



**LEBANESE UNIVERSITY
FACULTY OF SCIENCES
DEAN OFFICE**

**Master 2 Programs
Description & Curriculum
Major: Informatics**



Master Programs

Master Program	Data Science for Risk Analysis (DSRA)
Master Type	<input type="checkbox"/> M1+ M2 Professional <input type="checkbox"/> M2 Professional <input checked="" type="checkbox"/> M2 Research
Teaching Language	<input type="checkbox"/> English <input type="checkbox"/> French <input checked="" type="checkbox"/> Mixed - English & French
Place of Teaching (Campus)	<input checked="" type="checkbox"/> Hadat <input type="checkbox"/> Fanar <input type="checkbox"/> Tripoli <input type="checkbox"/> Nabatieh
About the Program	In a data-driven world, data science is a highly innovative area, and is at the forefront of innovation across all industries. In today's complex and uncertain world, the ability to analyze and manage risk is crucial across all industries. The Master's in Data Science program prepares students to harness the power of Big Data to discover insights, drive decision-making, and solve complex problems. This interdisciplinary field combines advanced skills in data management, statistical analysis, and machine learning with domain-specific knowledge. This is a great opportunity to join a dynamic and rapidly evolving field that impacts virtually every aspect of modern life. Start your journey with us and become a key player in the data revolution!
Program Learning Outcomes	<ul style="list-style-type: none"> • Understand the core principles and architectures of data systems. • Develop skills in analyzing large datasets using advanced statistical and computational methods. • Apply predictive modeling techniques to extract insights and make data-driven predictions. • Understand the principles and challenges of real-time data processing. • Design and implement comprehensive data solutions, from data collection and processing to analysis and deployment of data-driven applications. • Analyze and interpret data from social networks and graph structures to understand relationships and influence within networks. • Develop methods to analyze social media data to gain insights into trends, sentiment, and user behavior.
Fields of Work	Graduating from our master data science opens a multitude of exciting and diverse career opportunities across various industries: technology, finance, healthcare, government, retail, and more. Graduates in data science are well-equipped to tackle complex problems, drive innovation, and make data-driven decisions that impact organizations and society at large.
Admission Requirements	<p>GPA: Minimum GPA of 55/100 for students from Lebanese University Minimum GPA of 3.2 for students from outside Lebanese University</p> <p>Major: <input type="checkbox"/> Chemistry <input type="checkbox"/> Biochemistry <input type="checkbox"/> Animal Biology <input type="checkbox"/> Plant Biology <input type="checkbox"/> Math <input checked="" type="checkbox"/> Computer Science <input type="checkbox"/> Electronics <input type="checkbox"/> Physics</p>
Coordinator of Master Program	<p>Pr. Ali Jaber</p> <p>Contact information: UL Email address: ali.jaber@ul.edu.lb Alternative email: alijaber30@hotmail.com Phone number: +961- 70-660495</p>

Research Master - M2
Data Science for Risk Analysis
2024-2025

	Course			
	Code	Title	Credits	Hours
Semester 3	DSRA 540	English and Communication	5	56
		Scientific English and modern media	3	36
		Research methodology and communication techniques	2	20
	DSRA 541	Modeling and Evaluation of Computer Systems	5	51
		Advanced Graph Theory and Complexity	2	18
		Numerical algorithms matrix	2	18
		Optimization	1	15
	DSRA 542	Virtualization Architectures and Information Systems	5	51
		Communicating objects, Android	2	18
		Virtualization principle and interest	2	18
		Parallel computing	1	15
	DSRA 500	Introduction to Risk Analysis	5	52
		Part1: Risk Analysis Concepts, Methods, and Application	2	20
		Part2: Information Systems for Risk Analysis	1.5	16
		Part3: Introduction to Data Driven Risk Analysis	1.5	16
	DSRA 543	Ubiquitous system	5	51
		Sensor Technologies for Interactive Environments	2	18
		Internet of things	2	18
		Sensor Data Acquisition	1	15
	DSRA 501	Risk Data Mining and Advanced Analysis	5	52
		Part1: Advanced Risk Data Analysis	2	20
		Part2: Risk Data Mining	1.5	16
		Part3: Early Risk Prediction and Management	1.5	16
Total			30	313

