

Bachelor of Science (BSc) (Honours) in Digital Business

Fact Sheet

Overall Program Description

In today's rapidly evolving digital landscape, technological advancements occur at an astonishing pace, becoming the cornerstones of innovation and competitiveness in business. Think about retail revolutions led by Amazon and Alibaba to advertising transformations by Google and Facebook. Fintech innovators like PayPal and Stripe have changed financial transactions, while Uber, Netflix, and Spotify have redefined transportation and media consumption.

However, many businesses struggle to secure talents to navigate this transformation. Future leaders in the Digital Business field must possess theoretical knowledge and the practical proficiency to understand challenges (e.g. privacy, cybersecurity threats, and sustainable digital practices), to take responsibility for decision making in such an unpredictable context and to fully exploit the dynamic relationship between technology, digitalization, and business.

OPIT's Bachelor of Science (BSc) (Honours) in Digital Business empowers students to blend traditional business acumen with digital and technological fluency, enabling them to bridge the gap between strategy and execution in the digital age.

Commencing with foundational principles of business and economics, the program progressively delves into key topics such as Digital Product Management, Business Models, Digital Marketing, Digital Transformation, and Entrepreneurship. Recognizing the pivotal role of Information Technology in shaping future business leaders, the program seamlessly integrates robust IT foundations across Programming, Artificial Intelligence (AI), Cloud Computing, Data Science, and Cybersecurity. Overall, the program emphasizes practical skills through hands-on projects and industry connections.

The ultimate goal is to empower students with the knowledge and practical skills necessary to excel in the digital landscape. By immersing themselves in practical experiences and real-world challenges, graduates emerge with the competence required to drive innovation and achieve success in digital business.

The main objective of this program are:

Business Management Proficiency: To equip students with the comprehensive skills necessary for effective, creative and responsible management in the digital business landscape.

Technical Confidence: To instill a deep understanding of modern Information Technology and ensure students can make informed decisions about its strategic application within a digital business context.

Future-Proof Leadership: Seamlessly blend industry best practices with innovative strategies and technology management. Emphasize developing soft skills that enable forward-thinking leadership, focusing on understanding human needs, harnessing scalable technologies and leading teams. Finally students will learn foresights and how to lead further studies with a degree of autonomy.

Real-world Application: To prepare students for the real-world challenges they will encounter in the industry by emphasizing a hands-on approach and the analysis of real-world case studies.

When it comes to the overall competences to be achieved, the students will be able to manage complex technical/professional activities or projects in the domain of digital business, including team management. This includes taking responsibility for decision making in the disruptive, unpredictable working environment, applying creativity whether needed. Finally, students will be able to acquire and practice leadership skills.

Entry Requirements

Application requests from prospective students are received by the Students Secretary Office, which will conduct an interview with the applicants.

Students will need to provide the following documents for admission:

1. Updated CV in English;
2. Copy of a valid ID (front and back);

Qualifications:

3. High secondary school certificate (MQF level 4); or a higher level of education in the following fields:
Computer Science, Computer and Electrical Engineering, Mechanical Engineering, Aerospace Engineering, Physics, Mathematics, Statistics, Chemistry, Biology, Geosciences, Economics, Law, Liberal Arts, Medical Sciences..

Since all OPIT programs are taught in English, a proof of language proficiency is needed. Any of the following options is accepted as a proof of English proficiency:

1. Being an English native speaker;
2. Having completed a previous degree entirely taught in English;
3. Having passed one of the following English tests:
 - TOEFL (minimum 80 points)
 - IELTS (minimum Level 6)
 - Duolingo English Test (minimum 95 points)
 - Cambridge Certificate (minimum B2 grade overall)

Students who do not hold the requested level must sit for the English Entry Test in order to certify the students' competences.

All the enrolled students will follow an Induction Module before the beginning of the chosen program. This will explain to the student all the policies and procedures outlined in this handbook, and specific information related to the training, such as learning outcomes and expectations.

Study Guidelines will also be shared. Induction will also include a handbook and/or a tutorial lesson related to the different functionalities of the Virtual Learning Environment and how to use it. If students have any specific requirements or needs, they should inform the Students Support Office.

During the admission process of students wishing to enroll to the program, we will also ensure that such students have the required basic digital competence and equipment to successfully complete such a course. We will do so by administering to such students a standardized questionnaire that will cover aspects including, but not limited to: the availability of a device with a webcam and speakers, and the availability of an adequate internet connection.

Recognition of Prior Learning

OPIT recognizes previous academic and professional experience in different ways. Procedures that describe the mechanisms related to admission and RPL are entirely described at the following webpage:

<https://www.opit.com/fee-admission/>

**Learning Outcomes
for Knowledge
obtained at the end
of the programme**

The learner will be able to:

- a) Demonstrate a holistic understanding of the digital business landscape, encompassing concepts, tools, and strategies relevant to the digital economy.
- b) Understand and implement entrepreneurship and finance for the digital economy.
- c) Understand foundational Data Science and Artificial Intelligence principles and their relevance in contemporary digital ecosystems.
- d) Navigate cybersecurity and cloud adoption frameworks for enhanced business resilience and security.
- e) Use project management, quality assurance, and digital transformation management techniques for successful project execution and organizational evolution.
- f) Evaluate market trends, consumer behavior, and emerging technologies to identify opportunities and anticipate changes in the digital marketplace.
- g) Analyze and evaluate e-commerce strategies, digital marketing techniques, and online brand management to drive visibility and growth.
- h) Understand risks, regulatory compliance, and ethical considerations in digital business operations.
- i) Identify innovation and apply adaptive techniques for technological advancements, and implement agile methodologies for continuous improvement and adaptation.
- j) Evaluate the global impact of digitalization on businesses, economies, and societies, and navigate the complexities of international digital markets.

**Learning Outcomes
for Skills obtained at
the end of the
programme**

The learner will be able to:

- a) Use technical English fluently.
- b) Show and articulate strategic approaches for leveraging digital technologies to enhance business operations, marketing, and overall competitiveness.
- c) Design and manage digital transformation initiatives within organizations, aligning technology with business objectives.
- d) Design and manage digital products within organizations or startups, aligning technology with business objectives.
- e) Develop an entrepreneurial mindset by exploring innovative business models, disruptive technologies, and opportunities for new ventures in the digital space.
- f) Use collaboration, communication, and leadership skills necessary to lead multidisciplinary teams in digital initiatives and projects.
- g) Apply the power of data analytics and AI to make informed decisions, derive insights, and optimize business processes in the digital context.
- h) Design strategies to enhance customer experiences, engagement, and satisfaction through digital channels and personalized interactions.
- i) Apply web development and usability principles.

- j) Apply and implement decision-making systems through the use of Machine Learning and AI.
- k) Plan cloud computing architectures and FinOps practices.
- l) Assess and use various programming languages and paradigms.
- m) Adopt AI-driven software development principles.
- n) Implement blockchain technology for business.
- o) Consistently evaluates own learning and identifies learning needs.

Hours of Total Learning

1 ECTS is equivalent to 25 total hours of learning, inclusive of contact hours, supervised placement and practice hours, self-study hours and assessment hours.

Total Learning Hours

<p>Total Contact Hours ¹ 1125</p> <p>(Contact Hours are hours invested In learning new content under the Direction of a tutor/lecturer (e.g. lectures, participation in online forums, video-lectures)</p>	<p>Supervised Placement and Practice Hours 980</p> <p>(During these hours the learner is supervised, coached, or mentored. Tutorial hours may be included here)</p>
<p>Self-Study Hours 2090</p> <p>(Estimated workload of research and study)</p>	<p>Assessment Hours 305</p> <p>(Examinations/ presentations/ group work/ projects, etc.)</p>
<p>4500 Hours</p>	

¹ In the case of online learning, synchronous and asynchronous learning activities under the direction and control of an instructor are considered as contact hours.

