AU Course Outline Template

College of Engineering

Civil Engineering Department

CIVL451 – Water Resources Management

CIVL22

Bachelor of Engineering Technology - Civil

- Prerequisites: CIVL450
- Co-Requisites: None
- Credit Hours: 3 credits
- Course Coordinator:
- Instructor's Information:
- Classroom Location and timings[1]:

This course is part of the mentioned above program which is accredited by Engineers Australia.

Catalog Description

This course will provide students with an opportunity to gain an understanding of the role that water plays in human and environmental systems, and knowledge related to issues and methods in water resources management. The course covers hydrology and watershed management principles, methods, and applications. The course also covers the hydrologic cycle and water budget, groundwater and groundwater-surface exchange, hydrological extremes, the principles of integrated catchment management and sustainability, and current water resources management tools and strategies.

Course Objectives and Student Learning Outcomes

LO1 Understand the hydrologic cycle, land-atmosphere interactions, and the theory of integrated water resources management (IWRM)

LO2 Explain the principles of governance, planning, adaptive management, and capacity building in local, regional, and transboundary water resource regimes

LO3 Apply hydrological and statistical methods to assess economic, social, and environmental risks of variations in freshwater resources in different climatic zones

[1] Classroom timings and location are tentative, please refer to ATS for the up-to-date information.

LO4 Analyse the natural and human processes influencing water resources quantity, quality, and accessibility under global warming and climate change

LO5 Evaluate different key international initiatives and frameworks for making decisions on potential water resources crisis

LO6 Develop adaptation and mitigation policies, strategies and programs for sustainable water resources planning and management

Engineers Australia Stage 1 Competencies

Achieving the student learning outcomes of this course partially fulfills the following EA Stage 1 Competencies for Engineering Technologists.

Knowledge and Skills	1.1 Systematic, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the technology domain.
	1.2 Conceptual understanding of the, mathematics, numerical analysis, statistics, and computer and information sciences which underpin the technology domain.
	1.3 In-depth understanding of specialist bodies of knowledge within the technology domain.
	1.4 Discernment of knowledge development within the technology domain.
	1.5 Knowledge of engineering design practice and contextual factors impacting the technology domain.
	1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the technology domain.
Engineering Application Ability	2.1 Application of established engineering methods to broadly-defined problem solving within the technology domain.
	2.2 Application of engineering techniques, tools and resources within the technology domain.
	2.3 Application of systematic synthesis and design processes within the technology domain.
	2.4 Application of systematic approaches to the conduct and management of projects within the technology domain.
Professional and	3.1 Ethical conduct and professional accountability.

Personal Attributes	
	3.2 Effective oral and written communication in professional and lay domains.
	3.3 Creative, innovative and pro-active demeanor.
	3.4 Professional use and management of information.
	3.5 Orderly management of self, and professional conduct.
	3.6 Effective team membership and team leadership.

Course Content

The course material will be delivered to the student as a mix of power point presentation, handwritten notes and handouts. Below are the topics that will be covered during this course. Please note that topics are tentative to change.

#	Topic	Resources	Learning Outcomes /Performance Criteria
1	Water Infrastructure and Systems	PPT, Ch 3	LO-1
2	Hydrological Principles for Water Management	PPT, Ch 5	LO-1
3	Water Quality, Public Health, and Environmental Integrity	PPT, Ch 8	LO-1, 2
4	Decision Making Models	PPT, Ch 9	LO-2, 3
5	Water Governance and Institutions	PPT, Ch 11	LO-2, 3
6	Planning Principles for Water Infrastructure	PPT, Ch 13, 14	LO-2, 3
7	Water Quality Planning and Management	PPT, Ch 15	LO-3, 4
8	Economic, Environmental, and Social Sustainability of Water Infrastructure	PPT, Ch 16, 17, 18	LO- 3, 4, 5
9	Financing Water Systems	PPT, Ch 19	LO-3, 4, 5
10	Water Laws, Conflicts, litigation, and Regulations	PPT, Ch 20	LO-5, 6
11	Flooding, Stormwater, and Dam Safety	PPT, Ch 21	LO-2, 3, 4, 5, 6

12	Water Security	PPT, Ch 22	LO-2, 3, 4, 6
13	Integrated Water Resources Management (IWRM)	PPT, Ch 23	LO-1, 2, 3, 4, 5, 6

Methods of Delivery

This course will be delivered on-campus face to face delivery method. Students are expected to attend designated live lectures on campus. Any updates about the method of delivery will be communicated with the students via the official communication platforms.

Extent and Nature of Use of Technology

All the lectures' slides and other learning material for this course are available online on the course webpage on EduLearn. Students are required to visit this page regularly to check for any update. Course related announcements are sent by email. Students are required to check their email daily.

Textbook/s

For this course, the following textbook will be used:

- Water Resources Management: Principles, Methods, and Tools. Neil S. Grigg. Wiley, 2022, ISBN: 978-1-119-88596-2.

Additional Supplemental Materials

N/A

Attendance

The student is required to attend designated live session on campus. A student who fails to do so will be marked as absent from that class.

Please refer to the AU Student Attendance Policy and Procedure on the AU portal.

Submission of Work

Please refer to the AU Code of Academic Integrity on the AU Portal.

Assessment Plan

The assessments dates are subject to change according to the material coverage pace.

#	Assessment Title	Method of Assessment	Learning Outcomes Covered	Week	Weight

1	Midterm	Written Exam		Midterm Exams Period	25%
2	Continuous Assessment*	Quizzes & Assignment		TBA	25%
3	Attendance/Participation	In Class Participation/Attendance		1-14	10%
4	Final Exam	Written Exam		Final Exam Period	40%

*Assignments will be followed by group presentations delivered by the students. Late submissions will be penalized by 25% mark deduction up to three-day late.

* A student who misses an in-class assessment (quiz, in-class group work, in-class assignment, etc.) of a weight of 10% or less will not be eligible for makeup and will be automatically awarded a zero mark.

Students must refer to the AU Student Assessment Policy on the AU Portal with regards to assessments and re-assessment.

Grading Scale

Please refer to the AU Grading Policy on the AU Portal.