Reviews of Geophysics*, Vol. 27, 115-119.

Trenberth, K.E., Fasullo, J.T., 2012, Tracking Earth's Energy: From El Niño to Global Warming, , *Climate Change*, Vol. 33, 413-426.

Trenberth, K.E., Solomon, A., 1994: The global heat balance: heat transports in the atmosphere and ocean, *Climate Change*, Vol. 10, 106-134.

SOILS

Buol, S.W., Hole, F.D. and McCracken, R.J. 1980. *Soil Genesis and Classification* Second Edition. Iowa State University Press, Ames, 404 p.

Division of Soils, CSIRO. 1983. *Soils: An Australian Viewpoint*. CSIRO, Melbourne, 928 p.

McKenzie, N. et al, 2004. *Australian Soils and Landscapes*. CSIRO Publishing, Melbourne, 416 p.

Marshall, T.J. and Holmes, J.W. 1979. *Soil Physics*. Cambridge Univ. Press, 345 p.

FLORA AND FAUNA

Australian Academy of Science, 1994. *Environmental Science*. AAS, Canberra, 465 p.

Miller, G.T. 2002. *Living in the Environment*. 12th Edition, Brooks/Cole, Belmont California, 758 p++.

ALPINE ECOSYSTEMS

- Barlow, B.A. (Editor) 1986. *Flora and fauna of Alpine Australasia*. CSIRO and Australian Systematic Botany Society, Melbourne, 543 p.
- Costin, A.B. 1983. Mountain lands in the Australia region: some principles of use and management. *Proc. Ecol. Soc. Aust.*, **12**, 1-13.
- Costin, A.B., Gray, M., Totterdell, C.J. and Wimbush, D.J. 1979. *Kosciusko Alpine Flora*. CSIRO/Collins Australia, Melbourne. See also 'The Kosciusko Environment' by the same authors in *Habitat*, **7**(3), 12-19 (1979).
- Ives, J.D. and Barry, J.D. (Editors) 1974. *Arctic and Alpine Environments*. Methuen, London, 999 p.
- Wood, T.G. 1970. Decomposition of plant litter in montane and Alpine soils on Mt. Kosciusko, Australia. *Nature*, **226**, 561-2.

FOREST ECOSYSTEMS

- Adam, P. 1992. *Australian Rainforests*. Oxford University Press, Oxford, 308 p.
- Birk, E.M. and Simpson, R.W. 1980. Steady state and the continuous input model of litter accumulation and decomposition in eucalypt forests. *Ecology*, **61**, 481-85.
- Bormann, F.H and Likens, G.E. 1979. *Pattern and Process in a Forested Ecosystem*. Springer Verlag, New York, 253 p.
- Cannell, M.G.R. 1982. *World Forest Biomass and Primary Production Data*. Academic Press, London, 391 p.
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- Ovington, J.D. (Editor) 1983. *Temperate Broad-leaved Evergreen Forests*. Elsevier, Amsterdam, 241 p.
- Penman, H.L. 1963. *Vegetation and Hydrology*. Technical Communication No. 53, Commonwealth Agricultural Bureaux, Farnham Royal, 148 p.
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- Spurr, S.H. and Barnes, B.V. 1980. *Forest Ecology*. Wiley, N.Y., 278 p.
- Swaine, M.D. and Hall, J.B. 1983. Early succession on cleared forest land in Ghana. *J. Ecology*, **71**, 601-627
- Waring, R.H. and Schlesinger, W.H. 1985. *Forest Ecosystems: concepts and management*. Academic Press, Orlando, 340 p.
- Webb, L.J. and Kikkawa, J. 1990. *Australian Tropical Forests*. CSIRO, Melbourne, 185p.

SAVANNA/GRASSLAND ECOSYSTEMS

- Bourliere, F. (Editor) 1983. *Tropical Savannas*. Ecosystems of the World 13. Elsevier, Amsterdam.
- Cole, M.M. 1960. Cerrado, caatinga and pentenal: the distribution and origin of savanna vegetation in Brazil. *Geographical J.*, **45**, 3-14.
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- Coupland, R.T. 1979. *Grassland Ecosystems of the World: Analysis of Grasslands and their Uses*. Cambridge University Press, 401 p.
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- Walker, B.H., Ludwig, D., Holling, C.S. and Peterman, R.M. 1981. Stability of semi-arid savanna grazing systems. *J. Ecology*, **69**, 473-498.