The Program Structure						
Module/ Unit Title	Compulsory (C) or Elective (E)	ECTS	MQF Level	Mode of Teaching	Mode of Assessment	Term
Technical English	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	1
ICT Fundamentals	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	1
Programming Principles	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	1
Business Fundamentals	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	1
Managerial Economics	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	1
Web Development	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	2
Project Management and QA	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	2
Digital Business Models	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	2
Organizational Behavior	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	2
Elements of Data Structures and Algorithms	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	2
Cloud Computing Infrastructure	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	3
Programming Paradigms	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	3
Introduction to Artificial Intelligence	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	3
Business Strategy	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	3
Digital Analytics and Metrics	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	3
Introduction to Machine Learning	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	4
Digital Marketing	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	4
Introduction to Computer Security	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	4
Entrepreneurship and Finance for the Digital Economy	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	4

Soft Skills and Critical Thinking	Compulsory	6	6	Live lectures, asynchronous contents	Exercises, Tests	4
Digital Platforms and Ecosystems	Elective	6	6	Live lectures, asynchronous contents	Exercises, Tests	5
Digital Product Management	Elective	6	6	Live lectures, asynchronous contents	Exercises, Tests	5
Digital Transformation Management	Elective	6	6	Live lectures, asynchronous contents	Exercises, Tests	5
Cybersecurity	Elective	6	6	Live lectures, asynchronous contents	Exercises, Tests	5
Cloud Adoption Frameworks	Elective	6	6	Live lectures, asynchronous contents	Exercises, Tests	5
Leadership and Business Development for the Metaverse	Elective	6	6	Live lectures, asynchronous contents	Exercises, Tests	5
Advanced Digital Marketing	Elective	6	6	Live lectures, asynchronous contents	Exercises, Tests	5
Business Intelligence and Decision Making	Elective	6	6	Live lectures, asynchronous contents	Exercises, Tests	5
Blockchain for Business	Elective	6	6	Live lectures, asynchronous contents	Exercises, Tests	5
FinOps	Elective	6	6	Live lectures, asynchronous contents	Exercises, Tests	5
AI-Driven Software Development	Elective	6	6	Live lectures, asynchronous contents	Exercises, Tests	5
E-Commerce Management	Elective	6	6	Live lectures, asynchronous contents	Exercises, Tests	5
Capstone Project and Dissertation	Compulsory	30	6	-	Thesis	6
Total ECTS for Program Completion		180 ECTS				

Technical English

Compulsory

6 ECTS

Term 1

Course description

English is the language used in most technical contexts and because of this, it is imperative that students get a good command of it. Throughout the course, students are presented with clear technical concepts and given information on how to present them in a way which is understandable by those present.

What's important is that the language is taught in context using real world examples thus helping the student understand the nuances of such a specialized use. The students will learn specialist terms alongside other basic English skills like reading, listening and communication. Practice is extremely important in any language because even though the basic constructs can be easily learnt, fluency and diction can only be acquired through active usage.

Since students might have a first language which is not English, grammatical rules will be regularly practiced and summarized. This is done to reinforce the use of the English language within a work context and discourage code switching during such conversations. The topics presented will reflect the latest developments in technology taken from popular literature and which are relevant to students' applications.

The course will provide the basic linguistic competences necessary for the student to ultimately listen, read, write and critically think in English. A skill which is needed for academic and professional success.

The educational goals are defined in relation to the Common European Framework of Reference for languages (CEFR). Acquisition of the basic structures of the English language system (levels (B1/B2)) in order to develop both written and oral communicative competences.

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Utilize language skills necessary to succeed in a technical environment
- b) Build basic information on technical issues for further studies
- c) Deal with large quantities of technical readings and writings
- d) Identify and make use of appropriate terms with particular reference to technical aspects
- e) Choose phrases, oral and written, morphologically and syntactically correct and appropriate to the level of language proficiency required by the program
- f) Translate and to interpret texts, oral and written, of adequate complexity and difficulty

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Define, describe, and use both written and oral texts in Technical English
- b) Develop a good range of vocabulary in Technical English
- d) Construct English in situations of intercultural interaction/environments.
- e) Rewrite technical studies and business writing in English

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Use word processing software to write technical reports and business writing in English

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ICT Fundamentals

Compulsory

6 ECTS

Term 1

Course Description

The Information Communications Technology (ICT) module is an ideal foundation course for any student aspiring to deepen his knowledge in computing. It is designed to help them understand the basic principles of problem-solving, digital devices, and software development. After the modules, the students should have all the knowledge required to tackle various science, engineering and ICT areas. The skills learnt are also transferable to other fields and can be used in various situations encountered daily.

Through this module, students will take a hands-on approach to computing since it is designed to help them reflect on the technology they use daily and encourage them to ponder on how it works. They will also be encouraged to question how they can improve their problem-solving skills using technology as an enabler. Students will be able to focus on real-world problem-solving, mainly how this can be achieved through simple programming.

To achieve all this, the topics covered in this module include:

- Computational thinking
- Introduction to algorithms
- Introduction to data structures
- Language translators, interpreters and compilers
- IT project management methodologies
- Introduction to computer networks
- Introduction to cloud computing
- Principles of cybersecurity
- Introduction to data and databases
- Artificial intelligence and machine learning
- Future directions in Computer Science and Information Technology

The ICT fundamentals will provide students with the basic skills required to further their studies, equipping them for the ever-increasing open vacancies in the tech market.

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Demonstrate how the components, the architecture and the organization inside a computer works
- b) Practice the problem-solving process using various scenarios
- c) Demonstrate the characteristics of operating systems and their applications
- d) Develop a range of cognitive skills, including critical thinking skills

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Explain the different components of a computer system and how it can connect to other machines
- b) Define, describe, and use computing techniques to address specific problems
- c) Design simple algorithms and solve basic problems

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Show the skills acquired to create algorithms which solve problems
- b) Solve computer-based problems using simple programs
- c) Use computer networks and show how they can be used to connect computers together

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Programming

Principles

Compulsory

6 ECTS

Term 1

Course Description

The Programming Principles module is intended as the first introductory course to programming. It takes students without experience through a step-by-step process towards creating their first programs. This is achieved via a hands-on approach that highlights the fundamental concepts of most programming languages. The module will use C/C++ with the GCC compiler.

The module will first introduce the students to the inner workings of a computer. In particular, they will be exposed to variables and how they are used to access main memory. Following that, students will be introduced to more complex concepts such as data types and abstract types. With this knowledge, they can then proceed toward using fundamental programming concepts such as:

- Assigning and manipulating variables,
- Using conditional statements,
- Looping and iterations,
- Using more complex data types and data structures,
- Creating simple functions

Every program needs some debugging, and because of this, students will be guided toward solving issues that might arise in their code. In particular, they will be shown how to identify and solve syntactical or logical problems.

To create complex code, programmers do not just rely on their code but make use of other code available online for free. Thus, we will introduce the notion of libraries and explain how programs can use them. The idea of an Application Programming Interface will be defined, and students will be urged to make use of other functions in their code. The unit will also cover techniques to create efficient and effective code.

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Create efficient programs
- b) Write and maintain reliable code
- c) Effectively debug a computer program
- d) Analyze and manipulate an existent program
- e) Learn to use effective programming constructs
- f) Describe the compilation and execution process of code

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Explain how computer programming works
- b) Define, describe, and use the different constituents of a program
- c) Design and create a program capable of solving a simple problem

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Use C/C++ compilers
- b) Test the program to ensure that it meets the intended requirements
- c) Search and use external libraries

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**Business
Fundamentals**
Compulsory
6 ECTS
Term 1

Course Description

The Business Fundamentals course offers a comprehensive exploration of foundational concepts and practices essential for understanding the dynamics of the business world. Students will delve into critical aspects spanning from corporate strategy to market management, gaining insights into financial basics, market analysis, and core marketing principles.

Topics include:

- Overview of the Business World, Sectors, Functions, and Societal Impact
- Business vs Consumer Markets Differences
- From Corporate Strategy to Markets Management
- Financial Basics: Financial Statements, Budgeting, Capital Budgeting, Investment Analysis, Time Value of Money
- Growth, Portfolio, Diversification
- Market Analysis: Market Research, Customer Segmentation, and Competitive Analysis
- Marketing Fundamentals: Core Concepts, Including Marketing Mix (4Ps), and Branding

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply the time value of money in business decision-making.
- b) Perform comprehensive market analysis utilizing market research.
- c) Perform competitive analysis to identify customer needs and market opportunities.

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to:

- Create customer segmentation.

Module-Specific Digital Skills and Competences

At the end of the module/unit the learner will be able to:

- N/A

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**Managerial
Economics**

Compulsory

6 ECTS

Term 1

Course Description

Managerial Economics provides a comprehensive understanding of economic principles and their application in managerial decision-making. This course delves into fundamental economic concepts and analyzes their relevance in contemporary digital economies. Students will be equipped with analytical tools to navigate digital economies and make informed strategic choices in complex business environments.

Topics include:

- Basic Economic Concepts (Scarcity, Opportunity Cost, Demand, Supply, and Equilibrium)
- Market Structures, Elasticity of Demand and Supply, Production and Cost Analysis
- Basic Accounting, Profit Maximization, Pricing Strategies, Risk and Uncertainty
- Game Theory, Case Studies, and Applied Analysis.
Characteristics of Digital Economies

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply techniques for profit maximization, create and assess pricing strategies, and manage risk and uncertainty in business scenarios.
- b) Apply game theory principles to strategic decision-making in business scenarios.
- c) Apply economic theories to understand the impact of digitalization on markets, consumer behavior, and managerial strategies.
- d) Calculate and interpret elasticity of demand and supply.

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- Analyze case studies using economic models and tools to make informed managerial choices.

