

PHD IN INNOVATION MANAGEMENT

College of Education, Administrative & Technical Studies | Business Administration Department

The PhD in Innovation Management at Arabian Gulf University is an advanced doctoral program designed to prepare researchers and leaders specialized in innovation management, with a focus on knowledge creation and applied research addressing the strategic priorities of the GCC countries. The program develops advanced capabilities in innovation management, emerging technologies, business models, innovation policy and economics, and intellectual property.

The program is divided into three specialized tracks: Business Management, Information Systems, and Engineering Management, allowing students to pursue a specialization aligned with their research interests and professional goals.

1. Program Tracks Overview

Track	Focus Area	Starting Page
BUSINESS MANAGEMENT	Focuses on the strategic and managerial dimensions of innovation, including strategic foresight, entrepreneurship and innovation, knowledge management, finance for innovation, service innovation and sustainability, advanced business management, and risk and safety management.	Page 3
INFORMATION SYSTEMS	Focuses on information systems and digital innovation, including digital marketing innovation, advanced digital healthcare, educational innovation, database and blockchain technology, digital media innovation, advanced information systems, web designing and programming, and advanced cybersecurity.	Page 4
ENGINEERING MANAGEMENT	Focuses on the management of engineering and technology-driven innovation, including design thinking and product development, project management for innovation, supply chain management, systems modelling and simulation, sustainable innovation, and systems engineering and analysis.	Page 4

PHD IN INNOVATION MANAGEMENT

1. Programme Overview

The PhD in Innovation Management is a 51-credit-hour doctoral program designed to develop advanced research capabilities and prepare independent researchers and thought leaders in innovation management. The program comprises 33 credit hours of coursework and an 18-credit-hour Doctoral Dissertation. The coursework includes 9 credit hours of Foundation Courses, 12 credit hours of Core Courses, and 12 credit hours of Elective Courses. The program offers three specialized tracks: Business Management, Information Systems, and Engineering Management, allowing students to pursue advanced study aligned with their research interests and professional fields. The dissertation component provides students with the opportunity to conduct original research and contribute to knowledge and practice in innovation management, particularly in areas relevant to GCC strategic priorities.

2. Study Plan

PHD DEGREE IN INNOVATION MANAGEMENT

Course Code	Course Title	Credit Hours
Semester 1 : Foundation Courses		
INNM701	Research Methodology	3
INNM702	Data Analysis	3
INNM703	Scientific Writing	1
INNM704	Innovation Theories	2
Total Credit Hours		9
Semester 2 : Core Courses		
INNM711	Strategy & Business Model Innovation	3
INNM712	Advanced Emerging Technologies and Innovation	3
INNM713	Economics of Innovation	3
INNM714	Intellectual Property for Innovation	3

Course Code	Course Title	Credit Hours
Total Credit Hours		12
Semester 3 : Elective Courses		
INNM***	ELECTIVE COURSE (I)	3
INNM***	ELECTIVE COURSE (II)	3
INNM***	ELECTIVE COURSE (III)	3
INNM***	ELECTIVE COURSE (IIII)	3
Total Credit Hours		12
Semesters 4–6 — Doctoral Dissertation		
INNM799	Dissertation	18
Total Credit Hours		18
Total Programme Credit Hours		51

ELECTIVE COURSES

STUDENTS MUST SELECT AT LEAST TWO ELECTIVES THAT ARE UNIQUE TO THEIR CHOSEN TRACK (I.E., NOT SHARED WITH OTHER TRACKS).

