

CE 204 ENVIRONMENTAL ENGINEERING

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Lecturers:	Professor H.S. Wheeler (HSW) Professor D. Butler (DB) (Room 305), Dr C.R. Cheeseman (CRC) (Room 303)
Structure:	30 contact hours, approximately 20 hours of lectures, 10 hours tutorials
Links:	CE311 Introductory Microbiology and Chemistry for Environmental Engineering CE407 Water and Wastewater Engineering CE408 Water Resources Engineering

Aims

The module provides an introduction to the role of the civil and environmental engineer in environmental management. Specific topics include Flood Hydrology, Water and Wastewater Treatment, and Waste Management. The module gives an overview of these topics and a foundation of methods of design and analysis underlying current practice.

SYLLABUS

- Introduction to hydrology and environmental management; hydrological cycle, management of floods and water resources; environmental impacts of land use change; pollutant pathways; climate change.
- Floods and flood management; the unit hydrograph; rainfall and flood frequency; flood routing; flood management.
- Water and wastewater treatment: water quality tests/standards; sedimentation; filtration; aerobic biological oxidation, including introductory kinetics and reactor design, activated sludge, trickling filters.
- Waste management: solid wastes and their disposal by landfill and incineration; hazardous waste management, waste reuse; recycling and resource recovery.

Coursework and submission dates

The Environmental Engineering essay. To develop a general appreciation of contemporary problems of environmental management, students are asked to write a 3000 word essay from a short list of topics provided.

Submission date:- week 17

Assessment

One 2-hour written examination; 4 questions out of 7 to be answered.

Recommended Textbooks/Reading

SHAW, E.M., Hydrology in Practice. *Chapman & Hall, 3rd Edn., 1994.*

WARD, R.C. & ROBINSON, M., Principles of Hydrology. *McGraw Hill, 4th Edn., 2000.*

TEBBUTT, T.H.Y. Principles of Water Quality Control, *Butterworth-Heinemann, 1997.*

WILLIAMS, P.T., Waste treatment and disposal, *John Wiley, 1998.*

Learning Outcomes

- An understanding of the problems of flood management
- The ability to apply basic method of flood design for flood protection
- An understanding of the principles of water and wastewater treatment
- The ability to design basic treatment unit processes
- An appreciation of the waste management problem
- An understanding of the advantages and disadvantages of different waste management options, including landfill and incineration