Module Code: CL965
Module Title: Science, Technology and Innovation Policy (STIP)
Module Registrar: Girma Zawdie
Other Lecturers Involved: -
Credit Weighting: 10
Semester: 1
Compulsory/optional/elective class: optional/elective
Academic Level: 5
Prerequisites: None

Module Format and Delivery (hours):

<table>
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<tr>
<th>Lecture</th>
<th>Tutorial</th>
<th>Assignments</th>
<th>Laboratories</th>
<th>Private Study</th>
<th>Total</th>
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<tr>
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General Aim

This class introduces the conceptual and practical issues underlying policy-making processes, with a particular focus on science and technology policy and innovation management. The class addresses elements of policy analysis as an interdisciplinary exercise. Within this context, it explores questions as to how innovations occur and how they can be managed to enhance prospects for socio-economic development and environmental protection through sustainable use of resources. A major aspect of the module is the systems approach to technology and innovation management, particularly as this relates to the design of strategies for research and development, and mechanisms for technology transfer and for the generation, use, exchange and sharing of knowledge.

The class is intended to give students working under different disciplines at PG level a feel of the significance of S&T policy and innovation management as a crucial basis for the understanding of how various disciplines fit into the making of sustainability and sustainable development.

Specific (Learning) Objectives

- **LO1.** Understanding of the nature of policy & policy analysis as an interdisciplinary exercise in the context of sustainable development;
- **LO2.** Understanding of strategic skills, tools and techniques for forward thinking and thinking across disciplinary boundaries in the process of planning and policymaking;
- **LO3.** Understanding of management system standards, reporting, appraisal and use of S&T indicators in a systems framework;
- **LO4.** Understanding the systemic nature of the economy and how its various sectors could be influenced through policy intervention to promote sustainable development

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)
**Syllabus**

**Introduction** *(Week 1)*: Innovation and technological progress - meaning and socio-economic significance; the case for science, technology and innovation policy

**Policy instruments and goals** *(Week 2-3)*: What is in science, technology and innovation policy; policy-making processes and mechanisms; and patterns of government intervention

**Theoretical and historical foundations of innovation and technological progress** *(Weeks 4-5)*: The Kondratieff cycles; technology paradigms and trajectories; determinants of innovation; Schumpeter's trilogy; market-pull versus technology/science-push; incremental versus radical innovation

**Approaches to policies for the promotion of science, technology and innovation** *(Weeks 6-8)*: Indicators of scientific and technological activities; innovation systems including NIS, RIS and Triple helix; Porters framework for innovation and competitiveness; national innovation capacity as a synthesis of endogenous growth theory and industrial clustering and networking systems

**Patterns of government intervention** *(Weeks 9-10)*: Identifying and evaluating policy options and strategies; risk and uncertainty in financing innovation; need assessment and research priorities

**Organisational and management of R&D** *(Week 11)*

**Contemporary issues in technology development and policy** *(Week 12)*: Technology transfer; technology choice; knowledge exchange; incubators and science parks; technology forecasting

**Assessment Method(s) Including Percentage Breakdown and Duration of Exams**

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<tr>
<th>Examinations</th>
<th>Courseworks</th>
<th>Projects</th>
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**Main Text Books**

**Books**


**Journals**
1. *International Journal of Technology Management and Sustainable Development*
2. *International Journal of Technology Management and Globalisation*
3. *International Journal of Technology Management*
4. *Journal of the Economics of Innovation and New Technologies*
5. *Technology Analysis and Strategic Management*
6. *Research Policy*
7. *Science and Public Policy*

**Date of Last Modifications: July 2012**