CIVL 3011 HYDRAULICS

Credit Points 10

Legacy Code 300765

Coordinator Kejun Dong (https://directory.westernsydney.edu.au/search/name/Kejun Dong/)

Description The subject covers the principles of open channel hydraulics, pipe hydraulics and culvert hydraulics. Specific topics in open channel hydraulics include uniform flow, resistance equations, specific energy principle, flow types, gradually varied flow and rapidly varied flow. The purpose is to enable design of efficient open channels to meet engineering requirements. In addition, principles of pipe and culvert hydraulics are introduced, enabling analysis and design of pipe networks and culverts.

School Eng, Design & Built Env

Discipline Water and Sanitary Engineering

Student Contribution Band HECS Band 2 10cp

Check your fees via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 3 subject

Pre-requisite(s) CIVL 2003

Equivalent Subjects -

Assumed Knowledge

Mathematical knowledge equivalent to the content within 200238 Mathematics for Engineers 2.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. analyse existing channels using hydraulic principles
2. apply basic hydraulic principles to design open channels of different configurations
3. critically analyse existing small hydraulic structures
4. design appropriate hydraulic structures to control and measure flow through open channels
5. analyse and design pipe networks using pressurised flow principles
6. evaluate the adequacy of existing culverts
7. design appropriate culverts using culvert hydraulic principles

Subject Content

Open channel hydraulics: Basic principles - continuity, momentum and energy principles
Open channel hydraulics: Channel design - use of uniform flow principles
Open channel hydraulics: Best hydraulic sections
Open channel hydraulics: Specific energy principle
Open channel hydraulics: Rapidly varied flow - hydraulic jump
Open channel hydraulics: Gradually varied flow - water surface profiles
Open channel hydraulics: Flow measurements - weirs, spillways, gates and flumes
Pipe hydraulics: Laminar and turbulent flow in pipes
Pipe hydraulics: Major and minor losses in pipes
Pipe hydraulics: Pipes in series
Pipe hydraulics: Pipes in parallel
Pipe hydraulics: Pipe network analysis
Pipe hydraulics: Turbomachinery - pumps and pump selection
Culvert hydraulics: Basic principles - gravity and pressurised flows
Culvert hydraulics: Culvert flow classification
Culvert hydraulics: Design of culverts

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Quiz	1/2 hour	20	N	Individual	N
Quiz	1-hr	10	N	Individual	N
Intra-session Exam	2 hours, closed book	35	N	Individual	N
Final Exam	2 hours, closed book	35	N	Individual	N

Teaching Periods

Sydney City Campus - Term 2 (2025)

Sydney City

On-site

Subject Contact Eileen An (https://directory.westernsydney.edu.au/search/name/Eileen An/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=CIVL3011_25-SC2_SC_1#subjects)

Spring (2025)

Penrith (Kingswood)

Hybrid

Subject Contact Kejun Dong (https://directory.westernsydney.edu.au/search/name/Kejun Dong/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=CIVL3011_25-SPR_KW_3#subjects)

Parramatta City - Macquarie St

Hybrid

Subject Contact Kejun Dong (https://directory.westernsydney.edu.au/search/name/Kejun Dong/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=CIVL3011_25-SPR_PC_3#subjects)