Master Degree in Technology Policy and Management

إدارة وسياسات التكنولوجيا

Description

The Master in Technology Policy and Management program seamlessly integrates technology, management, economics, and policy, providing a comprehensive education that combines theoretical grounding with practical, hands-on experience in technology policy formulation, analysis, and management. This program is designed to equip students with the necessary context and skills to navigate and influence the intersection of the public and private sectors. With innovation as a central theme, students will acquire a robust set of frameworks and tools to effectively formulate, contribute to, and analyze the complex dynamics of technology policy and industrial strategy.

Program Objectives (PO)

PO1: Develop Expertise in Technology Management: Equip students with the ability to lead and manage technological innovations, aligning them with organizational and societal goals to drive growth and efficiency.

PO2: Integrate Technology with Public Policy: Enable students to understand and contribute to the development of policies that regulate and promote the responsible use of emerging technologies while addressing societal and ethical concerns.

PO3: Foster Critical and Strategic Thinking: Prepare students to analyze complex technological challenges, evaluate different management approaches, and formulate strategies that support decision-making in technology-driven environments.

PO4: Promote Ethical Leadership and Social Responsibility: Encourage students to recognize and address ethical issues related to technology development and use, ensuring that technological advances benefit society while minimizing risks to privacy, security, and sustainability.

PO5: Cultivate Global and Multicultural Perspectives: Train students to apply technology management and policy solutions in global contexts, understanding the varying regulatory, cultural, and economic conditions across different regions and industries

PO6: Enhance Communication and Leadership Skills: Strengthen students' ability to effectively communicate complex technology management issues and policy recommendations through written reports, visual documents, and oral presentations to diverse audiences.

Goals and Outcomes

LG1: Knowledge: This goal ensures that students have a deep understanding of the key concepts in technology management, innovation, and policy development, enabling them to lead technological change effectively.

LG2: Critical Thinking: Students are expected to apply analytical and critical thinking skills to assess the impact of technology on organizations and societies and to make informed decisions in complex environments.

LG3: Ethical Awareness and Social Responsibility: This goal ensures that students can identify and address ethical and societal concerns related to technological advancements, including issues of privacy, security, sustainability, and equity

LG4: Communication: Students must be able to communicate complex technological and policy issues clearly and effectively to diverse stakeholders, including policy-makers, executives, and the public.

Learning Goals (LGs)	**Learning Outcomes (LOs)**
LG1: Knowledge	**PLO 1:** Explain the role of technology management in aligning technological innovations with organizational strategies.
	PLO 2: Evaluate different policy frameworks and their impact on the development and governance of emerging technologies.
LG2: Critical thinking	**PLO 3:** Analyze the implications of technological innovations on public policy and organizational strategies.
	PLO 4: Develop strategic models to address challenges at the intersection of technology and policy in various sectors.
LG3: Ethical awareness and social responsibility	**PLO 5:** Evaluate ethical issues related to the implementation and governance of emerging technologies, including privacy, security, and sustainability concerns.
	PLO 6: Analyze the social, environmental, and economic impacts of technological advancements to promote responsible and sustainable development
LG4: Communication	**PLO 7:** Articulate technology management strategies and policy recommendations clearly in oral presentations to stakeholders.

	PLO 8: Communicate the outcomes of technology management and policy analyses effectively through written reports, policy briefs, and visual documents.

Courses Description

1. Research Methodology

This course aims to equip the students with the skills to conduct scientific research by introducing them to scientific research methods and providing the basic skills to write scientific research. This includes defining the problem of study and its variables, the research significance, and objectives, the research model and its variables based on the literature review, how to determine the population and sample of the study, data collection and hypotheses writing and testing methods in addition to their analysis and interpretation using statistical methods, writing the conclusions and recommendations and linking them to the literature review, and introducing the students to various documentation methods.

2. System Thinking and Modeling

The course provides a holistic approach to understanding, analyzing, and solving problems within interconnected systems. It introduces the concepts of systems theory and modeling techniques required to develop a system dynamic models, causal loop diagrams, and stock-and-flow models. The course covers the use of systems thinking to address the challenges in technology management, such as innovation management, strategic planning, and organizational change. In addition to the theoretical part, the course is designed to provide some practical sessions to demonstrate the impact of systems thinking and modeling on decision-making, problem-solving, and process optimization in various industries. By the end of this course, students are expected to manage the complexities of modern technological environments by the implementation of systems-thinking theories.