BUSINESS MANAGEMENT TRACK

Course Code	Course Title	Credit Hours
Semester 1		
INNM731	Strategic foresight	3
INNM732	Entrepreneurship and Innovation	3
INNM734	Knowledge Management and Innovation	3
INNM735	Advanced Finance for Innovation	3
INNM736	Services Innovation and Sustainability	3
INNM737	Advanced Topics in Business Management	3
INNM738*	Advanced Data Analytics for Innovation	3

Course Code	Course Title	Credit Hours
INNM739	Risk and Safety Management	3
INNM741*	AI Applications and Ethics	3

*SHARED ELECTIVES ON ALL TRACKS

INFORMATION SYSTEMS TRACK

Course Code	Course Title	Credit Hours
Semester 1		
INNM733	Digital Marketing Innovation	3
INNM738*	Advanced Data Analytics for Innovation	3
INNM741*	AI Applications and Ethics	3
INNM743	Advanced Digital Healthcare	3
INNM744	Educational Innovation	3
INNM745	Database and Blockchain Technology	3
INNM746	Digital Media Innovation	3
INNM747	Advanced Topics in Information Systems	3
INNM748	Web Designing and Programming	3

*SHARED ELECTIVES ON ALL TRACKS

ENGINEERING MANAGEMENT TRACK

Course Code	Course Title	Credit Hours
Semester 1		
INNM738*	Advanced Data Analytics for Innovation	3
INNM741*	AI Applications and Ethics	3
INNM742	Advanced Total Quality Management	3
INNM751	Design Thinking and Product Development	3
INNM752	Current Topics in Engineering Management	3

Course Code	Course Title	Credit Hours
INNM753	Project Management for Innovation	3
INNM754	Supply Chain Management	3
INNM755	Systems Modeling and Simulation	3
INNM756	Sustainable Innovation	3

*SHARED ELECTIVES ON ALL TRACKS

3. Course Descriptions

INNM701— RESEARCH METHODOLOGY (3 CH)

This PhD course provides advanced training in research methodologies, requiring students to engage with qualitative and quantitative methods at a level suitable for producing publication-quality research. The course engages critically with epistemological foundations, research paradigms, including design science and action research, and advanced methodological approaches suitable for publication in leading journals. It explores qualitative and quantitative research methods, research design, data collection techniques, and ethical considerations in conducting research. The course emphasizes the importance of critical thinking and analytical skills in evaluating research literature and developing research proposals. Students will engage in practical exercises to apply methodology concepts to real-world research questions. Students will be able to design a research study, select appropriate methodologies, analyze data effectively, and present research findings in a clear and coherent manner.

INNM702— DATA ANALYSIS (3 CH)

This course aims to provide students with the skills needed to conduct management research and perform data analysis effectively. This course covers advanced data analysis techniques, including causal inference, predictive modeling, and computational methods, and requires students to apply them to original research problems. The course emphasizes the use of analytical tools and software to analyze management-related data, enabling students to make informed decisions based on empirical evidence. Students will work on case studies and projects that require the practical application of data analysis techniques. Students will be able to design and carry out management research projects, utilize data analysis tools proficiently, and communicate research findings to stakeholders clearly and effectively.

INNM703— SCIENTIFIC WRITING (3 CH)

This course aims to develop students' skills in writing clear, concise, and effective scientific documents. It covers the principles of scientific writing, including structure, style, and conventions specific to various types of scientific literature, such as research papers, theses, and reports. The course emphasizes the importance of clarity, coherence, and proper citation practices. Students will engage in practical writing exercises, peer reviews, and revisions to enhance their writing proficiency. Students will be able to produce high-quality scientific manuscripts, adhere to disciplinary writing standards, and effectively communicate their research findings to diverse audiences.

INNM704— INNOVATION THEORIES (3 CH)

This course aims to provide students with a foundational understanding of key theories and models of innovation. It explores various theoretical frameworks that explain the processes and dynamics of innovation, including disruptive innovation, open innovation, and the innovation life cycle. The course examines how these theories apply to real-world scenarios and the role of innovation in driving organizational success. Students will analyze case studies to understand the practical implications of different innovation theories. Students will be able to critically evaluate innovation theories, apply theoretical concepts to practical situations, and articulate the significance of innovation in various contexts.

