Academic Programs Booklet

College of Science

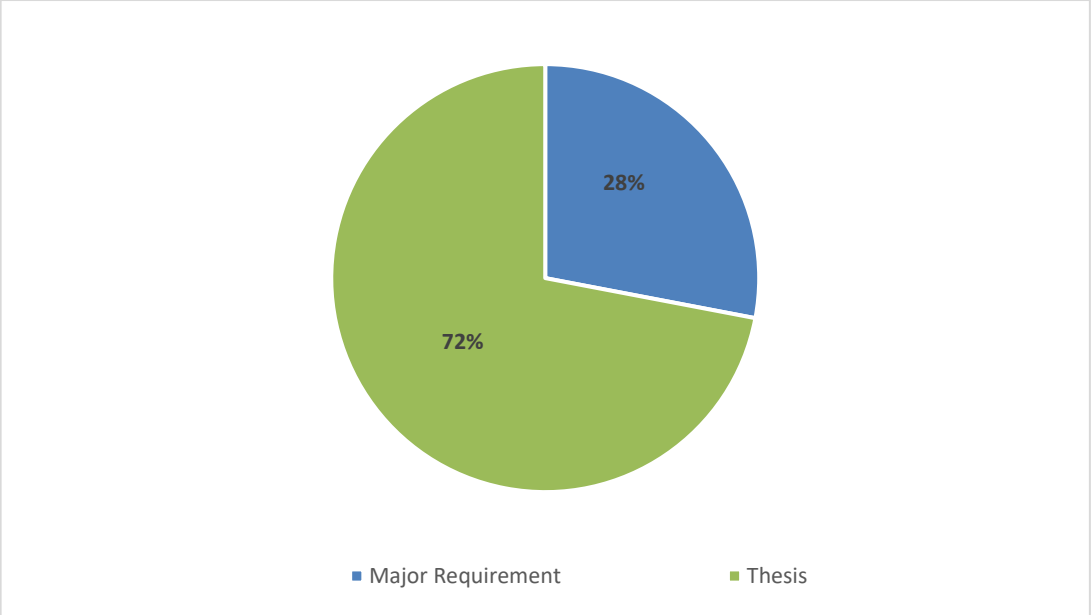
2025

Prepared By: VP For Academic Programs and Graduate Studies Office

College of Science

PhD. in Environment and Sustainable Development

Program Components



Course Type	CRD
Major Requirement (MR):	**21**
Thesis	**54**
Total Credit (CRD)	**75**

Detailed Study Plan

Year 1- Semester 1

Course Code	Course Title	Course Hours			Course Type	Pre-Requisite:	Major CGPA
		LEC	PRAC	CRD			
ESD 701	Environment and Sustainability	3	0	3	MR	---------	Yes
ESD 703	Sustainable Development Goals	3	0	3	MR	---------	Yes
ESD 704	Advanced Environmental Research Skills	3	0	3	MR	---------	Yes

Year 1- Semester 2

Course Code	Course Title	Course Hours			Course Type	Pre-Requisite:	Major GPA
		LEC	PRAC	CRD			
ESD 702	Environment and Sustainability Assessment	3	0	3	MR	---------	Yes
ESD 705	Sustainable Resources Management	3	0	3	MR	---------	Yes
ESD 706	Environmental policies and governance	3	0	3	MR	---------	Yes

Year 2- Semester 3

Course Code	Course Title	Course Hours			Course Type	Pre-Requisite:	Major GPA
		Lec	Prac	Crd			
ESD 707	Global Environmental Issues	3	0	3	MR	---------	Yes
ESD 719	Thesis I	0	27	9	Thesis	---------	Yes

Year 2- Semester 4

Course Code	Course Title	Course Hours			Course Type	Pre-Requisite:	Major GPA
		Lec	Prac	Crd			
ESD 729	Thesis II	0	27	9	Thesis	---------	Yes

Year 3- Semester 5

Course Code	Course Title	Course Hours			Course Type	Pre-Requisite:	Major GPA
		Lec	Prac	Crd			
ESD 739	Thesis III	0	27	9	Thesis	---------	Yes

Year 3- Semester 6

Course Code	Course Title	Course Hours			Course Type	Pre-Requisite:	Major GPA
		Lec	Prac	Crd			
ESD 749	Thesis IV	0	27	9	Thesis	---------	Yes

Year 4- Semester 7

Course Code	Course Title	Course Hours			Course Type	Pre-Requisite:	Major GPA
		Lec	Prac	Crd			
ESD 759	Thesis V	0	27	9	Thesis	---------	Yes

Year 4- Semester 8

Course Code	Course Title	Course Hours			Course Type	Pre-Requisite:	Major GPA
		Lec	Prac	Crd			
ESD 769	Thesis VI	0	27	9	Thesis	---------	Yes

Course Discription

ESD 701 ENVIRONMENT AND SUSTAINABILITY (3-0-3)

Exploration of advanced environmental and sustainability principles, examining biosphere dynamics, human-environment interlinkages, and global challenges like climate change and resource depletion. Critical analysis of sustainability within the economic, social, and environmental nexus, fostering innovative research approaches to address complex sustainability issues at local, regional, and global levels.

