



The University of Southern Queensland

Course specification

The current and official versions of the course specifications are available on the web at <http://www.usq.edu.au/coursespecification/current>.
Please consult the web for updates that may occur during the year.

Description: Water Resources Engineering

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
ENV	4107	90339	2, 2009	EXT	1.00	Toowoomba

Academic group:	FOENS
Academic org:	FOES03
Student contribution band:	6
ASCED code:	010711

STAFFING

Examiner: Ian Brodie
Moderator: Rod Smith

REQUISITES

Pre-requisite: (ENV3104 and ENV3105) or Students must be enrolled in one of the following Programs: GCEN or GDET or METC or MEPR

SYNOPSIS

This course is designed as the upper level course for students electing to major in water engineering. It provides an insight into the management of water resources and the environment, the magnitude and utilisation of the resource, the management tools available and the controlling legislation. The course also provides an opportunity for students to be practiced in the use of complex computer simulation programmes available to practicing engineers, including free surface flow, stochastic hydrology, catchment and groundwater modelling. The course allows the integration of the material presented in the earlier courses under the segregated headings of hydraulics and hydrology. It relies heavily on the use of case studies, workshops and directed study assignments to enhance the programme of lectures.

OBJECTIVES

The course objectives define the student learning outcomes for a course. The assessment item(s) that may be used to assess student achievement of an objective are shown in parenthesis. On completion of this course, students should be able to:

1. discuss how water resources projects address a range of often conflicting technical, economic, social and legal objectives and explain the role of public consultation in engineering works; (2 Hour Closed Examination)
2. contrast the different perceptions of water resources systems held by different groups in society; (2 Hour Closed Examination)
3. explain the important features of Australian and related legislation; (2 Hour Closed Examination)

4. assess the measure of the available water resource (nationally and locally) and evaluate the prospects of its development at different geographic locations; (2 Hour Closed Examination)
5. compare and assess the usefulness of a range of techniques available for flood mitigation, river and flood plain management; (2 Hour Closed Examination)
6. solve via the medium of case studies, problems in water resource management; (2 Hour Closed Examination)
7. describe the theoretical basis of the particular computer methods studied; (Assignment 1; Assignment 2; Assignment 3; 2 Hour Closed Examination)
8. apply the computer models studies to real situations and evaluate the effectiveness of simulation in design; and (Assignment 1; Assignment 2; Assignment 3; 2 Hour Closed Examination)
9. calibrate a model to measured data and assess the quality of the model fit (Assignment 1; Assignment 2; Assignment 3; 2 Hour Closed Examination)

TOPICS

Description	Weighting (%)
1. Water resource planning and management	50.00
1.1. Legislation	
1.2. Resource assessment	
1.3. Economics	
1.4. Flood plain management	
1.5. Systems engineering	
2. Computer applications. Theoretical basis of and practice in the use of computer software packages available to practicing engineers, and which might include:	50.00
2.1. River and estuarine models	
2.2. Catchment process models (ie Boughton)	
2.3. Catchment event models (ie RORB, XPRAFT's)	
2.4. Flood routing/backwater models (ie HEC - RAS)	
2.5. Reservoir analysis	
2.6. Water quality models	
2.7. Groundwater management	

TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For

costs, further details, and internet ordering, use the 'Textbook Search' facility at <http://bookshop.usq.edu.au> click 'Semester', then enter your 'Course Code' (no spaces).

REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Acts of the Commonwealth and State Parliaments.

IEAust Civil Engineering Transactions.

Computer Programme User Manuals.

Bedient, PB & Huber, WC 2002, *Hydrology and Floodplain Analysis*, 3rd edn, Addison Wesley, USA.