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- Analyze and interpret economic data to make informed managerial decisions.

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Web Development

Compulsory

6 ECTS

Term 2

Course Description

The Web Development module is intended to give students a basic and generic understanding of how the web works by explaining the various components of the internet and how the world wide web operates upon that infrastructure. It starts by introducing core web programming principles while presenting the opportunities and challenges of these web-based technologies. The unit begins by introducing the fundamentals of the Hypertext Transfer Protocol (HTTP) while delving into issues and practices surrounding such a protocol. This will be presented through an architectural perspective, thus allowing students to understand how the web operates under the bonnet and helping them take full advantage of this complex distributed platform.

The unit then shifts the attention toward the browser, its anatomy, and its role in client-side architecture. At this stage, students will be introduced to markup languages; their use, and how they evolved. In particular, they will be introduced to and given the possibility to get their hands dirty with the Hypertext Markup Language (HTML), which is considered to be the language of the web, Cascading Style Sheets (CSS), and JavaScript. Successively, they will be introduced to server-side scripting, and exposed to technologies used within this context (e.g., JSON, XML, relational database), and the use of client-side techniques for document tree manipulation using the Document Object Model (DOM). Finally, they will also be exposed to Web debugging techniques and tools thus helping them troubleshoot both client and server-side code.

Most of the technologies mentioned in this module are based upon official standards issued by the World Wide Web (W3C) consortium. Through the analysis of the various technologies, students will also understand the paradigm shift required to design and build web systems as opposed to traditional applications. This unit also offers the basics for various other modules throughout the whole programme.

Topics discussed in the module include:

- Web development environment (servers, domains)
- Web development cycle
- Website prototyping tools
- Principles of website prototyping
- W3C standards
- UX & Web usability
- HTML, CSS
- JavaScript
- PHP
- Web development frameworks
- Principles of web testing
- Cross-platform compatibility
- Web Accessibility

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Write and maintain reliable web pages
- b) Manage secure client-server connections
- c) Analyse and manipulate page elements using client-side scripts
- d) Request and use remote data using server-side logic
- e) Carry out domain registrations
- f) Prepare domain hosting comparison reports

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Explain how the internet and the world wide web works
- b) Define and describe the functions of the various components in web applications
- c) Design and propose a basic website

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Create efficient web applications
- b) Generate simple HTML pages

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**Project Management
and QA**

Compulsory

6 ECTS

Term 2

Course Description

The Project Management and Quality Assurance module starts by giving students an overview of different projects and their backgrounds. This is meant to showcase a hands-on approach to project management. The unit will then delve into identifying the various project components and categorize them into types, followed by a discussion on the organization's culture and how this affects the successful completion or otherwise of a project. In the end, every project manager seeks to complete a project successfully, and to do so; the module will investigate common risks or pitfalls that projects encounter. To help manage the project, we will also explore the use of different methodologies (such as but not limited to PRINCE2).

Once the overarching objectives of Project Management are explained, the student will delve into more granular details. They will have to identify the project boundaries, ensure the necessary resources are available and organize them for efficient implementation. They must clearly define the project's scope and produce a work breakdown to do so. The project's structure has to be clear by defining a governance and organizational set-up that will see the project through the various hurdles. Project reporting should be in place throughout the project based on the expected milestones. To ensure that project costs do not spiral out of control, resources should be adequately estimated, and a responsibility chart should be drawn to ensure everyone is aligned with the project's objectives.

Quality Assurance is a very important aspect of project management, so students must manage quality by preparing quality plans. They need to ensure that costs are under control at all stages by using tools such as control cubes, s-curves, etc. Time too needs to be managed using bar charts, networks, and other planning methodologies to ensure that the execution of the project conforms to the original plan.

Finally, the crux of all the planning lies in the execution, which has to be carried out effectively and efficiently. Students need to set up robust processes to make sure that they reach these goals, such as work approvals, allocation of resources, team management, progress measurement, forecasting, and project completion amongst others. Almost all projects exhibit some sort of variance, and because of this, they need to engineer recovery actions directly in the plan thus guaranteeing that the project goals are reached. The students will also be exposed to project management information systems which will help them manage very large and international projects.

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply the theoretical elements of project management to real-life scenarios
- b) Use project management techniques to ensure an effective governance and organizational set-up
- c) Ascertain the principles of accountability and competency through the use of rigorous project management methodologies
- d) Create detailed project management plans taking into consideration every aspect
- e) Compose calculated recovery action plans in order to tackle variances which might arise
- f) Demonstrate the use of Quality Assurance in all aspects of the project

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Explain how project management works and apply it in different contexts
- b) Define, describe, and use complex functions of project management and quality assurance methodologies
- c) Design basic project management plans

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Comprehend how to use project management tools

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**Digital Business
Models**

Compulsory

6 ECTS

Term 2

Course Description

This module aims to provide students with a robust understanding of digital business models, preparing them to navigate and innovate within the rapidly evolving digital business landscape. Upon completion of this module, students will possess a comprehensive understanding of diverse digital business models, their components, and their applications in various industries. They will be equipped to analyze, innovate, and critically evaluate digital business models considering sustainability, ethics, and future trends.

Topics include:

- Introduction to Digital Business Models
- Traditional vs. Digital Business Models
- Various Business Models (E-commerce, Subscription-Based, Freemium, Platform and Marketplace, Sharing Economy, Advertising-Based, Data-Driven, Direct-to-Consumer, Hybrid)
- Building Blocks (Digital Business Model Canvas) and Business Model Innovation
- Sustainability and Ethical Considerations
- Future Trends and Disruptions

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Design strategies for innovating and adapting business models to fit evolving market landscapes.
- b) Analyze and demonstrate the responsibility of businesses in addressing ethical concerns and fostering sustainable practices.
- c) Analyze real-world digital business models and conduct case studies.

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Use the Business Model Canvas and its application in outlining and innovating business models.

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Use digital tools like Figma and Canva for:
 - Managing the different phases of the digital business model creation process.
 - Identifying and testing new business models using the digital version of the Business Model Canvas.
 - Facilitating remote teams at work.
 - Increase creativity and collaboration.
 - Simulate decentralized productivity.

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**Organizational
Behavior**

Compulsory

6 ECTS

Term 2

Course Description

Organizational Behavior explores the dynamics within organizations, emphasizing individual behavior, group dynamics, and the impact on overall organizational effectiveness. This course delves into the foundational theories, models, and practices shaping organizational behavior while addressing the contemporary challenges faced by leaders and managers. By the end of this course, students will gain a profound understanding of organizational behavior theories, dynamics, and practices. They will acquire essential skills in people management, leadership, decision-making, and fostering a conducive organizational culture, preparing them to navigate the complexities of modern workplaces effectively.

Topics include:

- Individual Behavior and Group Dynamics
- Organizational Models: History, Evolution, and Trends
- Organizational Change.
- Leadership and Ethics in Organizations
- The Strategic Role of Organizational Culture
- People Management: Motivation, Employee Engagement, Communication, Conflict Resolution, Decision-Making, Diversity and Inclusion

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply various management approaches to real-world scenarios and case studies.
- b) Use theories and frameworks related to organizational change, including drivers, resistance, and strategies for successful change implementation.
- c) Analyze the relationship between organizational culture and strategic outcomes.
- d) Assess the significance of organizational culture in shaping behavior, values, and performance within an organization.

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Use techniques for employee engagement, effective communication strategies, conflict resolution methods, decision-making processes, and fostering diversity and inclusion.

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Use collaborative tools for team organization and tasks allocation like Maptio.
- b) Use organizational culture tools like The Culture Map for culture identification and/or culture design.

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**Elements of Data
Structures and
Algorithms**

Compulsory

6 ECTS

Term 2

Course Description

This course introduces fundamental concepts in algorithm analysis, data structures using C++, and their practical implementations. It explores the efficiency and design principles of algorithms and data structures crucial in software development. Upon completion of this course, students will have a strong foundation in algorithmic analysis, understanding of various data structures, and proficiency in implementing them using C++. They will be equipped to design and analyze algorithms and make informed choices of data structures based on their efficiency and suitability for specific applications.

Topics include:

- Introduction to Algorithm Analysis: Space and Time Complexity
- Introduction to C++
- Data Structures in C++
- Linked Lists
- Stacks and Queues
- Sorting Algorithms
- Case studies of Time and Space Complexity Analysis

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply Big O notation to evaluate and express algorithmic performance
- b) Implement basic programs using C++ to solve simple problems
- c) Implement and utilize stacks and queues, exploring their practical applications
- d) Apply time and space complexity analysis to real-world scenarios and algorithms

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Analyze the efficiency of algorithms in terms of time and space complexity

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) N/A

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**Cloud Computing
Infrastructure**

Compulsory

6 ECTS

Term 3

Course Description

The Cloud Computing Infrastructure module aims to help students understand the growing needs in computing resources and how they can be addressed using remote computing architectures. The module will highlight the fundamental concepts behind clouds (such as virtualization, Infrastructure as a Service, Platform as a Service, Hybrid Models, and others) in relation to alternate distributed computing paradigms (such as Peer to Peer networks, Grid computing, and others). This will ensure that students decide on the best computing paradigm they should adopt when solving real-world applications.

