



# Department of Mechanical Engineering Science

Faculty of Engineering and the Built Environment  
University of Johannesburg

## Master of Sustainability Energy

The need to develop skills that support the South African government's drive towards a greener and more sustainable energy system cannot be overemphasized. This Master's degree provides an opportunity for graduates and professionals in related fields (engineers, project developers, financiers and public officials) to advance their knowledge and grow their careers in the field of sustainable energy development. The programme combines key elements of the engineering and non-engineering aspects of sustainable energy with the main focus being to provide participants with the practical knowledge required to develop and manage sustainable energy projects.

The programme is designed to target graduates with interests in sustainable energy development and/or management. Stakeholders include public and private sector participants in the energy sector, covering rural, and industrial applications. The associated careers require advanced and specialised analytical capabilities and, as such, the programme has been carefully designed to equip graduates with the knowledge required to assess, conceptualize, plan, develop and manage sustainable energy.

### ADMISSION REQUIREMENTS

Bachelor's (Honours) degree in Engineering or Sciences or NQF level 8 equivalent.

*FEBE may consider accommodating meritorious applicants from the Faculty of Humanities who do not meet the full entrance requirements via a bridging programme relevant to the knowledge required.*

**Duration:** 1 year full-time, 2 years part-time.

### PROGRAMME PURPOSE

The purpose of the programme is to develop professionals who are capable of conceptualising, planning, and managing sustainable energy projects in the context of developing economies. The programme adopts a multi-disciplinary approach by incorporating content that involves Sustainable Energy Technologies, Energy Efficiency and Green Buildings, Sustainable Energy Governance and the economics in the sustainable energy sector.

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### EXIT LEVEL OUTCOMES

Ability to:

- Analyse** and develop sustainable energy projects, creatively and innovatively by applying relevant fundamental and applied knowledge.
- Plan** and manage sustainable energy research projects demonstrating underlying fundamental knowledge, understanding and insight into the principles, methodologies and concepts that constitute socially responsible (vis-à-vis all local and other communities) research/development in the chosen field of research practice.
- Work** effectively independently or with others as a member of a team, group, organization, and community or in multidisciplinary environments in the chosen field of research within the scope of sustainable energy.
- Communicate** effectively, both orally and in writing, with relevant professionals and particularly with research audiences and communities at large in so far as they are affected by the research, using appropriate structure, style and graphical support.
- Employ** various learning strategies and skills to master the outcomes required in preparing the individual to engage in continuous learning to keep abreast of knowledge and skills in sustainable planning, development and management of sustainable energy.
- Demonstrate** cultural and aesthetic sensitivity with regards to the socio-economic impact of the execution of sustainable research activities, where applicable.

The programme consists of three core-compulsory modules and a number of elective modules as described below. Furthermore, the programme consists of a compulsory minor dissertation on a suitable project related to the programme scope.

Module name	NQF level of the module	Credits per module	Fundamental/Core/Elective	Year	Total Credits
<b>Sustainable Energy Technologies</b>	9	30	Core – Compulsory	1	30
<b>Energy Efficiency and Green Buildings</b>	9	30	Core – Compulsory	1	30
<b>Sustainable Energy Systems Modelling</b>	9	30	Core – Compulsory	1	30
<b>Energy Policy Formulation*</b>	8	20	Elective	1	20
<b>Energy Economics*</b>	8	30	Elective	1	30
<b>Energy and Development*</b>	8	30	Elective	1	30
<b>International, Geographical and Political Aspects of Energy*</b>	8	20	Elective	1	20
<b>Minor Dissertation</b>	9	60	Core	1	60

\*The student must select 1 elective module from Group A and 1 elective module from Group B.

Group A is made up of the *Energy Economics* and *Energy and Development* modules.

Group B is made up of the *Energy Policy Formulation* and *International, Geographical and Political Aspects of Energy* modules.

### TUITION FEES

The student must take all three modules in the green block (3 x R4640 = R13920). The student must select two modules from the yellow block, as per rules provided above (2 x R6920 = R13840). The student must register for two semesters of their minor dissertation as per the purple block (2 x 4640 = 9280). Thus, the total fees (full-time or part-time for the entire programme) would be R37 040.

Subject Description	Subject Price
<b>Energy Efficiency and Green Buildings</b>	R4 640
<b>Sustainable Energy Systems Modeling</b>	R4 640
<b>Sustainable Energy Technologies</b>	R4 640
<b>Energy and Development</b>	R6 920
<b>Energy Policy Formulation</b>	R6 920
<b>International, Geographical and Political Aspects of Energy</b>	R6 920
<b>Energy Economics</b>	R6 920
<b>Minor Dissertation: Sustainable Energy (Sci) (Research : 0.25)</b>	R4 650
<b>Minor Dissertation: Sustainable Energy (Sci) (Research : 0.25)</b>	R4 650
<b>Minor Dissertation: Sustainable Energy (Eng) (Research : 0.25)</b>	R4 640
<b>Minor Dissertation: Sustainable Energy (Eng) (Research : 0.25)</b>	R4 640

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