

MINIMUM CORE SUBJECT AREAS: ENVIRONMENTAL ENGINEERING

AREA	SUBJECTS / DESCRIPTION	RECOMMENDED CONTACT HOURS
A recommendation of 30 hours each in at least 5 out of 10 areas below, totaling no less than 180 hours.		
1. Sustainable development / Carbon footprint measurement and reporting	- selected topics such as natural environment and human impact, sources and compositions of greenhouse gases, climate change and slow onset events, adaptation to climate change; renewable energy, carbon footprint and carbon reduction measures, social and economic impacts of developments, carbon dioxide balance, eco-audit calculation, carbon capture & storage technology etc.	30
2. Fluid mechanics	- selected topics such as fluid statics, dynamics of fluid motion, laminar and turbulent flow, flow measurement, dimensional analysis, friction and headloss, etc.	30
3. Material science	- selected topics such as physics and chemistry of materials, stress, strain and deformation of materials, linear and non-linear material behaviour, engineering applications and industrial manufacturing processes, etc.	30
4. Hydrology and hydraulics	- selected topics such as rainfall and runoff analysis, catchment characteristics, drainage design, pipe and channel networks, backwater analysis and analysis of surface flow, ground flow and pressurised flow, etc.	30
5. Heat and mass transfer	- selected topics such as mechanism of heat and mass transfer, related material properties and measurements, phase transition, modelling approaches, engineering applications such as heat exchangers, cooling techniques and thermal storage, etc.	30
6. Air / noise pollution control system	- selected topics such as sources of air / noise pollution, identification of air / noise sensitive receivers, measurements, modelling, assessment and monitoring of air / noise pollution, assessment of air ventilation, avoidance and mitigation of air quality / noise impacts, etc.	30
7. Water and wastewater engineering	- selected topics such as water transfer and distribution systems, storm water systems, wastewater collection, water and wastewater treatment processes, water quality management, water reuse and sludge treatment systems, etc.	30
8. Solid / hazardous waste management	- selected topics such as solid / hazardous waste collection and transport, waste recycling and reuse, waste thermal treatments such as incineration and plasma gasification, waste landfill disposal, waste circular economy concept, identification of hazardous waste, hazardous waste minimization & pollution prevention, release contingency plan & safety measures etc.	30
9. Environmental impact assessment and environmental management	- selected topics such as environmental impact assessment processes, identification, measurement, assessment, mitigation and monitoring of environmental impacts, environmental regulations, relevant environmental management systems, for example, ISO14000, etc.	30
10. Energy management and conservation / Green building design	- Selected topics such as energy audits, energy management; heating, ventilating, and air conditioning control systems, renewable energy, energy efficient technologies energy storage technologies, supply-side and demand-side management, energy use in buildings, thermal & visual comfort, shading & integrated façade design, green building rating, zero carbon building etc.	30

Note: The subject areas with forward dash can be considered as two subject areas.