The systems available for cloud computing are various and change according to the context. Because of this, the module will introduce different technologies developed by the major players, such as Microsoft - Azure, Amazon - AWS and Google - GCP. Through this practical approach, they will understand the core principles and concepts surrounding the various architectures (including but not limited to Hybrid Multicloud, Serverless, Microservices, Cloud Natives, etc.). They will then explore the myriad of supporting software that exists, thus allowing them to manage a cloud subscription effectively and deploy efficient architectures while keeping costs in check.

The module also delves into the practicalities of setting up a real cloud environment using the leading cloud service providers (such as Microsoft Azure) as a case study. It will expose students to create and provision virtual machines, manage storage solutions and apply lifecycle policies, use the Map Reduce paradigm, thus helping them understand how to simplify, transform and analyze large datasets. They will also be exposed to various cloud components for networking, storage (blob/file/queues), databases (SQL/NoSQL), web/mobile services, IOT and finally managing and orchestrating cloud solutions via monitoring and metrics. Other industry essential topics including technology utilization, security, encryption, authentication, scalability, and performance will also be covered. All of these components will allow students to design a robust cloud system that is also secure.

Finally, an overview of the business implications of using a cloud system will be covered, thus allowing students to gain a macro perspective on using the cloud within larger organizations. Since the dependency on the cloud is constantly increasing, this skill set will be essential in the coming years.

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Plan and setup analytical tasks that can be used with Cloud technologies
- b) Design a system which uses the Map-Reduce Paradigm
- c) Prepare financial budgets (pertaining to cloud expenses) that allow business owners to make smart decisions
- d) Compose security, performance and scalability plans using the latest Cloud technologies

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Explain how an cloud system works
- b) Define and describe the functions of the various components in cloud architectures
- c) Design and propose a basic cloud system

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Apply the techniques learnt to design a cloud system capable of handling big data
- b) Setup industry standard platforms such as Google Cloud, Microsoft Azure or Amazon Web Services

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Programming

Paradigms

Compulsory

6 ECTS

Term 3

Course Description

Students will have to face different programming languages and paradigms throughout their careers as ICT professionals. It is probable that every few years, the programming language of choice changes in line with the technological advancements of the time. To help them make informed decisions, this module aims to expose students to different programming paradigms. They must understand the programming languages' underlying principles and their various features.

The module will start by giving them a historical perspective to help them understand how the earliest programming languages have evolved into the mainstream ones we use today. Through this historic walkthrough, they will appreciate the various paradigms, their strengths, weaknesses, and differences. It will also help them realize how paradigm shifts helped programmers create better and more complex code.

The student will be exposed to the following programming paradigms:

- Imperative. The course will quickly go over C as a prototypical language to explain the imperative programming paradigm.
- Object-Oriented programming, which organizes software design around data and objects. The module will focus on this paradigm, since it plays a major role in modern software design methodologies. This provides various advantages over imperative programming, such as modularity, reusability, security, and flexibility. Students will learn about classes, objects, and interfaces in this part. They will then delve into more advanced topics such as abstraction, encapsulation, inheritance, polymorphism, and input/output. The languages of choice will be Java and Python.
- Functional programming. The module will briefly introduce students to functional programming using Python/Java. Advanced functionalities are not covered in this module.
- Brief overview of concurrent (i.e. parallel and multi-thread) programming, time permitting. Here, the module will quickly expose students to concurrency control and other aspects of concurrent programming.

Through this module, we aim to consolidate student's knowledge of object oriented programming, and at the same time we aim to give students a broader overview of different paradigms, thus helping them create large and more complex software projects.

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply OO software design methodologies to implement robust applications
- b) Use event handling to illustrate OO concepts
- c) Develop classes which exhibit inheritance and allow for re-use
- d) Create custom libraries
- e) Use various data structures to store complex objects in secondary memory
- f) Develop safe multithreaded programming
- g) Use one of the different Integrated Developers Environments (IDE) available

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Explain the difference between different programming paradigms
- b) Design programs by following the object oriented paradigm
- c) Describe basic concurrent programs

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Install and use one of the many IDEs available
- b) Install software frameworks required to run Java and Python programs

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**Introduction to
Artificial Intelligence**

Compulsory

6 ECTS

Term 3

Course Description

Artificial Intelligence (AI) is the field of study which aims to get machines to do things that humans do best. It is probably the most important technology of the decade and because of this, students need to understand what it is and how to use it. This module introduces them to the fundamental concepts of AI, however it does so by focusing on a wide range of topics so as to give the students a taste of theoretical aspects but ultimately focus on the practical viewpoints.

The module covers a range of topics including but not limited to:

- Introduction to the Python programming language
- The difference between classical and modern AI
- Main AI applications
- Knowledge representation & Reasoning
- Problem Solving
- Search Algorithms
- Decision Making
- Natural Language Processing
- Intelligent Agents
- Robotics
- The challenges and limitations of AI
- AI ethics
- The future of AI

By the end of the module, students should be in a better position to understand when and how to use AI.

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Evaluate different approaches and choose the best one
- b) Represent real-world information using different knowledge representation techniques
- c) Use any AI technique covered in the module to solve simple challenges
- d) Plan and execute a project which uses various aspects of AI
- e) Identify ethical issues which might arise from AI projects
- f) Prepare conceptual solutions for different AI applications

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Explain how AI approaches work
- b) Comprehend the difference between AI and other subfields of computing

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Design and propose a simple AI system using available technologies

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Business Strategy

Compulsory

6 ECTS

Term 3

Course Description

The Business Strategy module is designed to provide students with a comprehensive understanding of the critical concepts and frameworks for developing effective business strategies in the digital age. The course will cover various topics, including market analysis, competitive analysis, and identifying opportunities and threats in the digital landscape.

Students will learn to conduct market research and analyze data to identify market trends and customer needs. They will also learn how to evaluate the competitive environment and develop a competitive strategy to gain a competitive advantage. In addition, students will learn how to identify and assess opportunities and threats in the digital marketplace and develop a strategic plan to capitalize on these opportunities and mitigate the risks posed by these threats.

The course will also cover the use of digital tools and techniques to gain a competitive advantage. Students will learn about social media marketing, search engine optimisation, data analysis, and how to use these tools to reach and engage with customers in the digital world. They will also learn the importance of developing a digital business model and implementing a digital marketing plan to drive customer acquisition and retention. In addition to lectures and discussions, the course will include hands-on activities and case studies to help students apply their knowledge to real-world scenarios.

By the end of the course, students will be equipped with the skills and knowledge necessary to develop and implement effective business strategies in the digital world. In addition to the core concepts and frameworks covered in the course, students will also have the opportunity to learn about the latest developments and trends in the digital landscape. This will include topics such as the impact of emerging technologies, the rise of digital platforms, and the growing importance of data and analytics in business.

Overall, the Business Strategy module is designed to provide students with a comprehensive understanding of the key concepts and frameworks for developing effective business strategies in the digital age. Through a combination of lectures, discussions, hands-on activities, and case studies, students will gain the knowledge and skills necessary to develop and implement successful business strategies in the dynamic and rapidly-changing digital marketplace.

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply market research and analysis techniques to identify market trends and customer needs
- b) Evaluate the competitive environment and develop a competitive strategy
- c) Assess opportunities and threats in the digital marketplace
- d) Develop a digital business model
- e) Implement a digital marketing plan
- f) Applying skills learnt to real-world scenarios through hands-on activities and case studies
- g) Develop and implementing effective business strategies
- h) Keep up-to-date with the latest developments and trends in the digital landscape

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Explain how a business strategy is essential to ensure a success digital business
- b) Define, describe, and use the various business strategy techniques covered in the module
- c) Monitor new technologies being adopted

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Use digital tools and techniques, such as social media marketing and search engine optimisation, to gain a competitive advantage

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**Digital Analytics and
Metrics**

Compulsory

6 ECTS

Term 3

Course Description

This comprehensive course delves into the realm of digital analytics, empowering students with the skills to harness data-driven insights and make informed decisions in the digital landscape. From marketing analytics to customer journey mapping, the course explores various facets of data analysis crucial for optimizing digital strategies.