CORE COURSES:

INNM711— STRATEGY & BUSINESS MODEL INNOVATION (3 CH)

This course aims to equip students with a comprehensive understanding of Science, Technology, and Innovation (STI) policy and IP strategy in business models. It addresses the enabling environment for innovation, including the roles of government, the private sector, and civil society. The course will explore STI governance, strategic foresight, evaluation of STI policies, and innovation management tools. It will also cover technology forecasting, patent analysis, innovation auditing, and mapping through a series of case studies and critical inquiries drawn from global and regional contexts. The delivery is workshop-style, and students present case analyses periodically. Topics include Competitive strategy, dynamic capabilities, resource-based views, business model typologies, value creation and capture, IP strategy, sustainable business models, and strategic management of innovation ecosystems. Students will develop the ability to critically analyze and design innovative strategies and business models that enhance value creation, delivery, and capture mechanisms, and to link them directly to broader innovation strategies in the GCC.

INNM712— ADVANCED EMERGING TECHNOLOGIES AND INNOVATION (3 CH)

This doctoral-level course requires critical engagement with frontier research on emerging technologies. This course aims to provide students with an understanding of how emerging technologies drive innovation across sectors such as manufacturing, energy, finance, healthcare, logistics, and government. This course explores IP and commercialization of emerging technologies, including Artificial Intelligence, Blockchain, the Internet of Things, and Quantum technologies, and how these technologies revolutionize business models, optimize operations, and create new opportunities. The course will adopt a seminar-style discussion with student-led presentations on frontier research. Students will be able to evaluate the impact of emerging technologies on innovation, develop strategies for integrating these technologies into existing frameworks, and assess their potential risks and benefits in real-world applications.

INNM713— ECONOMICS OF INNOVATION (3 CH)

This course aims to provide students with a deep understanding of the economic theories and policies that drive innovation. It requires advanced quantitative modeling and critical engagement with frontier economic theories. It examines the intersection of technology, policy, and business strategy, focusing on how economic forces shape technological progress and societal transformation. The course will cover topics such as innovation systems, debates on intellectual property, strategic R&D investment, and the dynamics of technological competitiveness. Through group discussions and case studies, students will engage with real-world examples to enhance their comprehension of the IP economics and innovation

policy. Students will be able to critically analyze economic policies that influence innovation, evaluate the effectiveness of various innovation strategies, and contribute to discussions on policy implications in different contexts, including GCC.

INN714— INTELLECTUAL PROPERTY FOR INNOVATION (3 CH)

This course provides an advanced, interdisciplinary examination of intellectual property (IP) law, strategy, and management as a driver of innovation and commercialization. It explores the complex interplay of patents, copyrights, trademarks, trade secrets, and industrial designs within regional and global innovation ecosystems. Students will critique the legal, economic, and policy dimensions of IP protection, licensing, technology transfer, and IP valuation, with an emphasis on their roles in fostering knowledge-based economies. The course covers strategic IP management for innovative enterprises, open innovation models, IP risk assessment, and the ethical and professional responsibilities in IP governance. Special attention is paid to GCC national innovation priorities, regional IP regimes, and international frameworks (e.g., WIPO, TRIPS). Through case studies and research, students will design IP strategies that align with organizational innovation goals and sustainable development.

ELECTIVE COURSES:

COURSES THAT ARE SHARED IN PHD TRACKS:

TRACKS (BUSINESS MANAGEMENT / INFORMATION SYSTEMS/ ENGINEERING MANAGEMENT):

INN738*— ADVANCED DATA ANALYTICS FOR INNOVATION (3 CH)

This course aims to equip students with advanced data analytics skills to drive innovation within organizations. It explores data analysis techniques, predictive modeling, and data visualization tools that support decision-making in innovative contexts. The course covers methodologies for collecting and interpreting data to identify trends, opportunities, and challenges in the innovation process. Students will engage in hands-on projects that apply analytics to real-world innovation scenarios. Students will be able to utilize advanced data analytics tools to inform innovation strategies, evaluate data-driven insights, and communicate findings effectively to stakeholders.

INN741*— AI APPLICATIONS AND ETHICS (3 CH)

This course provides an advanced, interdisciplinary exploration of Artificial Intelligence (AI) applications, ethical frameworks, and innovation strategies. The course integrates technical AI foundations (machine learning, computer vision, NLP, intelligent systems) with ethical, societal, legal, and governance considerations, positioning AI as a central driver of innovation and digital transformation. The course emphasizes responsible and ethical AI design, deployment, and governance, particularly within high-impact domains such as smart cities, healthcare, cybersecurity, public services, and digital economies. Special attention is given to AI strategies and regulatory frameworks in GCC countries, aligned with national visions, digital government initiatives, and emerging AI governance policies. Doctoral students will gain both conceptual depth and applied research competence, enabling them to design, evaluate, and lead AI-driven innovation responsibly while contributing original scholarly research.