Haestad, M, Walski, TM, Chase, DV, Slavie, DA, Grayman, W, Becwith, S and Koelle, E 2003, *Advanced Water Distribution Modelling and Management*, Haestad Methods Inc, (ISBN 0.9714141-2-2)

Hall, WA & Dracup, JA 1970, *Water Resources Systems Engineering*, McGraw Hill,

Hann, CT, Johnson, HP & Brakensiek, DL 1982, *Hydrologic Modelling of Small Watersheds*, ASAE,

(Monograph No 5)

Linsley, RK, Franzini, JB, Freyburg, DL & Tchobanoglous 1992, *Water Resources Engineering*, 4th edn, McGraw Hill,

Smith, DI 1998, *Water in Australia: Resources and Management*, Oxford University Press, Melbourne.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessments	50.00
Directed Study	50.00
Examinations	2.00
Private Study	53.00

ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
ASSIGNMENT 1	200.00	20.00	28 Aug 2009
ASSIGNMENT 2	250.00	25.00	02 Oct 2009
ASSIGNMENT 3	150.00	15.00	23 Oct 2009
2 HOUR CLOSED EXAMINATION	400.00	40.00	END S2 (see note 1)

NOTES

1. Student Administration will advise students of the dates of their examinations during the semester.

IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:
There are no attendance requirements for this course. However, it is the students' responsibility to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.
- 2 Requirements for students to complete each assessment item satisfactorily:
To satisfactorily complete an individual assessment item a student must achieve at least 50% of the marks or a grade of at least C-. (Depending upon the requirements in Statement 4 below, students may not have to satisfactorily complete each assessment item to receive a passing grade in this course.)
- 3 Penalties for late submission of required work:
If students submit assignments after the due date without extenuating circumstances then a penalty of 5% of the assigned mark may apply for each working day late up to a maximum of ten working days at which time a mark of zero can be recorded for that assignment.
- 4 Requirements for student to be awarded a passing grade in the course:
To be assured of receiving a passing grade in a course a student must obtain at least 50% of the total weighted marks for the course.
- 5 Method used to combine assessment results to attain final grade:
The final grades for students will be assigned on the basis of the weighted aggregate of the marks (or grades) obtained for each of the summative assessment items in the course.
- 6 Examination information:
In a Closed Examination, candidates are allowed to bring only writing and drawing instruments into the examination.
- 7 Examination period when Deferred/Supplementary examinations will be held:
Any Deferred or Supplementary examinations for this course will be held during the examination period at the end of the semester of the next offering of this course.
- 8 University Regulations:
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL <http://www.usq.edu.au/corporateservices/calendar/part5.htm> or in the current USQ Handbook.

ASSESSMENT NOTES

- 1 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner.
- 2 Students must retain a copy of each item submitted for assessment. This must be despatched to USQ within 24 hours if required by the Examiner.
- 3 In accordance with University's Assignment Extension Policy (Regulation 5.6.1), the examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances.
- 4 The Faculty will normally only accept assessments that have been written, typed or printed on paper-based media.
- 5 The Faculty will NOT accept submission of assignments by facsimile.
- 6 Students who do not have regular access to postal services or who are otherwise disadvantaged by these regulations may be given special consideration. They should contact the examiner of the course to negotiate such special arrangements.
- 7 In the event that a due date for an assignment falls on a local public holiday in their area, such as a Show holiday, the due date for the assignment will be the next day. Students are to note on the assignment cover the date of the public holiday for the Examiner's convenience.
- 8 Students who have undertaken all of the required assessments in a course but who have failed to meet some of the specified objectives of a course within the normally prescribed time may be awarded one of the temporary grades: IM (Incomplete - Make up), IS (Incomplete - Supplementary Examination) or ISM (Incomplete -Supplementary Examination and Make up). A temporary grade will only be awarded when, in the opinion of the examiner, a student will be able to achieve the remaining objectives of the course after a period of non directed personal study.
- 9 Students who, for medical, family/personal, or employment-related reasons, are unable to complete an assignment or to sit for an examination at the scheduled time may apply to defer an assessment in a course. Such a request must be accompanied by appropriate supporting documentation. One of the following temporary grades may be awarded IDS (Incomplete - Deferred Examination; IDM (Incomplete Deferred Make-up); IDB (Incomplete - Both Deferred Examination and Deferred Make-up).

OTHER REQUIREMENTS

- 1 Students will require access to e-mail and internet access to UConnect for this course.
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