

Summary Information

Module Code	7307BEPG
Formal Module Title	Sustainable Infrastructure
Owning School	Civil Engineering and Built Environment
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
Civil Engineering and Built Environment

Learning Methods

Learning Method Type	Hours
Lecture	22
Seminar	22

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

Aims	To develop understanding of the operation, design and management of infrastructure in both the Developing World and the Developed World. From this students will develop the capability for critical assessment of the sustainability of infrastructure in a wide variety of situations.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Develop and undertake the critical evaluation of alternative proposals and designs for water supply, water treatment, wastewater treatment systems, energy supply and air pollution control.
MLO2	2	Design and evaluate sustainable solutions to infrastructure problems working from information which may be incomplete.
MLO3	3	Design and critically evaluate sustainable town planning options, including highways and transportation systems and the management of waste, in both developed and developing countries.
MLO4	4	Develop critical awareness of own learning through reflection and research.

Module Content

Outline Syllabus	Water, sanitation and health. Global view of levels of provision of water supply and sanitation. Water, waste and health relationships; water and waste related infections. Urban sprawl and environmental degradation. Cultural attitudes and impact on the environment. Health and environmental education and communication. International standards for infrastructure and infrastructure management at local and national levels. Water Supply. A review of current water supply systems including surface water, groundwater, tankers, fog, sea water and rainwater. Components of supply systems, selection of systems and the protection and transport of water. Sustainable potable water treatment processes, and the sizing and operation of treatment components. Wastewater collection, treatment and transport. Sustainable sewerage and drainage systems. Sustainable wastewater and sludge treatment methods and the sizing of their component parts. Wastewater and sludge reuse. Sanitation systems, including waterless technologies such as pit, VIP and communal latrines. Sustainable technologies such as Aqua privies, Septic tanks, soakaways, lagoons and reedbeds. Sullage disposal. Solid Waste Management. A critical review of current practices of management systems including waste collection and transfer, landfill, recycling, re-use, incineration. Energy Supply. Fossil fuel systems and renewable systems. Town planning with respect to infrastructure design, operation and management. Design and critical evaluation of highways and transportation systems. Air pollution control.
Module Overview	This module provides students with an understanding of the operation, design and management of infrastructure in both the developed and developing world. Critical assessment skills are also developed to allow students to assess infrastructure sustainability in a wide variety of situations (e.g. water supply, water and wastewater treatment systems, energy supply, air pollution control, housing construction, highways and transportation systems).
Additional Information	This module develops students' understanding, and critical awareness, of the sustainability of infrastructure. Students consider and compare infrastructure through the world, with a particular emphasis on sustainable development.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Examination	60	3	MLO1, MLO2, MLO3
Portfolio	Portfolio	40	0	MLO1, MLO2, MLO3, MLO4

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Iacopo Carnacina	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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