Topics include:

- Introduction to Digital Analytics
- Marketing Analytics (Web Analytics Tools, Data Collection and Tracking, Key Performance Indicators -KPIs)
- Data-driven Decision Making (Data Visualization, Interpretation and Insights, Data Privacy and Compliance)
- Customer Journey Mapping
- Conversion Rate Optimization (CRO)
- Segmentation and Targeting, Social Media Analytics, Email Campaign Analytics, Mobile App Analytics, E-commerce Analytics
- Case Studies and Practical Exercises
- Emerging Trends in Digital Analytics

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Develop skills in data visualization to effectively communicate insights derived from analytics data
- b) Utilize web analytics tools proficiently for data collection, tracking, and interpretation
- c) Utilize data-driven approaches to segment and target specific customer groups for personalized marketing campaigns
- d) Apply CRO techniques to enhance website performance and optimize conversion rates
- e) Apply theoretical knowledge through hands-on case studies and practical exercises in digital analytics
- f) Visualize the customer journey across multiple touchpoints to identify improvement areas.

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to:

- a) Implement effective strategies based on customer journey insights to enhance user experiences.

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Synthesize real-world scenarios to address challenges and derive actionable insights from data
- b) Use Google Analytics in its basic version
- c) Use digital Customer Journey tools like Figma or Lucidchart
- d) Use digital visualization tools like PowerBI- TO BE CHECKED (if we have access)

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Introduction to Machine Learning

Compulsory

6 ECTS

Term 4

Course Description

With the proliferation of various electronic devices (computers, tablets, smartwatches, smartphones, IoT, etc.), the world is suddenly producing vast amounts of data to such an extent that the absolute majority of information in existence today was created in the last few years. Today, data is the fuel that powers most of the systems we use, and because of this, it is crucial that we learn to harvest data, process, analyze and manipulate it in various forms to serve our ever-growing needs.

Machine learning allows us to do just that in a rigorous manner and gives us the confidence to answer the various questions arising from data analysis. The role of machine learning is multidisciplinary and can be used in many areas including but not limited to finance, physics, biology, and many others. With such data in hand, students can formulate novel hypotheses or confirm existing ones. Essentially, machine learning will allow them to build interesting models to predict behaviors and improve business decisions.

The Introduction to Machine Learning unit will help students gain a multi-disciplinary overview of the field using elements from computation, statistics, and machine learning. They will then go through the basic steps of a machine learning project, including the following:

- Introduction to the Python programming language for Machine Learning
- The Numpy library for manipulating multidimensional arrays
- The data-driven modeling paradigm
- Data preprocessing and visualization
- Model complexity and cross-validation
- Simple models for classification, regression, and clustering

The computational aspects will be developed by using the Python programming language and related open source libraries, such as numpy and scikit-learn. Python is the de-facto standard in Machine Learning and Data science, offering the possibility to use numerous open source resources and software environments. The module will stress the use of jupyter notebooks for developing code for machine learning projects and writing reports.

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Design simple machine learning models for specific applications
- b) Create machine learning pipelines
- c) Use Python to process and analyze different datasets
- d) Use plotting libraries to programmatically create graphs describing the underlying datasets
- e) Apply the lessons learnt to predict real-world phenomena.
- f) Prepare data elements for further analysis

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Explain how machine learning methods are able to extract interesting features from existing datasets
- b) Use the Python programming language and related functionalities
- c) Monitor new technologies being adopted as part of the machine learning toolkit

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Use the Python programming language effectively to analyze data
- b) Write Python programs to use simple machine learning models

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Digital Marketing

Compulsory

6 ECTS

Term 4

Course Description

This Digital Marketing module delves into today's digital media scenario by discussing how technology has changed marketing. Through it, students will learn to harness the potential of web marketing strategies and embrace the challenges in online environments.

The aim of this module is to provide students with a critical understanding of the key concepts, fundamentals, and challenges of online marketing. This is taken from a global perspective whereby social media is gaining importance, and the number of people shifting to mobile commerce is increasing. The module explores the impact of the internet on the traditional marketing mix. It examines the key ingredients of the online micro and macro environments. Moreover, it delves into analyzing consumer behaviors and how they respond to social media strategies.

Students will then experience a typical online marketing strategy that addresses market segmentation, positioning, and communication. They will also experience the power of Customer Relationship Management applications and marketing approaches, especially within a dynamic online environment. Finally, they will dirty their hands by formulating an online marketing strategy and seek to implement it, keeping in mind the changing web environment.

Throughout the module, students will be exposed to successful case studies of web marketing. This will allow them to appreciate the various approaches used by these companies to integrate the Internet into their marketing strategy. They will also learn to use multiple best practices to facilitate electronic commerce using media channels such as affiliate marketing, search engine optimization, and web public relations.

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Define and describe the role of web analytics within digital marketing
- b) Describe the strategic and operational aspects of web analytics tools and how they can influence to create new marketing levers
- c) Apply creativity in the application of online analytics platforms to monitor and track web marketing activities
- d) Compose marketing funnels to improve the outcomes of marketing strategies within the context of the modern business and its international dimension
- e) Arrange existing strategies to make them more effective and in line with specific target groups

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Explain how web marketing works
- b) Comprehend the importance of the marketing mix especially when applied to online commerce
- c) Design and propose a web marketing strategy

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Create web marketing plans
- b) Use Customer Relationships Management tools to create highly targeted campaigns

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**Introduction to
Computer Security**

Compulsory

6 ECTS

Term 4

Course Description

Most people today conduct a digital life where they spend most of their time connected to a screen and interacting with other humans or even bots. This is made even more accessible through the proliferation of digital devices such as laptops, tablets, smartphones, smartwatches, and other wearable devices. Because of this, it is estimated that most of the online information available today was generated in the past two years. Furthermore, with the propagation of Internet of Things (IoT) devices and Artificial Intelligence (AI) applications, digital content production is set to increase drastically.

Thus, developing secure methods in the online world is becoming extremely important. Let's not forget that governments, entities, corporations and individuals all have different cybersecurity needs and their data has to be protected from malicious users. Considering the rising trend of digitizing everything, it becomes more crucial to meet the needs of the different users and protect them from potential online dangers. With time, these perils are becoming more sophisticated since AI bots are also being used as digital accomplices in online crime.

Through this module, students will study the main issues surrounding cyber security. They will cover the core principles and analyze the implications and trade-offs of different methodologies. Finally, they will also look at current technologies and how they are evolving with the deployment of emerging technologies. The topics covered include:

- Cryptography and key management
- User authentication and identity management
- Secure Operating systems
- Network security
- Security on the Web and cloud systems
- Policies for risk management
- Privacy, anonymity, and censorship
- General Data Protection Rules (EU-GDPR)

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Demonstrate the security controls necessary to provide a required level of confidentiality, integrity, and availability in computer networks
- b) Diagnose cybersecurity events
- c) Investigate attacks on an organization's networks
- d) Design incident response plans
- e) Apply critical thinking and problem-solving skills to detect existent and future attacks on an organization's computer systems
- f) Communicate effectively proposed information security solutions to technical and non-technical decision-makers
- g) Apply business principles in an information security environment

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Explain the intricate issues surrounding cyber security
- b) Define and describe different components of secure systems
- c) Design and propose secure systems

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Apply secure methodologies to protect and defend computer systems from cyber attacks

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**Entrepreneurship and
Finance for the Digital
Economy**

Compulsory

6 ECTS

Term 4

Course Description

In the rapidly changing terrain of the digital economy, the fusion of entrepreneurship and finance serves as the cornerstone for driving innovation and fostering sustainable progress. This course in Entrepreneurship and Finance for the Digital Economy is designed to equip and embolden individuals – from budding entrepreneurs to seasoned finance professionals – with the indispensable tools, strategic methodologies, and profound insights essential to not just survive but flourish within the intricate dynamics of the digital era. By dissecting the intricate interplay between entrepreneurial endeavors and the financial underpinnings that support them, participants gain more than theoretical knowledge; they acquire practical wisdom. From deciphering emerging market trends to mastering the art of securing funding in a digital ecosystem, the course acts as a compass, guiding individuals toward harnessing the power of innovation and capital in a symbiotic dance that propels businesses forward.