ARID ENVIRONMENTS

- Beaumont, P. 1989. *Environmental Management and Development in Drylands*. Routledge, London, 505 p.
- Bowyer-Bower, T.A.S. 1993. Effects of rainfall intensity and antecedent moisture on the steady-state infiltration rate in a semi-arid region. *Soil Use and Management*, **9**, 69-76.
- Friedel, M.H. 1990. Some key concepts for monitoring Australia's arid and semi-arid rangelands. *Austr. Rangel. J.*, **12**, 21-24.
- Hall, A.E., Cannell, G.H. and Lawton, H.W. 1979. *Agriculture in Semi-Arid Environments*. Springer-Verlag, Berlin, 340 p.
- Hills, E.S. (Editor) 1966. *Arid Lands: A geographical appraisal*. Methuen, London and UNESCO, Paris, 461 p.
- Holmes, J.W. and Talsma, T. (Editors) 1981. *Land and Stream Salinity*. Elsevier, Amsterdam.
- Morton, S.R. and Pickup, G. 1992. Sustainable land management in arid Australia. *Search*, **23**, 66-68.
- Walker, B.H. (Editor) 1979. *Management of Semi-arid Ecosystems*. Elsevier, Amsterdam, 398 p.
- Williams, B.G. 1991. Salinity and waterlogging in the Murray-Darling Basin. In: *Environmental Research in Australia - case studies*. ASTEC/AGPO, Canberra, pp 87-120.
- Williams, J. and Probert, M.E. 1984. Characterisation of the soil-climate constraints for predicting pasture production in the semi-arid tropics. In: E.T. Craswell and R.F. Isbell (Editors) *Proceedings of the International Workshop on Tropical Soils* Townsville, Queensland, Australia, 12-16 September 1983, ACIAR, Canberra, pp 61-75.
- Wilson, A.D. and Gratz, R.D. 1979. Management of the semi-arid and arid rangelands of Australia. In: Walker, B.H. (Editor), pp 83-111.

LAKES

- Burgis, M. and Morris, P. 1987. *Natural History of Lakes*. Cambridge Univ Press, Cambridge, 218 p.
- De Dekker, P. and Williams, W.D. (Editors) 1986. *Limnology in Australia*. Dr. W. Junk Publishers, Dordrecht, 671 p.
(the final section of this book contains a number of chapters discussing aspects of lake management in Australia).
- Graf, W.H. and Mortimer, C.H. (Editors) 1979. *Hydrodynamics of Lakes*. Elsevier, Amsterdam, 360 p.
- Hakanson, L. 1981. *A Manual of Lake Morphometry*. Springer-Verlag, Berlin, 78 p.
- Hutchinson, G.E. 1975. *Treatise on Limnology*. 2 Vols. Wiley, New York.
- Jolankai, G. 1992. Hydrological, chemical and biological processes of contaminant transformation and transport in river and lake systems. A state of the art report. Technical Documents in Hydrology IHP-IV Projects H-3.2, International Hydrological Programme, UNESCO, Paris, 147 p.
- Lerman, A. (Editor) 1978. *Lakes: Chemistry, Geology and Physics*. Springer-Verlag, New York, 363 p.
- Limnology and Oceanography - very good international journal with many papers on the science of lake systems
- Serruya, C. and Pollinger, U. 1983. *Lakes of the Warm Belt*. Cambridge University Press, Cambridge.
- Taub, F.B. (Editor) 1984. *Lakes and Reservoirs*. Elsevier, Amsterdam, 643 p.
- Taub, F.B. 1984. Ecosystems processes. In: Taub, F.B. (Editor), pp 9-42.
- Wetzel, R.G. 1983. *Limnology*, Second Edition. Suanders, Philadelphia, 767 p.
- Williams, W.D. 1984. Australian lakes. In: Taub, F.B. (Editor), pp 499-519

