Minor Requirement
(Updated as at 28 December 2004)

The Minor allows students the freedom to take charge of what they want to do. Students can set their own pace and design their own curriculum in a way that best meets their personal needs and aspirations. Students can choose from an initial offering of 8 different courses, worth 3 AUs each. These courses are listed below. The accompanying write-up on Course Descriptions provides more details about the courses.

EM101 Environmental Quality
EM102 Environmental Management
EM103 Water Resources Management
EM104 Air Quality Management (mutually exclusive with CL454/CV4554 Air Pollution Control Engineering)
EM105 Energy Resources Management
EM106 Environmental Impact Assessment
EM107 Environmental Health and Safety
EM108 Urban Planning and Environment

To be awarded the Minor in Environmental Management, students will have to satisfactorily complete 15 AUs.

Students in School of CEE

Students in the Bachelor of Engineering (Civil) degree programme offer are not allowed to complete the Minor in Environmental Management. However, they are allowed to take one or more of the following subjects in the Minor in Environmental Management, but only to fulfill the General Elective requirements of their degree programme:

EM104 Air Quality Management (mutually exclusive with CL454/CV4554 Air Pollution Control Engineering)
EM105 Energy Resources Management
EM106 Environmental Impact Assessment
EM107 Environmental Health and Safety
EM108 Urban Planning and Environment

Students in the Bachelor of Engineering (Environmental) degree programme are not allowed to complete the Minor in Environmental Management or take any subject in the Minor in Environmental Management.

Students in the Bachelor of Science (Maritime Studies) degree programme are allowed to offer and complete the Minor in Environmental Management. They can also choose to offer one or more of the Minor courses to fulfill the General Elective requirements of their degree programme.

Schedule

The Minor in Environmental Management is offered from the Nov-Dec 2003 Inter-Semester. The latest schedule of courses is shown below. Please note that the proposed schedule for upcoming courses is tentative, and depends on factors such as staff availability and other logistical considerations.

Academic Year	Period	Course Offerings
AY03/04	Nov-Dec 2003 Inter-Semester	EM101, EM103
	Jan-May 2004 Semester 2	EM102, EM104
AY04/05	Jul-Nov 2004 Semester 1	EM101, EM105
	Nov-Dec 2004 Inter-Semester	EM104
	Jan-Apr 2005 Semester 2	EM102, EM103, EM108
	May-Jun 2005 Special Session	EM105, EM106
AY05/06	Jul-Nov 2005 Semester 1	EM101, EM103, EM104
	Jan-Apr 2006 Semester 2	EM102, EM106, EM108
	May-Jun 2006 Special Session	EM105, EM107

Course Codes:	
EM101 Environmental Quality	EM105 Energy Resources Management
EM102 Environmental Management	EM106 Environmental Impact Assessment
EM103 Water Resources Management	EM107 Environmental Health and Safety
EM104 Air Quality Management (mutually exclusive with CL454/CV4554 Air Pollution Control Engineering)	EM108 Urban Planning and Environment

Further Information

Detailed information on the programme is available at the following website:
http://www.ntu.edu.sg/cee

For further enquiries, please contact:
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Course Descriptions

Lectures: 26 hr; Tutorials: 13 hr; Prerequisites: Nil;
Academic Units: 3 (for all proposed modules)

EM101 Environmental Quality
This is an introductory course on environmental engineering. Topics include ecological concepts, environmental engineering basics, and water, air, land and other environmental quality issues.

EM102 Environmental Management
This is an introductory course on environmental management. Topics include management of impacts due to water, wastewater, solid waste, air and noise, society and ecology, assessment indices, environmental legislation and regulation, and environmental planning and assessment.

EM103 Water Resources Management
This is an introductory course on water resources management. Topics include concepts in hydrology, storm water management, water quality, and water and wastewater treatment.

EM104 Air Quality Management (mutually exclusive with CL454/CV4554 Air Pollution Control Engineering)
This is an introductory course on air quality management. Topics include the types of air pollutants, pollutant sampling and measurement devices, pollutant distributions and dispersal modes. Filtration concepts will be illustrated with reference to collection systems such as inertial devices, particulate scrubbers, electrostatic precipitators and air filters.

EM105 Energy Resources Management
This introductory course provides an overview of energy resources management in the context of sustainable economic development. Topics include energy and human society, energy resources and reserves, supply, distribution, utilization, recovery and conversion, environmental impacts of energy utilization, energy economics and policies.

EM106 Environmental Impact Assessment
Environment systems; direct and indirect impacts; impact assessment and analysis; planning tools; assessment methodologies; water, air, noise, social and economic impacts and planning issues; management of impacts; assessment indices and reports; environmental legislations.

EM107 Environmental Health and Safety
Basic safety, health and environmental issues; legislations and regulations, exposure to toxic chemicals, biohazards, chemical hazards, noise, vectors and disease control, occupational health; air, water and noise control.

EM108 Urban Planning and Environment

This course introduces how environmental considerations can be integrated into urban planning to build a sustainable green city. Topics include urban planning practices, strategic approaches addressing urban environmental issues including sanitation, water supply, wastewater treatment, solid waste management, land use control, air emissions, and noise control, as well as socio-economic issues including lower productivity, reduced income and quality of life.