Topics include:

- Global Scenario and Business Evaluation Methods.
- Principles of Finance in the Digital Economy
- Financial Planning and Analysis in Digital Businesses: Budgeting, Forecasting, Financial Models, Valuations, Scalability, Profitability
- Digital Currencies and Payment Systems: Blockchain and E-Wallets
- Funding Digital Ventures: Sources of Funding, Venture Capital and Angel Investing, Crowdfunding and Alternative Methods
- Startup and Entrepreneurship: From Ideation to Planning and Execution

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply the mechanics and functionalities of digital currencies, blockchain technology, and e-wallets, and assess their impact on modern payment systems and financial transactions
- b) Apply evaluation methods to assess market opportunities and industry trends
- c) Apply advanced financial planning techniques, including budgeting, forecasting, financial modeling, valuations, scalability, and profitability analysis, tailored for digital enterprises
- d) Develop skills to craft effective pitches and secure funding critical for scaling digital initiatives
- e) Interpret and use financial data to optimize business strategies and drive sustainable growth in digital environments

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to:

- a) Demonstrate the functionalities of digital currencies, blockchain technology, and e-wallets, and evaluate their influence on contemporary payment systems and financial transactions
- b) Implement sophisticated financial planning methodologies, encompassing budgeting, forecasting, financial modeling, valuations, scalability, and profitability analysis, specifically designed for digital enterprises
- c) Create compelling presentations and secure crucial funding pivotal for expanding digital projects
- d) Analyze financial information to refine business tactics and foster lasting growth within digital settings

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Use specific tools for data collection and quick prototyping like Typeform and Figma/Figjam
- b) Gather market insights and trends with tools like SimilarWeb and GoogleTrends

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**Soft Skills and Critical
Thinking**

Compulsory

6 ECTS

Term 4

Course Description

This course is designed to develop essential soft skills crucial for success in professional settings and cultivate critical thinking abilities. The curriculum covers a broad spectrum of skills aimed at enhancing personal and professional growth. This course aims to equip learners with a comprehensive toolkit of soft skills essential for thriving in various professional settings while honing critical thinking abilities to approach challenges with confidence and innovation.

Topics include:

- Communication and Interpersonal Skills
- Emotional Intelligence
- Leadership and Influence
- Problem-Solving and Critical Thinking
- Decision-Making
- Time Management and Productivity
- Adaptability and Resilience
- Stress Management
- Networking and Relationship Building
- Cross-Cultural Communication
- Negotiations
- Design Thinking
- Presentation Skills
- Crisis Management
- Professional Etiquette

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply rational decision-making methods in diverse professional contexts
- b) Apply creative problem-solving methods and design thinking principles to innovate solutions
- c) Use tools and techniques to prioritize tasks and manage workload effectively
- d) Build and maintain professional networks to leverage opportunities and collaborations
- e) Develop skills for effective relationship building with peers and clients

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to:

- a) Apply skills to influence and motivate team members towards common goals
- b) Apply various problem-solving techniques to resolve complex issues efficiently
- c) Use negotiation skills and strategies for successful outcomes in various professional interactions

Module-Specific Digital Skills and Competences

At the end of the module/unit the learner will be able to:

- a) Use tools for skills assessment, for understanding, evaluation and for self improvement

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**Digital Platforms and
Ecosystems**

Elective

6 ECTS

Term 5

Course Description

The evolution of digital platforms has revolutionized the way businesses operate, fostering interconnected ecosystems that drive innovation, engagement, and value creation. This course aims to forge professionals, entrepreneurs, and individuals seeking to comprehend the transformative power of digital platforms and ecosystems. Through a blend of theoretical frameworks and real-world case studies, students will gain the skills and strategies to leverage digital platforms, foster thriving ecosystems, and drive innovation and value creation in today's digital landscape.

Topics include:

- Introduction to Digital Platforms and Ecosystems
- Business Models for Digital Platforms: Revenue Models, Monetization Strategies, Network Effects, Leveraged Assets
- Community Building and Crowd Dynamics on Digital Platforms
- Management of Digital Platforms.
- Building and Sustaining Digital Ecosystems
- Innovation and Disruption through Platforms

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Examine aspects such as governance, user experience design, content curation, and platform evolution strategies
- b) Use the key elements necessary for fostering a sustainable and thriving digital ecosystem
- c) Investigate the role of digital platforms in driving innovation and disruption across industries
- d) Show case studies and disruptive strategies employed by successful platforms
- e) Show how digital platforms foster innovation and challenge traditional business models

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to:

- a) Show the effectiveness and implications of different business models used in the digital platform economy
- b) Plan the critical components essential for nurturing and maintaining a sustainable and vibrant digital ecosystem
- c) Demonstrate the interplay between collaboration, interoperability, and value creation among ecosystem participants

Module-Specific Digital Skills and Competences

At the end of the module/unit the learner will be able to:

- a) N/A

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**Digital Product
Management**

Elective

6 ECTS

Term 5

Course Description

The role of a Digital Product Manager is pivotal in driving innovation, guiding development, and ensuring the success of digital products. This course is designed for individuals aspiring to become proficient Digital Product Managers or those seeking to enhance their product management skills in the digital realm. Through a blend of theoretical knowledge, practical case studies, and hands-on exercises, participants will gain insights and strategies necessary to excel in managing digital products effectively across their lifecycle.

Topics include:

- Introduction to Digital Product Management: Role of a Digital Product Manager, Digital Product Lifecycle, Digital Product Strategy
- Idea Generation and Validation: Techniques for Generating Product Ideas, Market Research and User Needs Analysis, Validating Product Ideas through Prototyping and MVP
- Elements of User-Centric Design and Development
- Objectives and Key Results (OKRs)
- Data-Driven Product Management
- Marketing and Launching Digital Products

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply various techniques to generate innovative product ideas
- b) Conduct comprehensive market research, and perform user needs analysis to validate product concepts using prototyping and MVP approaches
- c) Use OKRs as a framework for setting and tracking measurable goals in digital product management
- d) Implement marketing tactics tailored for digital products to achieve successful market penetration and user engagement

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to:

- a) Utilize data-driven approaches to iterate and improve digital product functionalities and user satisfaction
- b) Apply human-centered design principles prioritizing user experience enhancements throughout the product development lifecycle

Module-Specific Digital Skills and Competences

At the end of the module/unit the learner will be able to:

- a) N/A

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**Digital
Transformation
Management**

Elective

6 ECTS

Term 5

Course Description

The pursuit of digital transformation is crucial for organizations seeking to thrive in a constantly evolving digital era. This course is designed for professionals, business leaders, managers, and change agents looking to spearhead digital transformation within their organizations. By blending theoretical frameworks with real-world case studies and practical applications, students will gain the expertise to navigate digital transformation challenges, implement successful strategies, and lead organizations through impactful digital changes.

Topics include:

- Fundamentals of Digital Transformation
- Strategic Planning for Digital Transformation
- Leadership in Digital Transformation
- Managing Change in Digital Transformation
- Digital Technology Implementation: Evaluating and Selecting Appropriate Digital Technologies, and Measuring the ROI and Impact
- Challenges and Risks in Digital Transformation
- Cybersecurity Threats
- Case Studies and Real-World Applications, Successful and Unsuccessful

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Operate organizational change during digital transformation, addressing resistance, fostering adaptability, and facilitating a culture of innovation
- b) Apply different leadership approaches and determine their impact on the outcomes of digital transformation initiatives
- c) Plan change management strategies tailored for digital transformation to ensure smooth transitions and maximize employee engagement
- d) Analyze the effectiveness of digital technology implementations to ensure alignment with strategic goals and organizational success metrics
- e) Design risk management strategies specific to digital transformations to minimize disruptions and optimize outcomes

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to:

- a) Conduct assessments to measure the efficacy of digital technology implementations
- b) Implement risk management strategies specifically designed for digital transformations

Module-Specific Digital Skills and Competences

At the end of the module/unit the learner will be able to:

a) N/A

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Cybersecurity

Elective

6 ECTS

Term 5

Course Description

The Cybersecurity module builds upon the concepts learnt in the introductory module in computer security. It covers three main aspects; security, compliance, and identity fundamentals across cloud-based systems. The unit will use cloud services such as Microsoft Azure to ground the theoretical aspects into real-life applications thus illustrating the different concepts presented.

Students will first explore the various security methodologies, concepts and compliance principles. This should give them a good understanding of what they are and why they are essential. Within this context, they will be presented with real-life cases to help them understand the daily threats that system administrators face. It is quite alarming that the number of threats has been on the rise in recent years. Furthermore, these cybercriminals are becoming increasingly more sophisticated with the use of Artificial Intelligence technologies to help them find a breach in the cloud infrastructure. Hence why it is extremely important for students to get a good understanding of cybersecurity. They will then proceed further towards identity principles, concepts and types. With this information, they can try out authentication and access management procedures. This will allow them to assess whether such systems have adequate identity protection and governance capabilities.

They will then analyze the security aspects of various systems by looking into the security management capabilities of cloud platforms. This will include using industry-standard software which facilitates this function, such as Azure Sentinel, Microsoft 365 Defender, and InTune.

The final item is compliance, whereby students will examine information protection risks and data lifecycle management capabilities in cloud deployments. They will look at both internal and external risks, analyzing them in detail, while keeping in mind the resource governance capabilities which cloud platforms provide.

In the end, students would have gained a good knowledge of security, compliance, and identity across cloud-based platforms. They would also have tried them in real-life thus giving them the much sought-after experiences that employers require.