RIVER/CATCHMENT/WATERSHED SYSTEMS

- Baker, D.E. and Senft, J.P. 1992. Advances in agricultural nutrient runoff controls. *Water Sci. Tech.*, **26**, 2685-2694
- CEPA, 1992. *Towards Healthier Rivers*. Canberra. 19 p.
- Costin, A.B., Greenaway, M.A. and Wright, C.B. 1984. Harvesting water from the land: land use hydrology of the Upper Shoalhaven Valley of New South Wales. CRES, ANU, Canberra, 92 p.
- Degens, E.T., Kempe, S. and Richey, J.E. (Editors) 1991. *Biogeochemistry of Major World Rivers*. SCOPE 42, J. Wiley and Sons, Chichester, 356 p.
- DOPIE, 1992. *Floodplain Management in Australia Volume 2: Main Report*. AWRC Water Management Series No. 21, Aust. Govt. Pub. Service, Canberra, 176 p.
- East, T.J. 1990. *Erosion and Sedimentary Processes in the Kakadu Conservation Zone, South Alligator River, Northern Territory*. AGPS for Resource Assessment Commission, Canberra, 97 p.
- Harris, G.P. 2001. Biogeochemistry of nitrogen and phosphorus in Australian catchments, rivers and estuaries: effects of land use and flow regulation and comparisons with global patterns. *Marine and Freshwater Res.*, **52**, 139-150
- Hart, B.T. 1992. Ecological condition of Australia's rivers. *Search*, **23**, 33-37.
- Kirchner, J.W., Dillon, P.J. and LaZerte, B.D. 1992. Predicted response of stream chemistry to acid loading tested in Canadian catchments. *Nature*, **358**, 478-482.
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- Lundquist, J., Lohm, U, Falkenmark, M. (Editors) 1985. *Strategies or River Basin management: Environemtal integration of land and water in a river basin.* D. Reidel Pub. Co., Dordrecht, 346 p.
- Laut, P and Taplin, B.J. 1989. *Catchment Management in Australia in the 1980s.* CSIRO Institute of Natural Resources and Enviornment, Division of Water Resources, Canberra, 252 p.
- Milliman, J.D. and Syvitski, J.P.M. 1992. Geomorphic/tectonic control of sediment discharge to the Ocean: The importance of small mountainous rivers. *J.Geology*, **100**, 525-544.
- Pereira, H.C. 1989. *Policy and Practice in the Management of Tropical Watersheds.* Westview Press, Boulder, 237 p.
- Simmons, P., Poulter, D. and Hall, N.H. 1991. *Management of Irrigation Water in the Murray-Darling Basin.* ABARE, Canberra, 42 p.
- Walker, K.F. 1980. The Murray-Darling river system. In: B.R. Davies and K.F. Walker (Editors) *The Ecology of River Systems.* Dr.W.Junk Publishers, Dordrecht, pp 631-659.
- Walling, D.E. 1980. Water in the catchment ecosystem. In: Gower, A.M. (Editor) *Water Quality in Catchment Ecosystems.* John Wiley and Sons, Chichester, pp 1-47.

WETLANDS INCLUDING MANGROVES

- Adam, P. et al. 1985. *Coastal Wetlands of New South Wales: A survey report prepared for the Coastal Council of New South Wales 1985.* Coastal Council of New South Wales, Sydney, 125 p.
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- La Trobe University, 1990. *Wetlands: Their Ecology, Restoration and Management.* Proceedings of the Applied Ecology and Conservation Seminar Series-Wildlife Reserves, Oct-Dec 1989. Bundoora, Victoria, 123 p.
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ESTUARIES AND COASTAL LAGOONS

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- Aston, S.R. 1978. Estuarine chemistry. In: J.P. Riley and R. Chester (Editors), *Chemical Oceanography*, Second Edition, Volume 7, Academic Press, London, pp 362-440.
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- Dyer, K.R. 1986. *Coastal and Estuarine Sediment Dynamics*. J. Wiley and Sons, Chichester, 342 p.
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e-Learning

This subject has materials and activities available via eLearning. To access eLearning you must have a UOW user account name and password, and be enrolled in the subject. eLearning is accessed via SOLS (student online services). Log on to SOLS and then click on the eLearning link in the menu column.

For information regarding the eLearning spaces please use the following links:
Blackboard Vista - <http://www.uow.edu.au/student/elearning/vista/index.html>.