ELECTIVE COURSES – BUSINESS MANAGEMENT TRACK:

INN731— STRATEGIC FORESIGHT (3 CH)

This course examines the future and how organizations can prepare for change. In this course, students will explore the discipline of strategic foresight through a deeper understanding of models and tools for conceptualizing and communicating alternative viewpoints of the future. The course covers environmental scanning, trend analysis, causal layered analysis, and scenario planning. It will take a systems-wide approach and an ambidextrous mindset to map different pathways for the future.

INN732— ENTREPRENEURSHIP AND INNOVATION (3 CH)

This course aims to provide students with a comprehensive understanding of the roles of entrepreneurs, innovation, and technology in shaping entrepreneurial culture and outcomes. It involves exploring the processes of building new business models and managing the inherent uncertainties and complexities of entrepreneurship. The course covers essential topics such as fostering a creative mindset, cultivating an innovation culture, and measuring the effectiveness of entrepreneurship. Students will engage with case studies from the Gulf Cooperation Council (GCC) region to illustrate practical applications of these concepts. Students will be able to develop innovative business models, apply strategies for managing uncertainty, and effectively commercialize innovations within their entrepreneurial ventures.

INN734— KNOWLEDGE MANAGEMENT AND INNOVATION (3 CH)

This course explores the critical relationship between knowledge management and innovation within organizations. It examines strategies for effectively capturing, sharing, and utilizing knowledge to foster innovation and enhance organizational performance. The course covers topics such as knowledge creation, organizational learning, and the role of technology in facilitating knowledge management processes. Students will analyze case studies to understand how effective knowledge management practices can drive innovation and competitive advantage. Students will be able to develop knowledge management strategies that support innovation, assess the effectiveness of knowledge-sharing practices, and implement systems that enhance organizational learning and adaptability.

INN735— ADVANCED FINANCE FOR INNOVATION (3 CH)

This course aims to equip students with advanced financial concepts and tools to foster innovation within organizations. It explores the financial strategies that support innovation, including venture capital, corporate finance, and risk management. The course covers funding mechanisms for innovative projects, financial viability evaluation, and the role of financial metrics in decision-making. Students will engage with case studies to analyse financial models used by successful innovative firms. Students will be able to develop comprehensive financial plans for innovative initiatives, assess funding options, and evaluate the financial implications of innovation strategies within a business context.

INN736— SERVICES INNOVATION & SUSTAINABILITY (3 CH)

This course provides an advanced examination of innovation in service-oriented industries with a focus on sustainability-driven transformation. Students will explore service design, customer experience management, and the integration of technology in service delivery, while critically evaluating the environmental, social, and economic sustainability of service innovations. The course critically examines sustainable service models, circular-economy principles in service delivery, decarbonization strategies, and the measurement of sustainability outcomes, specifically within the context of the GCC energy transition, smart cities, and green finance initiatives. Through case studies and research projects, students

will develop frameworks for assessing and enhancing the sustainability impact of service innovations.

INNM737— ADVANCED TOPICS IN BUSINESS MANAGEMENT (3 CH)

Business management is a dynamic and interdisciplinary field that draws on insights from management, marketing, strategy, and innovation studies across both public and private sectors. This doctoral-level course provides PhD students with a rigorous and comprehensive introduction to the theoretical foundations of innovation management and advanced business management research. The course examines the relationships between competitive environments, managerial decision-making, and the processes of value creation, capture, and delivery through innovation. It adopts a broad, integrative perspective, reviewing seminal and contemporary research on innovation management, product development, competition, and strategic management. Key themes include disruptive innovation, competitive dynamics, product launch strategies, inter-organizational alliances, the role of product design, strategic orientations, and innovation-driven performance. Strong emphasis is placed on research design, theory development, and scholarly publishing. Students will critically analyze influential academic works, engage with advanced research methodologies, and develop publishable research ideas. The course is designed to equip doctoral students with the analytical tools, theoretical grounding, and research competencies required for academic careers and senior leadership roles in innovation-driven global organizations.