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply secure methodologies to protect and defend computer systems from cyber attacks
- b) Demonstrate the security controls necessary to provide a required level of confidentiality, integrity, and availability in computer networks
- c) Diagnose cybersecurity issues and take action against them
- d) Investigate attacks on an organization's networks
- e) Analyze security, compliance and identity issues
- f) Apply critical thinking and problem-solving skills to detect existent and future attacks on an organization's computer systems
- g) Communicate effectively proposed information security solutions to technical and non-technical decision-makers
- h) Apply business principles in an information security environment

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Explain complex issues surrounding cyber security
- b) Comprehend security, compliance and identity fundamentals
- c) Design and propose secure systems

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Gain experience in securing cloud systems like Microsoft Azure

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**Cloud Adoption
Frameworks**

Elective
6 ECTS
Term 5

Course Description

The Cloud Adoption Frameworks course provides an in-depth understanding of the strategies, best practices, and governance required to effectively transition organizations to cloud-based solutions. This comprehensive program navigates through the various stages of cloud adoption, from initial motivation and goal setting to successful implementation and optimization. Emphasis is placed on developing robust cloud strategies aligned with business objectives and leveraging industry best practices to ensure seamless transitions.

Topics include:

- Overview of Cloud Adoption Framework
- Strategy for Cloud Adoption: From Business Motivations to Goals
- Developing Cloud Strategy Plan
- Cloud Adoption Best Practices: Success metrics
- Cloud Adoption Governance
- Managing and Optimizing Cloud Solutions
- Case Study Workshops and Simulations

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply techniques for managing and optimizing cloud-based solutions for maximum efficiency
- b) Develop strategies for continuous improvement and optimization of cloud resources and services
- c) Analyze real-world case studies to understand practical implications and challenges in cloud adoption
- d) Design strategies that encompass scalability, security, and cost-effectiveness in cloud adoption

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to:

- a) Apply policies and procedures for effective management and oversight of cloud adoption initiatives
- b) Engage in simulations to apply theoretical knowledge in solving practical cloud adoption scenarios

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Produce digital business and technical plans for transitioning to cloud environments

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**Leadership and
Business
Development for the
Metaverse**

Elective

6 ECTS

Term 5

Course Description

Leadership and Business Development for the Metaverse is a forward-looking course delving into the transformational landscape of the metaverse and its profound impact on business strategies, leadership, and consumer interactions. This course navigates through the historical evolution of virtual reality in business contexts, paving the way for a comprehensive exploration of the metaverse's emerging realm.

Topics include:

- History of Virtual Reality in Business
- Overview of Digital Worlds: Second Life to Altspace
- Business Expansion into the Metaverse
- Utilization of Digital Assets in Virtual Spaces
- Implementation of NFTs in the Metaverse
- Cryptocurrencies and Virtual Economies
- Business Models for the Metaverse
- Leadership Strategies for Digital Realities
- Preparing for Consumer Trends in the Metaverse
- Legal and Ethical Considerations in Virtual Spaces
- Marketing and Brand Presence in the Metaverse
- Future Projections

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Forecast and prepare for emerging consumer trends and behaviors within the evolving metaverse, aligning business strategies accordingly
- b) Prepare leadership strategies and approaches specific to navigating digital landscapes and leading teams within virtual environments
- c) Design innovative business models optimized for success within the unique environment of the metaverse

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Analyze trends and speculate on potential future developments and transformations within the metaverse, fostering forward-thinking business strategies

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Use tools to navigate virtual worlds

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Advanced Digital Marketing

Elective

6 ECTS

Term 5

Course Description

The Advanced Digital Marketing course offers an immersive exploration of cutting-edge strategies, techniques, and tools required for an in-depth understanding and successful implementation of advanced digital marketing methodologies. The course delves into the dynamic landscape of digital marketing, equipping participants with advanced competencies to navigate and excel in the highly competitive digital sphere. The course is designed to empower participants with the expertise and strategic acumen required to spearhead innovative, data-driven, and impactful digital marketing campaigns, addressing contemporary challenges and harnessing emerging opportunities in the digital landscape.

Topics include:

- Advanced SEO techniques, algorithm updates, and competitive analysis
- Innovative Social Media Strategies: Tactics, Viral Campaigns, and Influencer Partnerships
- Data-Driven Decision Making and Predictive Modeling
- AI for Personalized Marketing and Chatbot-Driven Customer Experiences
- Advanced E-Commerce Optimization, Conversion Rate Optimization, Customer Retention
- International Market Entry Strategies, Cross-Border E-Commerce, Cultural Adaptability
- Mastering Pay-Per-Click (PPC), Affiliate Marketing, Programmatic Advertising, and ROI-Driven Strategies
- Rapid Experimentation, Viral Marketing, and Unconventional Growth Tactics
- Crisis Management, Online Reputation Repair, Brand Resilience Strategies
- Real-World Digital Marketing Challenges, Strategic Solutions, and Industry Presentations

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply Artificial Intelligence (AI) principles for personalized marketing strategies
- b) Optimize customer experiences through chatbot-driven interactions
- c) Use data analytics tools to drive informed decision-making, predictive modeling, and strategic planning in digital marketing campaigns
- d) Develop strategies for crisis management, online reputation repair, and establish brand resilience in the digital realm
- e) Implement ROI-driven digital marketing strategies for measurable results

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Address real-world digital marketing challenges, propose strategic solutions, and engage in industry-focused presentations for practical application

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Use data analytics tools to create marketing strategies
- b) Use digital tools to manage a marketing campaign

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**Business Intelligence
and Decision Making**

Elective

6 ECTS

Term 5

Course Description

The course in Business Intelligence and Decision Making will uncover the critical role of Business Intelligence (BI) in data-driven organizational decisions. Students will explore strategies for data curation, integration, management, and analysis. Then, the course delves into data warehouse architecture, models, storage solutions tailored for effective BI implementation, visualization techniques to communicate insights and drive informed decision-making, how to implement KPIs for robust business performance monitoring, and leverage data insights for strategic decision-making through scenario analysis and hypothesis testing. The students will also get acquainted with popular BI tools and their real-world applications.

Topics include:

- Introduction to BI and Data-Driven Decision-Making
- Data Management Strategies
- Data Warehouse Architecture and Modeling
- Visualization and Reporting Techniques
- Descriptive and Predictive Analytics
- Key Performance Indicators (KPIs)
- Data-Driven Decision-Making Strategies with AI
- BI Tools and Technologies
- Ethical Considerations in Data Handling
- BI Implementation Strategies

Applying Knowledge and Understanding

At the end of the module/unit, the learner will have acquired the following skills:

- a) Show the impact of BI on overall decision-making performance
- b) Demonstrate skills in gathering, cleaning, integrating, and managing data from diverse sources
- c) Develop strategies and best practices for successful BI implementation within organizational structures, fostering a data-driven culture

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Communicate insights derived from data analysis
- b) Develop strategies to leverage data insights effectively for making informed and strategic decisions
- c) Exploit scenario analysis and hypothesis testing for data-driven decision-making
- d) Demonstrate skills in using AI methods for supporting and improving decision-making

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Use popular BI tools in real-world applications for diverse business scenarios

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**Blockchain for
Business**

Elective

6 ECTS

Term 5

Course Description

This course provides a comprehensive understanding of blockchain technology and its transformative impact on modern business practices. Participants will delve into the fundamental concepts of blockchain, exploring its decentralized nature and the pivotal role it plays in reshaping business processes. The course navigates through different blockchain types—public, private, and permissioned—and their diverse applications across industries. It offers insights into consensus algorithms and their significance in securing transactions, covering Proof of Work, Proof of Stake, among others.

Participants will explore smart contracts and the development of Decentralized Applications (DApps), analyzing real-world use cases of blockchain technology across domains like supply chain management, finance, and healthcare. Security measures, encryption techniques, and privacy considerations in blockchain implementations will be thoroughly examined. Additionally, the course scrutinizes legal implications, compliance requirements, and regulatory frameworks essential for blockchain adoption in business environments.

Furthermore, participants will explore a range of enterprise-grade blockchain platforms, focusing on their features and suitability for business applications. Strategies for seamless integration of blockchain solutions into existing business systems, addressing challenges, and optimizing implementation processes will be discussed. The course culminates in discussions on governance models for blockchain networks, scalability challenges, and potential solutions for broader adoption in business contexts.