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ESD 702 ENVIRONMENT AND SUSTAINABILITY ASSESSMENT (3-0-3)

Principles, procedures and applications of environment and sustainability assessment approaches and processes. Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA), Integrated Environmental Assessment (IEA), and Sustainability Assessment (SA). Environmental policies analysis, environmental reporting and follow up.

ESD 703 SUSTAINABLE DEVELOPMENT GOALS (3-0-3)

Implementing the SDGs and the 2030 Agenda: An environmental approach is an innovative course on the Sustainable Development Goals (SDGs) and the 2030 Agenda for Sustainable Development with a focus on the environmental dimension of the SDGs. The course aims to get the students enrolled in the ESD Doctor of Philosophy program acquainted with the SDGs and provide them with a deeper understanding on the 2030 Agenda. The course has approximately a total of 45 hours and will be delivered within three modules, covering the following topics:

- **Module 1**: Historical Background and SDGs Description.
- **Module 2**: Policies of implementation and creating an enabling ecosystem for the SDGs
- **Module 3**: The road to action - Success stories and Lessons Learned implementing the SDGs

ESD 704 ADVANCED ENVIRONMENTAL RESEARCH SKILLS (3-0-3)

Research Design and Methodology, Formulating research questions and hypotheses. Quantitative, qualitative, and mixed methods approach, advanced data analysis and modeling, climate and sustainability systems modeling. Data collection in coastal ecosystems. Sampling methods for air, water, and soil quality. GIS and remote sensing for environmental monitoring. Applications in urban planning and resource management. Writing research papers, theses, and reports. Peer review and publication strategies. Grant Writing: Developing competitive research proposals. Identifying funding opportunities in environmental research. Aligning research with SDGs. Case studies in GCC SDG implementation.

ESD 705 SUSTAINABLE RESOURCES MANAGEMENT (3-0-3)

Sustainable Resources Management covers resource efficiency, circular economy, water conservation, renewable energy, biodiversity protection, waste management, sustainable agriculture, climate resilience, eco-friendly technologies, and policy frameworks to balance environmental, economic, and needs for long-term sustainability and global resource security.

ESD 706 ENVIRONMENTAL POLICIES AND GOVERNANCE (3-0-3)

The Environmental Policy and Legislation course provides a comprehensive analysis of environmental governance systems, focusing on the intersection of science, law, economics, and politics in addressing complex ecological challenges. It examines diverse policy approaches including market-based instruments, command-and-control regulation, and voluntary mechanisms across different jurisdictional contexts. The course explores key principles guiding environmental decision-making while analyzing how scientific evidence is translated into effective policy action. Through case studies and applied projects, students develop skills in policy analysis, design, and implementation across multiple environmental domains and governance scales.

ESD 707 GLOBAL ENVIRONMENTAL ISSUES (3-0-3)

An advanced investigation of the most pressing global environmental issues facing the world. Examining the complex relationship between human activities and the natural environment, focusing on the environmental challenges that have emerged during the Anthropocene, including climate migration, emerging pollutants, biodiversity loss, ecosystem collapse, water scarcity, energy transition, and emerging infectious diseases.

ESD 719 Thesis I (0-27-9)

The Doctor of Philosophy thesis in Environment and Sustainable Development should qualify to be research of international standards and for other work in society where there are high demands on scientific insight and analytical thinking, in accordance with recognized scientific principles and standards in research ethics. The research should also be eligible to be published in international peer reviewed journals.

ESD 729 Thesis II (0-27-9)

The Doctor of Philosophy thesis in Environment and Sustainable Development should qualify to be research of international standards and for other work in society where there are high demands on scientific insight and analytical thinking, in accordance with recognized scientific principles and standards in research ethics. The research should also be eligible to be published in international peer reviewed journals.

ESD 739 Thesis III (0-27-9)

The Doctor of Philosophy thesis in Environment and Sustainable Development should qualify to be research of international standards and for other work in society where there are high demands on scientific insight and analytical thinking, in accordance with recognized scientific principles and standards in research ethics. The research should also be eligible to be published in international peer reviewed journals.

ESD 749 Thesis IV (0-27-9)

The Doctor of Philosophy thesis in Environment and Sustainable Development should qualify to be research of international standards and for other work in society where there are high demands on scientific insight and analytical thinking, in accordance with recognized scientific principles and standards in research ethics. The research should also be eligible to be published in international peer reviewed journals.

ESD 759 Thesis V (0-27-9)

The Doctor of Philosophy thesis in Environment and Sustainable Development should qualify to be research of international standards and for other work in society where there are high demands on scientific insight and analytical thinking, in accordance with recognized scientific principles and standards in research ethics. The research should also be eligible to be published in international peer reviewed journals.

ESD 769 Thesis VI (0-27-9)

The Doctor of Philosophy thesis in Environment and Sustainable Development should qualify to be research of international standards and for other work in society where there are high demands on scientific insight and analytical thinking, in accordance with recognized scientific principles and standards in research ethics. The research should also be eligible to be published in international peer reviewed journals.