INNM739— RISK AND SAFETY MANAGEMENT (3 CH)

This course explores advanced theories, models, and practices of risk and safety management within innovation-driven, technology-intensive, and high-risk environments, with a particular emphasis on Gulf Cooperation Council (GCC) countries. The course adopts an interdisciplinary and research-oriented approach, integrating perspectives from innovation management, systems engineering, organizational behavior, governance, and public policy. It addresses how risks emerge, evolve, and are managed in complex socio-technical systems, especially those associated with digital transformation, energy transition, infrastructure development, cybersecurity, healthcare, and industrial innovation in the GCC region. The course prepares doctoral candidates to develop original research, critically analyze global and regional risk challenges, and contribute, both theoretically and empirically, to the fields of risk science, system safety, resilience, and innovation governance.

ELECTIVE COURSES – INFORMATION SYSTEMS TRACK:

INNM733— DIGITAL MARKETING INNOVATION (3 CH)

This course aims to provide students with an understanding of innovative digital marketing strategies that drive brand engagement and customer loyalty. It explores the latest trends and technologies in digital marketing, including social media, content marketing, search engine optimization, and data analytics. The course covers how to effectively leverage digital channels to create impactful marketing campaigns and enhance customer experiences. Students will engage with case studies to analyze successful digital marketing initiatives and their outcomes. Students will be able to design and implement innovative digital marketing strategies, assess the effectiveness of various digital tools, and adapt marketing approaches to meet the evolving needs of consumers.

INNM743— ADVANCED DIGITAL HEALTHCARE (3 CH)

This course aims to provide students with an in-depth understanding of the integration of digital technologies in healthcare and their impact on patient outcomes and service delivery. It explores advanced digital health solutions, including telemedicine, electronic health records, and health data analytics. The course will cover the challenges and opportunities presented by digital transformation in healthcare, emphasizing innovation in patient care, data management, and health informatics. Students will engage with case studies to analyze the effectiveness of various digital health interventions and their implications for healthcare policy. Students will be able to evaluate digital healthcare technologies, develop implementation strategies for digital solutions in healthcare settings, and assess their impact on patient care and systemic efficiency.

INN744— EDUCATIONAL INNOVATION (3 CH)

This course explores the principles and practices of educational innovation, focusing on how to enhance teaching and learning through innovative approaches. It examines various educational technologies, pedagogical strategies, and curriculum designs that foster creativity and engagement among learners. The course covers topics such as blended learning, experiential education, and the role of data in personalizing learning experiences. Students will analyze case studies of innovative educational programs and initiatives to understand their impacts and scalability. Students will be able to design innovative educational solutions, assess the effectiveness of different teaching methods, and implement strategies that foster an inclusive and engaging learning environment.

INN745— DATABASE & BLOCKCHAIN TECHNOLOGY (3 CH)

The course presents database technologies and their strategic impact on modern businesses, from traditional relational systems to blockchain as a distributed database. We will introduce fundamental cybersecurity concepts, such as hash functions and symmetric and public-key encryption, as critical tools for understanding blockchain technology and data protection in both centralized and distributed systems. The course includes computer lab sessions and interactive demos that give students hands-on experience with database systems, blockchain technology, and industrial systems such as Oracle and SAP.

INN746— DIGITAL MEDIA INNOVATION (3 CH)

This course explores the transformative impact of digital media on communication, storytelling, and content creation. It examines the latest trends in digital media technologies, including social media platforms, interactive content, and multimedia storytelling. The course covers strategies for engaging audiences and measuring the effectiveness of digital media campaigns. Students will analyze case studies of innovative digital media projects and their influence on public discourse and brand engagement. Students will be able to create and implement innovative digital media strategies, evaluate the effectiveness of various media formats, and adapt content to meet the evolving needs of diverse audiences.