Topics include:

- Fundamentals of Blockchain Technology
- Types of Blockchains and Industry Applications
- Consensus Algorithms and Transaction Security
- Smart Contracts and DApps
- Security, Encryption, and Privacy
- Legal and Regulatory Framework
- Enterprise-Grade Blockchain Platforms
- Integration Strategies and Challenges
- Blockchain Governance and Scalability
- Real-World Use Cases

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Investigate possibilities for regulatory innovation and sandboxes to encourage experimentation while maintaining compliance and legal adherence
- b) Develop strategies to manage disruptions caused by blockchain adoption, including change management, stakeholder communication, and mitigation plans
- c) Optimize blockchain system performance through analysis and refinement
- d) Use techniques like optimization of consensus mechanisms and transaction throughput
- e) Develop strategies for resource allocation in blockchain projects, addressing scalability challenges and planning for future growth

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Demonstrate the broader societal impact of blockchain adoption, considering aspects like sustainability, social responsibility, and inclusion in decision-making
- b) Develop strategies for the seamless integration of blockchain solutions into existing business systems, while addressing potential challenges and optimizing implementation processes

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Analyze and dissect real-world use cases of blockchain technology

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FinOps

Elective

6 ECTS

Term 5

Course Description

This course offers a comprehensive understanding of Financial Operations (FinOps) principles and their pivotal role in managing cloud financial resources effectively. Participants will explore strategies to optimize cloud costs, allocate expenditures across various services and providers, and implement financial controls for budgeting and compliance in cloud environments. Techniques for resource optimization and right-sizing cloud infrastructure will be covered to minimize costs while ensuring optimal performance. Moreover, participants will learn to leverage reporting tools and analytics to gain insights into cloud spending, forecast expenses, and identify cost patterns. Practical application of FinOps methodologies in real-world scenarios will be emphasized, integrating these practices seamlessly within organizational operations. Collaboration strategies between development, operations, and finance teams will be discussed to align cloud spending with business objectives and agile practices.

Topics include:

- Principles and Significance of FinOps in Cloud Financial Management
- Optimizing Cloud Costs, Allocation, and Expenditure Tracking
- Financial Controls, Budgeting, and Compliance in Cloud Environments
- Techniques for Resource Optimization and Right-Sizing in the Cloud
- Reporting, Analytics, and Cost Forecasting in Cloud Spending
- Real-World Application of FinOps Methodologies
- Collaboration Strategies for Alignment and Agile Practices
- Educating Teams on Cost-Efficient Practices in Development and Operations
- Advanced Strategies, Cost Modeling, and Predictive Analytics in Cloud Financial Management

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply effective budgeting methodologies and compliance measures to ensure cost-effectiveness and adherence to financial protocols
- b) Create resource optimization methods and right-sizing approaches for cloud infrastructure, enabling cost minimization while maintaining optimal performance levels
- c) Arrange reporting tools and analytics to generate actionable insights into cloud spending
- d) Forecast future expenses to identify patterns for informed decision-making

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

a) N/A

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

a) Use advanced techniques, including cost modeling and predictive analytics, to enhance cloud financial management

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**AI-Driven Software
Development**

Elective

6 ECTS

Term 5

Course Description

This course is designed to explore the transformative impact of Artificial Intelligence (AI) on software development. Participants will delve into the realm of generative models, foundational in the AI landscape, understanding their role and applications in software creation, improvement, and debugging. Through a blend of theoretical concepts and practical applications, participants will gain insights into leveraging Deep Learning techniques for generative models, specifically focusing on applications in Natural Language Processing (NLP).

Topics include:

- Introduction to Generative Models
- Generative Models based on Deep Learning
- Deep Learning Methods for NLP
- Prompt Engineering
- Creating Software with Generative Models
- Improving Software with Generative Models
- Debugging Software with Generative Models
- AI-Driven Testing and Quality Assurance
- Future Trends and Innovations

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply Deep Learning techniques specifically tailored for Natural Language Processing tasks
- b) Apply generative models to create software, understanding their role in software design and construction
- c) Apply AI-driven testing and quality assurance techniques to ensure the reliability and performance of AI-enhanced software

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Use deep learning based generative models to create and manage software projects
- b) Design and optimize prompts for effective utilization of generative models in software creation and enhancement

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Use machine learning and deep learning software tools in Python, like scikit-learn and keras

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**E-Commerce
Management**

Elective

6 ECTS

Term 5

Course Description

This comprehensive course navigates the dynamic landscape of electronic commerce (E-Commerce), providing a holistic understanding of its fundamental aspects and contemporary trends. Participants will delve into various dimensions of E-Commerce, starting from the foundational principles and evolving into advanced strategies for sustainable growth and success in the digital marketplace.

Topics include:

- Introduction to E-Commerce
- Types of E-Commerce: Business-to-Consumer (B2C), Business-to-Business (B2B), Consumer-to-Consumer (C2C), Consumer-to-Business (C2B), Business-to-Administration (B2A), and Consumer-to-Administration (C2A)
- E-Commerce Platforms and Technologies
- User Experience and Design
- Key Performance Indicators (KPIs)
- Payments and Security
- Supply Chain and Inventory Management
- International E-Commerce
- AI-Based Recommender Systems
- Legal and Ethical Considerations
- Future Trends in E-Commerce

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Practice with diverse E-Commerce platforms and technologies
- b) Show principles of user experience and design
- c) Show the critical role of user experience in E-Commerce success
- d) Create strategies for enhanced user engagement

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to:

- a) Operate the main recommendation engines based on AI methods

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Use various E-Commerce platforms.
- b) Experiment with various E-Commerce functionalities.
- c) Experiment with recommendation engines

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**Capstone Project and
Dissertation**

Compulsory

30 ECTS

Term 6

Course Description

The Capstone Project and Dissertation (also called thesis) is the most significant project assigned to students throughout their program. It is intended to consolidate the skills gained during the program through a research project. The student, together with an OPIT supervisor, will work on a project proposal that will be realized during the final Term of their program. The project needs to be a research work of industrial relevance that investigates methodological and/or practical aspects in any of the domains discussed in the program and beyond. Students will also have the opportunity to conduct internships with industrial partners as a way to work and complete their thesis. In general, the thesis should show that the student has achieved mastery of the field and is fully conversant with the relevant literature.

The thesis is the longest and most challenging project assigned to a student, requiring an entire term of preparation and hard work. The supervisor's role is to guide the student since most of the project should be carried on as an independent work. Students are required to prepare a thesis where they will describe the project goals and the obtained results. The results should provide enough depth within a particular field of application and be consistent with the original plan agreed with the supervisor. Although at this level one does not expect novelty, innovation distinguishes between an excellent and good thesis. At the end of the process, the student would have learnt to conduct independent research, problem-solving, numerical mastery, project management, time management, and self-discipline, amongst others.

The thesis will be presented to a committee, composed of an internal examiner, an external examiner, and the supervisor, where the student will be expected to defend the work done, and the results presented. This happens typically via an oral examination called a viva, where the student presents their work and answers questions from the committee.

The final thesis manuscript should consist of 10,000 - 20,000 words.

Applying Knowledge and Understanding

At the end of the module/unit the learner will have acquired the following skills:

- a) Apply research methodologies to explore, analyze, and address complex cybersecurity challenges
- b) Practice structured writing techniques to produce a comprehensive research document
- c) Demonstrate a deep understanding of a chosen cybersecurity topic, substantiating claims with evidence
- d) Show the ability to critically review existing literature and identify gaps or areas of improvement
- e) Plan and execute a research project within a stipulated time-frame, ensuring milestones are met
- f) Design experiments or simulations, as applicable, to validate hypotheses or research questions
- g) Operate relevant cybersecurity tools and platforms to gather, analyze, and present data
- h) Assemble and organize research findings in a coherent and logical manner, ensuring a flow of ideas
- i) Use feedback from peers and advisors to refine and improve the research process and outcomes
- j) Construct arguments and discussions backed by empirical evidence or theoretical frameworks
- k) Prepare and present findings to both technical and non-technical audiences, ensuring clarity and understanding
- l) Create actionable recommendations or solutions based on research findings, ensuring they are practical and implementable
- m) Compose a comprehensive document that adheres to academic standards and is free from plagiarism
- n) Arrange findings, discussions, and conclusions in a structured manner, ensuring the document is reader-friendly and organized

Module-Specific Learner Skills

At the end of the module/unit the learner will be able to

- a) Manage their own learning process, setting research goals, and milestones in line with the project's objectives
- b) Negotiate with potential stakeholders, if applicable, to gather necessary data or insights for the research
- c) Supervise and ensure the ethical collection and use of data, respecting privacy and confidentiality standards
- d) Guide discussions and arguments in the research, ensuring they are grounded in evidence and sound reasoning
- e) Authorize and finalize the submission of the research, ensuring all academic and institutional criteria are met

Module-Specific Digital Skills and Competences

At the end of the module/unit, the learner will be able to

- a) Operate specialized software or platforms relevant to the research topic, ensuring accurate data collection and analysis
- b) Utilize digital tools for literature review, citation management, and plagiarism checking
- c) Arrange and visualize data using appropriate digital tools, ensuring clear representation of findings
- d) Design and run simulations or models, if applicable, to validate hypotheses using dedicated software
- e) Apply AI tools to protect research data, ensuring its integrity and confidentiality
- f) Compose the research document using digital word processing software, adhering to specified formatting standards

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