Energy Efficiency Modelling and Implementation

Year and Campus:	2014
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Overview:	Energy Efficiency Modelling and Implementation is offered as a major field of study in the Master of Environment degree. Energy modelling and implementation for buildings has become an important area in the light of growing concerns about climate change, energy security and the general need to adopt more sustainable practices. Despite the obvious need for people with such knowledge, there is a severe shortage of people that are trained in energy modelling who have the capacity to interpret the modelling results to effective practice. The realms of energy knowledge required include heating and cooling requirements, as well as use of day lighting and natural lighting. These skills are crucial to being able to reduce the risk in the integration of innovative sustainability initiatives, this risk reduction centres on assurances of performance and delivery of desired sustainability outcomes. Energy modelling is a key tool for the development and adoption of energy efficiency in new and existing buildings. This course develops the skills of complex modelling informed by an understanding of the results ensuring the graduate has the ability to both interpret and communicate outcomes effectively. Units of study include a mix of building management, architecture, engineering, management, and education and communication subjects.

Learning Outcomes:	Students who complete the Master of Environment will have:
	# Knowledge to undertake professional practice in environment or sustainability, including:
	  # Specialised knowledge in an environmental discipline or field of practice, including knowledge of recent developments in this field
	  # Knowledge of the cross-disciplinary nature of environmental issues and professional practice to promote sustainable futures
	  # Knowledge of research principles and methods applicable to specialist field of environmental inquiry
	# Skills for collaborative and creative problem solving in environmental practice, including:
	  # Ability to critically analyse and synthesise environmental knowledge
	  # Ability to envision environmental change and propose pathways to realise this change
	  # Ability to communicate complex environmental knowledge and research effectively to a range of audiences
	  # Ability to work effectively in cross-disciplinary teams
	  # Technical skills for professional practice and research in field of specialisation
	# Demonstrated capacity to:
	  # Exercise well developed judgement, adaptability and responsibility as a practitioner in an environmental discipline or professional field
	  # Plan and execute a substantial project in an area of environmental research or practice
	Upon successful completion of the Energy Efficiency Modelling and Implementation major, students will be able to:
	# Work in multi-disciplinary groups;
	# Understand the outcome of modelling and be able to both communicate and integrate them into project development and management;
	# Use results as part of business case development; and
	# Carry out the modelling or interpret the modelling of complex building with innovative environmental initiatives from passive design, complex facades, natural lighting and heating and cooling systems.

Structure & Available Subjects:

Students will be required to complete two subjects core to the degree (Sustainability, Governance and Leadership, and Interdisciplinarity and Environment), and four subjects compulsory to the specialisation. One of these subjects, Complex Building Modelling (12.5 points), contributes to a capstone experience. Knowledge from this subject will be applied to a project including research of alternative retrofit options, testing, analysis and scholarly writing of the results. This research or internship project subject will be selected from a list of available research project subjects and must have a minimum weight of 12.5 points. Students choose subjects from a recommended list of electives to make up the balance of the award. The selection of electives is made in consultation with the Energy Efficiency Modelling and Implementation major coordinators. A full list of subjects available within this specialisation can be found at **http://environment.unimelb.edu.au/courses/streams/energy_efficiency_modelling_and_implementation (http://environment.unimelb.edu.au/courses/streams/energy_efficiency_modelling_and_implementation)**

Subject Options:

Core Subjects

Students must take the following core subjects:

Subject	Study Period Commencement:	Credit Points:
MULT90004 Sustainability Governance and Leadership	March, August	12.50
MULT90005 Interdisciplinarity and the Environment	Semester 2	12.50

Compulsory Specialisation Subjects

Students must complete the following compulsory specialisation subjects

Subject	Study Period Commencement:	Credit Points:
ENEN90011 Energy Efficiency Technology	Semester 2	12.50
ENEN90033 Solar Energy	Semester 1	12.50
ABPL90268 Building Envelopes	Semester 2	12.50
ABPL90153 Complex Building Energy Modelling	January, June	12.50

Compulsory Capstone Experience

Students must complete at least 12.5 points from the following compuolsory capstone subjects:

Subject	Study Period Commencement:	Credit Points:
ENST90006 Environmental Research Review (12.5)	Semester 1, Semester 2	12.50
ENST90007 Environmental Research Project (25)	Semester 1, Semester 2	25
ENST90024 Environmental Research Project - 25 Long	Semester 1, Semester 2	12.50
ENST90016 Environmental Research Project (50)	Semester 1, Semester 2	50
ENST70001 Environmental Research Proj (50 Long)	Semester 1, Semester 2	25
ENST90025 Environmental Industry Research (25)	Semester 1, Semester 2	25
ENST90026 Environmental Industry Research: 25 Long	Semester 1, Semester 2	12.50
ENST90020 Environmental Industry Research (50)	Semester 1, Semester 2	50
ENST70002 Environmental Industry Research: 50 Long	Semester 1, Semester 2	25
DEVT90002 Internship in Development	January, Semester 1, Semester 2	12.50

DEVT90008 International Internship in Development	January, Semester 1, Semester 2	25

Elective Subjects

Students should make up the balance of the award from the following list of elective subjects:

Subject	Study Period Commencement:	Credit Points:
ABPL90009 Participation and Negotiation	July	12.50
ABPL90032 Building Services and Operations	Semester 1	12.50
ABPL90049 Environmental Design	Not offered 2014	12.50
ABPL90152 Sustainable Tropical Housing	October	12.50
ABPL90283 Eco-Systems for Planning and Design	Semester 2	12.50
ENEN90014 Sustainable Buildings	September	12.50
ENEN90031 Quantitative Environmental Modelling	Semester 1	12.50
ENEN90032 Environmental Analysis Tools	Semester 2	12.50
ABPL90016 Asset Management	Semester 1	12.50
ABPL90030 Project Evaluation	Semester 1	12.50
GEOG90021 Conservation and Cultural Environments	Semester 1	12.50
DEVT90009 Development Theories	Semester 1	12.50
ECON90016 Environmental Economics and Strategy	Semester 1	12.50
ENST90002 Social Impact Assessment and Evaluation	Semester 2	12.50
ENST90017 Environmental Policy Instruments	Semester 2	12.50
EVSC90014 Environmental Risk Assessment	November	12.50
EVSC90015 Environmental Impact Assessment	Semester 1	12.50
FRST90034 Ecological Restoration	September	12.50
LAWS70068 Environmental Law	September	12.50
MAST90007 Statistics for Research Workers	June	12.50
MGMT90022 Managing Organisational Change	August	12.50
NRMT90003 Social Research Methods	Semester 1	12.50
POPH90014 Introduction to Epidemiology	Semester 1	12.50
ABPL90056 Sustainable Transport and Public Policy	Semester 1	12.50

Related Course(s):	Master of Environment