INN747— ADVANCED TOPICS IN INFORMATION SYSTEMS (3 CH)

This course explores selected and emerging topics in Information Systems (IS) that are not covered by other courses in the PhD program. The course is designed to be flexible and research-driven, with topics varying based on current technological developments, faculty expertise, and doctoral students' research interests. The course provides an in-depth and critical examination of advanced information systems architectures, information security solutions, privacy-preserving technologies, and governance mechanisms. It integrates technical, managerial, and strategic perspectives to support innovation

management in highly digitalized environments. Special emphasis is placed on Gulf Cooperation Council (GCC) contexts, including digital government, smart infrastructure, fintech, cybersecurity, data governance, and national digital transformation strategies. Students will critically analyze advanced theories, models, and methodologies and apply them to complex organizational and policy challenges in the GCC region.

INN748— WEB DESIGNING AND PROGRAMMING (3 CH)

This course provides an advanced, research-driven exploration of web design and programming as a platform for digital innovation. The course integrates web technologies, programming paradigms, user experience (UX), usability, security, ethics, and innovation management, positioning the web not merely as a technical artifact but as a strategic innovation infrastructure. The course moves beyond basic web development skills to focus on architectural design, innovation-oriented web systems, digital platforms, and research methodologies related to web-based technologies. It emphasizes the role of advanced web solutions in digital transformation, e-government, smart services, entrepreneurship, and innovation ecosystems, with reference to GCC countries. Doctoral students are trained to critically analyze emerging web technologies, design innovative web-based solutions, and conduct publishable research that contributes to both academic knowledge and regional development agendas.

ELECTIVE COURSES – ENGINEERING MANAGEMENT TRACK:

INN742— ADVANCED TOTAL QUALITY MANAGEMENT (3 CH)

The course provides an advanced and integrated examination of Total Quality Management (TQM) as a strategic driver of innovation, organizational excellence, and sustainable performance. The course extends beyond traditional quality concepts to address advanced applications of statistical process control (SPC), Lean Six Sigma, quality analytics, and technology-enabled quality systems within complex organizational environments. The course emphasizes the strategic role of TQM in innovation management, digital transformation, and continuous improvement across manufacturing, energy, finance, healthcare, logistics, and government sectors. Special focus is placed on Gulf Cooperation Council (GCC) countries, reflecting their national visions, public-sector excellence programs, quality awards, and the increasing adoption of international quality standards (ISO, EFQM, Lean Six Sigma). Doctoral students will critically analyze quality-related challenges, apply advanced quantitative and qualitative research methods, and develop innovative quality management frameworks aligned with organizational strategy and national development priorities.

INN751— DESIGN THINKING AND PRODUCT DEVELOPMENT (3 CH)

This course aims to equip students with the principles and practices of design thinking as a framework for innovative product development. It explores the design thinking process, including empathy, ideation, prototyping, and testing, and how these stages contribute to creating user-centered products. The course covers techniques for gathering user feedback, iterative design, and the role of cross-functional teams in product development. Students will engage in hands-on projects to apply design thinking methodologies to real-world challenges. Students will be able to apply design thinking principles to develop innovative products, conduct user research effectively, and iterate on designs based on feedback to meet user needs and market demands.

INNM752— CURRENT TOPICS IN ENGINEERING MANAGEMENT (3 CH)

This advanced course explores contemporary and emerging research topics at the intersection of engineering management and innovation management, with relevance to the economic and developmental priorities of the Gulf Cooperation Council (GCC) Countries. The course focuses on strategic, technical, and organizational challenges faced by technology-intensive organizations operating in dynamic, innovation-driven environments. The course emphasizes critical analysis of high-impact academic literature and current industry practices in artificial intelligence for decision-making, Industry 4.0, digital and agile innovation, sustainability, and technology commercialization. Special attention is given to innovation-led development, large-scale engineering projects, and public–private collaboration within Gulf Cooperation Council (GCC) countries. The course prepares PhD students for advanced research, scholarly publication, and leadership roles in academia, industry, and policy institutions.