3. Digital Business Innovation

This course aims to equip students with variant skills in innovation, and it will explore the role of recent technologies in business innovation. This course will focus on the

strategic role of digital technologies, digital transformation, digital entrepreneurship and creation of new business models, challenges of digital business innovation, and management and organizational aspects in digital business innovation.

4. Economic Analysis for Business Decisions

This course is designed to deepen their understanding of economic analysis in a business context and equip students with the essential tools of microeconomics to make informed and strategic business decisions. It begins with fundamental economic concepts, such as supply and demand, and their applications to modern marketplaces and innovation. Students will learn how to analyze market structures, evaluate pricing strategies, and understand the sources and implications of market power.

The course also introduces game theory as a means to explore competitive and cooperative behaviors in business, both within and between firms. Emphasis is placed on understanding the economic forces that shape business practices, from cost analysis and market demand to the role of government regulation. In addition, the course examines the broader economic, social, and political contexts that influence decision-making within organizations.

5. IT Project Management

This course will provide students a high level of understanding about project management and its applications in modern organizations that integrate technology advances in their business. This course will cover varied topics in project management like project management environment, project management roles, the relationship with the business strategy, project management processes and tools in addition of techniques used in project planning, executing and control.

6. Technology and Public Policy

This course explains the intricate relationship between public policy and technology advancements. Students will investigate how emerging technologies such as digital platforms and artificial intelligence affect society, the economy, politics, and ethics. The course will explore the process of formulating policies in relation to technical concerns, including policy design, implementation, and evaluation. Students will receive a comprehensive understanding of the challenges and opportunities presented by the intersection of technology and public policy by engaging in debates and critically analyzing case studies.

التكنولوجيا والسياسة العامة

تشرح هذه المادة العلاقة المعقدة بين السياسة العامة والتقدم التكنولوجي. سيقوم الطلاب بدراسة كيفية تأثير التقنيات الناشئة مثل المنصات الرقمية والذكاء الاصطناعي على المجتمع والاقتصاد والسياسة والأخلاق. سيقوم الطلاب في هذه المادة بفهم عملية صياغة السياسات وعلاقتها بالتكنولوجيا من خلال تصميم السياسات وتنفيذها وتقييمها. سيحصل الطلاب على فهم شامل للتحديات والفرص التي يوفرها تقاطع التكنولوجيا والسياسة العامة من خلال المشاركة في المناقشات والتحليل النقدي لحالات دراسية متعددة.

7. Special Topics in Technology Policy

This course explores selected advanced and emerging topics in technology policy that are shaping industries, governments, and societies. Students will examine the interaction between technological innovation and public policy, with a focus on how policies can promote or hinder technological development. The course emphasizes the impact of technology on regulatory frameworks, ethical considerations, sustainability, economic development, and societal outcomes.

8. AI Governance and Sustainability

This course explores the governance frameworks, ethical challenges, and sustainability issues related to artificial intelligence (AI). It focuses on the role of AI in promoting sustainable development while addressing the risks and regulatory concerns associated with its deployment across industries and societies.

9. Foundations of Business Analytics

This is an introductory course to Business Analytics (BA). It explains the levels of BA with a focus on descriptive, predictive, and prescriptive analytics. Main concepts such as Business Intelligence (BI), data mining, and data warehousing are discussed during the course, which also introduces some key terms in the field such as dimensional data models, data warehouse architecture and infrastructure, techniques for data integration, online analytical processing (OLAP), data visualization, analytical reporting, and managerial issues of data warehouse implementation. In addition, the course introduces the concept of Big Data and how it can be used to support business decisions.

10. Cyber Security & Information Management

This course provides a comprehensive examination of information management and cybersecurity principles, focusing on their intersection within the context of technology management and policy. Students will gain insights into managing and securing information assets, aligning security strategies with organizational goals, and adhering to regulatory requirements. The course is designed to equip students with the skills to manage information effectively, assess cybersecurity risks, and develop policies that support both technological advancement and data protection.

11. Ethics and Responsible Technology

This is a comprehensive course providing the main concepts of ethical theories and frameworks. It covers the ethical challenges and societal implications of emerging technologies. The course addresses the ethical considerations in technology design, development, and deployment with a focus on inclusivity, fairness, and sustainability. Contemporary technological issues such as artificial intelligence, data privacy, cybersecurity, and digital rights are covered from an ethical and responsible perspective. The course delves into the moral, legal, and social responsibilities of technology developers, managers, and policymakers. By the end of the course, students are expected to identify ethical dilemmas, develop strategies for responsible innovation, and craft policies that promote the ethical use of technology.