	Course			
	Code	Title	Credits	Hours
Semester 4	DSRA 580	Master Thesis	30	
	Total			30



Master Programs

Master Program	Information Systems and Data Intelligence (ISDI) <i>Systèmes d'Information et Intelligence des Données</i>
Master Type	<input type="checkbox"/> M1+ M2 Professional <input type="checkbox"/> M2 Professional <input checked="" type="checkbox"/> M2 Research
Teaching Language	<input checked="" type="checkbox"/> English <input type="checkbox"/> French <input type="checkbox"/> Mixed - English & French
Place of Teaching (Campus)	<input checked="" type="checkbox"/> Hadat <input type="checkbox"/> Fanar <input type="checkbox"/> Tripoli <input type="checkbox"/> Nabatieh
About the Program	<p>The ISDI master program is deeply rooted in the evolving domains of Big Data and Artificial Intelligence (AI), which continue to attract significant interest from both academia and industry. The program's objective is to develop exceptional Data Intelligence scientists equipped with the advanced quantitative and technical skills necessary to tackle complex data-centric challenges. In response to the rapid advancements in AI, the ISDI curriculum now includes a focus on generative AI and large language models (LLMs). These cutting-edge technologies are transforming the landscape of data analysis and decision-making. Generative AI enables the creation of new, synthetic data from existing datasets, enhancing the ability to model, predict, and understand complex phenomena.</p> <p>By integrating these technologies, the ISDI program ensures that graduates are not only adept at using current AI tools but also at pioneering new methodologies in data intelligence.</p>
Program Learning Outcomes	<p>Ability to apply a diverse tools and methods from several disciplines to extract meaningful information from the massive deluge of data continuously generated from industrial information systems, internet-of-things devices, and social media. Specifically, they will demonstrate proficiency in:</p> <ul style="list-style-type: none"> • Intelligent Cooperative/Collaborative Information Systems. • Big Data Analytics, Machine Learning and Deep Learning: Applying advanced algorithms to develop intelligent systems. • Generative AI and Large Language Models (LLMs): Leveraging cutting-edge technologies to generate synthetic data, enhance predictive models, and develop sophisticated natural language processing applications. <p>These skills enable graduates to contribute towards a more connected and smarter world by driving innovation in data intelligence and delivering end-to-end solutions.</p>
Fields of Work	<p>Earning this master's degree opens various opportunities in both academic and industrial sectors. Graduates will be well-prepared to pursue a variety of career paths, including:</p> <ul style="list-style-type: none"> • PhD Programs: leading to advanced research roles and professorships in prestigious universities, engineering schools, or Institutes of Science and Technology. • Teaching and Research Teams: Joining academic or industrial research groups to contribute to cutting-edge developments in data science, AI, and related fields. • Data Engineering and Data Science: Dealing with data systems and architectures to support data analytics and business intelligence. • Generative AI and LLM Development: Specializing in the creation and application of generative models and LLMs for innovative solutions in various industries. • Leadership in Industry: Leading teams or projects in consulting, strategic planning, internet technologies, decision-making, and data analytics/intelligence. • R&D Engineering: Working as R&D engineers, leading projects, and innovating new technologies in both industrial and academic settings. • Senior Management: Occupying high-level positions such as heads of R&D projects, chief data officers, strategic initiatives, and technology integration. <p>Graduates equipped with skills in generative AI and LLMs will be highly sought after for their ability to drive innovation and create transformative solutions, positioning them at the forefront of the data intelligence and AI revolution.</p>
Admission Requirements	<p>GPA: Minimum GPA of 55/100 for students from Lebanese University Minimum GPA of 3.2 for students from outside Lebanese University</p> <p>Major: <input type="checkbox"/> Chemistry <input type="checkbox"/> Biochemistry <input type="checkbox"/> Animal Biology <input type="checkbox"/> Plant Biology <input type="checkbox"/> Math <input checked="" type="checkbox"/> Computer Science <input type="checkbox"/> Electronics <input type="checkbox"/> Physics <input checked="" type="checkbox"/> Master (M2) in MIS</p>
Coordinator of Master Program	<p>Pr. Mohamed DBOUK Contact information: UL Email address: mdbouk@ul.edu.lb Alternative email: dbouk.mohamed@gmail.com Phone number (optional): +961- 03 - 851283</p>