Moodle - http://uowblogs.com/moodlelab/files/2013/05/Moodle_StudentGuide-1petpo7.pdf

Lecture Schedule or Topic List

(note exact schedule may be subject to change)

Week.	Date	Lecture	Topics
1	29-July	1	Course introduction (SM)
		2	Earth's systems (SM)
2.	5-August	3	Rivers and hydrology (TC)
		4	Rivers and hydrology (TC)
3.	12-August	5	Rivers and hydrology (TC)
		6	Rivers and hydrology (TC)
4.	19-August	7	Rivers and hydrology (TC)
		8	Rivers and hydrology (TC)
5.	26-August	9	Student lectures
		10	Student lectures
6.	2-September	11	Student lectures
		12	Student lectures
7.	9-September	13	Field trip project preparation
		14	Field trip project preparation
13-15 September: Field trip			
8.	16-September	15	Atmosphere and climate (SM)
		16	Atmosphere and climate (SM)
9.	23-September	17	Atmosphere and climate (SM)
		18	Coastal systems (SM)
30-4 October: Mid semester recess			
7-October: Labour Day public holiday.			
10.	7-October	19	Coastal systems (SM)
11.	14-October	21	Coastal systems (SM)
		22	Coastal systems (SM)

12.	21-October	23	Biological systems (SM)
		24	Biological systems(SM)
13.	28-October	25	Group presentations (SM)
		26	Group presentations (SM)/subject summary

Assessment

Minimum attendance requirements

It is expected that students attend all lectures.

Minimum performance requirements

Students need to complete each component at the level specified.

Component	Minimum Standard
Final examination	900 level 50%

Students who do not meet the minimum performance requirements as set out in the Subject Outline may be given a Fail grade or TF (Technical Fail) grade on their Academic Transcript.

See the General Course Rules

at <http://www.uow.edu.au/handbook/generalcourserules/index.html>

Summary

Task	Title	Weighting	Due Date
Assessment 1	Research proposal	10%	12-August
Assessment 2	Group lectures	15%	26-August
Assessment 3	Individual report	15%	8-October
Assessment 4	Group report/presentation	20%	28-October
Assessment 5	Final exam	40%	TBA

Performance grades

HD	High Distinction	85–100%
D	Distinction	75–84%
C	Credit	65–74%
P	Pass	50–64%
F	Fail (unsatisfactory completion)	0–49%
TF	Technical Fail	No mark recorded

Scaling

Marks awarded for any assessment task (including examinations) may be subject to scaling at the end of the session by the Unit Assessment Committee and/or the Faculty Assessment Committee (FAC). Marks will only be scaled to ensure fairness/parity of marking across groups of students. Scaling will not affect any individual student's rank order within their cohort. For more information refer to Assessment Guidelines – Scaling <http://www.uow.edu.au/about/policy/UOW058609.html>

Submission and Return of Assessment Items

Delivery: Please submit assignments by 5.00 pm on the due date to the Subject Coordinator or to SMAH Central.

Post: Submission by post is permitted provided the assignment arrives on the date due – this will usually mean posting 2 days before due.

Facsimile: Submission by fax is not permitted

Email: Submission by email is only allowed in exceptional circumstances – please contact Subject Coordinator for permission.

Assignment covers: All assignments should be submitted with a front cover page, which will be signed and dated on submission. Cover sheets are available from the SEES Administration Office (41.154).

Collection: Marked assignments will normally be made available during lectures within two weeks of submission.

Students are advised to keep an electronic or hard copy of all submitted assessment tasks except in circumstances where this is not possible e.g. where the task is submitted at the end of activity in which it was completed.

Submitting an assignment at SMAH Central

Assignments submitted at SMAH Central MUST have a SATS (Student Assignment Tracking System) coversheet attached to the front of the assignment. Instructions for generating a coversheet can be found on the SMAH Central web page.

For an assignment to be successfully submitted at SMAH Central please note the following:

- The coversheet must be signed and dated
- The assignment must have the correct coversheet i.e. the correct subject code and tutorial group (if applicable)
- A legible barcode with all numbers and digits below e.g. UOW20121007656
- Assignments must be submitted by 2.30pm on the due date

If an assignment is submitted to SMAH Central without any of the above we will contact you and advise that you need to return to SMAH Central with the correct coversheet. Your

assignment won't be recorded as being submitted until the correct coversheet is attached. This might mean that the assignment is recorded as being submitted late.

Late Submission

All assessment tasks are to be submitted on the due dates as specified in this Subject Outline. Assessment tasks submitted late will be penalised by the deduction of 10% of the maximum possible mark for the assessment task per calendar day or part thereof. Deduction of marks will not result in a negative mark.

Note that assessment tasks submitted to SMAH Central must be submitted by 2:30 pm on the due date to guarantee being recorded in SATS as being submitted on time.

Academic Consideration including Extensions of Time

Applications from students for academic consideration should be made only on the grounds of serious or extenuating circumstances. Applications for academic consideration are governed by the University's Student Academic Consideration Policy at <http://www.uow.edu.au/about/policy/UOW058721.html>

Do not assume that an application for special consideration will be automatically granted.