Special emphasis is placed on Gulf Cooperation Council (GCC) contexts, including digital government, smart infrastructure, fintech, cybersecurity, data governance, and national digital transformation strategies. Students will critically analyze advanced theories, models, and methodologies and apply them to complex organizational and policy challenges in the GCC region.

INNM753— PROJECT MANAGEMENT FOR INNOVATION (3 CH)

This course focuses on the strategic, behavioral, and research-driven dimensions of project management for innovation. It addresses the unique challenges of managing innovation, R&D, and doctoral research projects, which are characterized by high uncertainty, complexity, risk, and evolving stakeholder expectations. The course integrates theory and practice, combining advanced project management methodologies (Agile, Stage-Gate, Lean, Critical Chain, Portfolio Management) with innovation management frameworks. It emphasizes innovation implementation through projects, research project governance, and evidence-based decision-making. Special emphasis is placed on Gulf Cooperation Council (GCC) contexts, including mega-projects, national innovation initiatives, public sector transformation, energy transition, digital infrastructure, and research-driven development aligned with national visions. Doctoral students will apply project management tools directly to their own PhD research projects and to real-life innovation projects within GCC organizations.

INNM754— SUPPLY CHAIN MANAGEMENT (3 CH)

This course provides an advanced, research-intensive examination of Supply Chain Management (SCM) as a strategic, analytical, and innovation-driven discipline. The course integrates logistics, operations management, sourcing, and procurement, with a strong emphasis on innovation, digital transformation, and sustainability in supply chains. The course is designed to prepare PhD candidates to identify complex SCM problems, frame them as rigorous research questions, and address them using advanced analytical, empirical, and computational methods suitable for publication in top-tier academic journals. Special attention is given to supply chain challenges and opportunities in the Gulf Cooperation Council (GCC) region, including energy-intensive industries, logistics hubs, public-sector supply chains, digital trade platforms, resilience under uncertainty, and sustainability agendas aligned with national visions.

INNM754— SUPPLY CHAIN MANAGEMENT (3 CH)

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and sustainability in supply chains. The course is designed to prepare PhD candidates to identify complex SCM problems, frame them as rigorous research questions, and address them using advanced analytical, empirical, and computational methods suitable for publication in top-tier academic journals. Special attention is given to supply chain challenges and opportunities in the Gulf Cooperation Council (GCC) region, including energy-intensive industries, logistics hubs, public-sector supply chains, digital trade platforms, resilience under uncertainty, and sustainability agendas aligned with national visions.

INN755— SYSTEMS MODELING AND SIMULATION (3 CH)

This course provides a rigorous theoretical and applied foundation in systems modeling and simulation for analyzing, designing, and optimizing complex engineering, organizational, and socio-technical systems. The course emphasizes the strategic role of simulation as a decision-support and innovation-enabling tool in dynamic, uncertain, and data-intensive environments. The course covers discrete-event simulation, continuous and hybrid simulation models, stochastic and deterministic systems, Monte Carlo methods, queuing models, statistical input modeling, verification and validation, and advanced simulation methodologies. Special emphasis is placed on applying simulation and modeling techniques to innovation management challenges, including manufacturing systems, service operations, digital transformation, and policy planning. The course explicitly links modeling and simulation applications to Gulf Cooperation Council (GCC) contexts, such as smart cities, energy systems, logistics and ports, healthcare systems, public services, and large-scale infrastructure projects aligned with national development visions and innovation strategies.

INN756— SUSTAINABLE INNOVATION (3 CH)

This course aims to introduce students to the model of sustainable innovation and how it can be leveraged as a competitive advantage in organizations. The course engages deeply with socio-technical transitions, sustainability-oriented innovation systems, and policy frameworks for sustainable development, emphasizing GCC national commitments and global sustainability agendas. It explores the interrelations between sustainability, innovation, and marketing, emphasizing the importance of integrating sustainable practices into business strategies. The course will cover analytical tools that help identify and assess business opportunities within the realm of sustainable innovation. Students will be able to develop strategies that utilize sustainability as a core component of innovation, evaluate the potential impact of sustainable practices on business performance, and create competitive advantages through sustainable innovation approaches.