Research Master - M2
Information Systems and Data Intelligence
2024-2025

	Course			
	Code	Title	Credits	Hours
Semester 3	ISDI 500	Information systems fundamentals and collaborative computing	3	20
	ISDI 501	Decision fundamentals; multi-criteria analysis and visualizations	2	20
	ISDI 502	Data mining and knowledge discovery	3	20
	ISDI 503	Web of data, Semantic Web and Information Retrieval	3	24
	ISDI 504	Cloud computing and services	3	20
	ISDI 505	Ubiquitous computing and Internet of Things (IoT)	3	20
	ISDI 506	Communication infrastructures and platforms for Ambient Intelligence	3	20
	ISDI 507	OLAP and Big-data analytics	3	24
	ISDI 508	Real-time data processing and visualization	3	24
	ISDI 509	Data Security and Privacy	2	20
	RMSE 500	Research Methodology and Scientific English	2	24
	Total			30

	Course			
	Code	Title	Credits	Hours
Semester 4	ISDI 580	Master Thesis	30	
	Total			30



Master Programs

Master Program	Advanced Artificial Intelligence and Generative Systems
Master Type	<input type="checkbox"/> M1+ M2 Professional <input type="checkbox"/> M2 Professional <input checked="" type="checkbox"/> M2 Research
Teaching Language	<input checked="" type="checkbox"/> English <input type="checkbox"/> French <input type="checkbox"/> Mixed - English & French
Place of Teaching (Campus)	<input type="checkbox"/> Hadat <input type="checkbox"/> Fanar <input type="checkbox"/> Tripoli <input checked="" type="checkbox"/> Nabatieh
About the Program	<p>Given the exponential growth in the importance of AI and generative systems across various sectors, this program aims to train a new generation of professionals and researchers capable of designing, developing, and implementing innovative solutions in this field.</p> <p>Within this framework, students will delve into the theoretical foundations of AI and generative systems while learning to apply this knowledge pragmatically. The program will emphasize the use of algorithms and techniques in machine learning and deep learning, natural language processing, generative models, computer vision, IoT, and other innovative approaches specific to AI and generative systems. Students will also develop skills in data management and analysis, essential for extracting relevant insights from the vast datasets generated by users and applications.</p>
Program Learning Outcomes	<ul style="list-style-type: none"> • Mastery of the fundamental concepts of AI and generative AI. • Proficiency in the use of deep learning techniques for the analysis of data of various types, including images, videos, text, and graphs. • Ability to apply natural language processing and generation techniques to a variety of tasks. • Skills in managing and analyzing massive datasets generated by users and applications. • Ability to ensure the explicability and interpretability of AI models. • Ability to design and undertake research projects in artificial intelligence.
Fields of Work	The holders of this master's degree can either enter the job market directly as artificial intelligence specialists or prepare for a PhD in artificial intelligence-related fields.
Admission Requirements	<p>GPA: Minimum GPA of 55/100 for students from Lebanese University Minimum GPA of 3.2 for students from outside Lebanese University</p> <p>Major: <input type="checkbox"/> Chemistry <input type="checkbox"/> Biochemistry <input type="checkbox"/> Animal Biology <input type="checkbox"/> Plant Biology <input type="checkbox"/> Math <input checked="" type="checkbox"/> Computer Science <input type="checkbox"/> Electronics <input type="checkbox"/> Physics</p>
Coordinator of Master Program	<p>Pr. Ali Choumane</p> <p>Contact information: UL Email address: ali.choumane@ul.edu.lb Alternative email: ali.choumane@gmail.com Phone number (<i>optional</i>): +961- 81 – 911 310</p>