Supplementary Assessments

Supplementary assessment may be offered to students whose performance in this subject is close to that required to pass the subject, and are otherwise identified as meriting an offer of a supplementary assessment. The precise form of supplementary assessment will be determined at the time the offer of a supplementary is made.

Referencing

The Harvard referencing system is used in ENVI922 this is also known as the author-date system due to the order of the information presented. Failure to document *adequately* and *fully* is to ignore scholarly rules and run the risk of plagiarism.

Please consult the UOW library website for further information: <http://public01.library.uow.edu.au/refcite/style-guides/html/>

Plagiarism

Students are responsible for submitting original work for assessment, without plagiarising or cheating, abiding by the University's policy on plagiarism as set out in the University Handbook under the University's Policy Directory. Plagiarism has led to expulsion from the University.

The University's Academic Integrity and Plagiarism Policy, Faculty Handbooks and subject guides clearly set out the University's expectation that students submit only their own original work for assessment and avoid plagiarising the work of others or cheating. Re-using any of your own work (either in part or in full) which you have submitted previously for assessment is not permitted without appropriate acknowledgement. Plagiarism can be detected and has led to students being expelled from the University.

The use by students of any website that provides access to essays or other assessment items (sometimes promoted as 'resources') is extremely unwise. Students who provide an assessment item (or provide access to an assessment item) to others, either directly or indirectly (for example by uploading an assessment item to a website) are considered by the university to be intentionally or recklessly helping other students to cheat. This is considered academic misconduct and students place themselves at risk of being expelled from the University.

<http://www.uow.edu.au/about/policy/UOW058648.html>

Task 3: Individual report

Due Date: 8 October, 2013

Weighting: 25%

Details: Select a topic from the list below. Confirm your choice by signing your name beside the topic of your choice on the list held by the Lecturer/Administrative Assistant. You may not select a topic already signed for by another student.

Write a review paper/report on the topic of your choice (not more than 2000 words). The topics have been selected to require reading and thought in more than one discipline. Evidence of wide reading will be suitably rewarded (**worth 25% of final grade**).

You are encouraged to use figures and diagrams in your review.

This assignment should be handed to the Coordinator/Lecturer or to SMAH central on or before 8 October 2013.

TOPICS - ENVI 922 ASSIGNMENT NO.3

1. Impacts of land cover change on the climate system
2. The impact of dams on river systems
3. Determining environmental flows in regulated river systems
4. Managing fire regimes in natural ecosystems
5. Reducing water consumption in urban environments
6. Managing fire regimes in populated regions
7. Review the processes and implications of the urban heat island effect
8. Wetlands as a water pollution mitigation system
9. Review the environmental legacy of historical soil erosion in Australia
10. The impact of fire on soil microbial populations
11. Ocean acidification and phytoplankton productivity
12. The behaviour of phosphorus in estuarine systems
13. The role of dust in marine fertilisation
14. The re-establishment of seagrass beds after disturbance
15. Global fertilizer usage, trends and environmental threats.
16. The impacts of agriculture on long term soil health and productivity
17. Bioavailability indices for metals in soils and sediments
18. The use of geochemical tracers to map species movement/behaviour

19. Climate variability in Australia over the Holocene
20. Causes and implications of sea level rise in Australia
21. Fire impacts on nutrient cycling in forest ecosystems
22. Mercury pollution in the environment
23. Treated sewage effluent irrigation utilisation in forest systems
24. Soil erosion as a mechanism for nutrient transport
25. Marine ecosystem impacts of crude oil spills

Criteria for assessment:

- Clarity of expression (20%)
- Depth of understanding demonstrated (30%)
- Use of examples to illustrate points (20%)
- Format, style and presentation (10%)
- Graphics & tables, charts format and structure (10%)
- Conclusions and recommendations (10%)

Task 5: **Final exam**

Date: **TBA**

Weighting: **40%**

Details: Details of the final exam will be discussed in lectures

Practical component

A three day field trip will occur on from the 13-15 September as part of the subject.

General Advice

Students should refer to the Faculty of Science, Medicine and Health website for information on policies, learning and support services and other general advice.

Use of Electronic Devices in Timetabled Activities

Ensure that mobile phones are turned off or turned to silent before timetabled activities. Electronic devices including mobile phones and portable MP3 players should not be accessed during timetabled activities unless otherwise advised.