Research Master - M2
Advanced Artificial Intelligence and Generative Systems
2024-2025

		Course						
		Code	Title	Credits	C	TS	LS	Hours
Semester 3	Required courses							
	AIGS 500	Advanced Machine Learning	4	14	8	9	31	
	AIGS 501	Deep Learning and Computer Vision	4	14	8	9	31	
	AIGS 502	Generative AI: Concepts, Models, and Applications	4	14	8	9	31	
	AIGS 503	Natural Language Processing	4	14	8	9	31	
	AIGS 504	Metaheuristic Optimization Techniques	4	14	8	9	31	
	AIGS 505	Interpretability, Explainability, and Ethics in AI	2	7	8		15	
	RMSE 500	Research Methodology and Scientific English	2	24			24	
	Total of required courses			24	101	48	45	194
	Choose 2 courses from the following list							
	AIGS 506	Big Data and Artificial Intelligence	3	10.5	8	4.5	23	
	AIGS 507	Artificial Intelligence of Things	3	10.5	8	4.5	23	
	AIGS 508	Social Data Analysis	3	10.5	8	4.5	23	
	AIGS 509	Building and Mining Knowledge Graphs	3	10.5	8	4.5	23	
	AIGS 510	Special Topics in AI	3	10.5	8	4.5	23	
Total of elective courses			6	21	16	9	46	
Total			30	122	64	54	240	

		Course						
		Code	Title	Credits				Hours
Semester 4	AIGS 580	Master Thesis	30					
	Total			30				



Master Programs

Please do not exceed one page for all the information

Master Program	Cybersecurity
Master Type	<input type="checkbox"/> M1+ M2 Professional <input checked="" type="checkbox"/> M2 Professional <input type="checkbox"/> M2 Research
Teaching Language	<input checked="" type="checkbox"/> English <input type="checkbox"/> French <input type="checkbox"/> Mixed - English & French
Place of Teaching (Campus)	<input checked="" type="checkbox"/> Hadat <input checked="" type="checkbox"/> Fanar <input type="checkbox"/> Tripoli <input type="checkbox"/> Nabatieh
About the Program	This master's program in Cybersecurity aims to equip students with advanced skills and knowledge to protect and defend applications, computer systems and networks from cyber threats. The curriculum typically covers a wide range of topics, including cybersecurity fundamentals, risk management, application and network security, cyber threat intelligence, legal and ethical aspects.
Program Learning Outcomes	<ol style="list-style-type: none"> 1. Cybersecurity Needs Analysis: Analyze and evaluate the cybersecurity needs of an organization to design effective security measures. 2. Risk Assessment: Conduct comprehensive cybersecurity risk assessments and develop strategies to mitigate potential threats. 3. Technical Proficiency: Demonstrate the technical knowledge and skills necessary to protect and defend computer systems and networks from cyberattacks, including configuring firewalls, IPS, VPNs, and applying cryptographic techniques. Understand and address the vulnerabilities and threats specific to wireless, mobile, and future networks such as IoT, and implement appropriate security measures, including secure programming practices and secure architectures. 4. Information Security Solutions: Design and formulate effective information security solutions tailored to business processes and systems. 5. Communication Skills: Communicate cybersecurity concepts and solutions effectively, both orally and in writing, to a variety of audiences. 6. Ethical and Legal Aspects: Understand and apply the ethical and legal aspects of cybersecurity in different contexts
Fields of Work	A master's degree in Cybersecurity opens up various career opportunities in several specialized fields, including Security Architect, Ethical Hacker, Cybersecurity Consultant, Cybersecurity Analyst, Forensic Computer Analyst, Security Software Developer, ...
Admission Requirements	<p>GPA: Minimum GPA of 55/100 for students from Lebanese University Minimum GPA of 3.2 for students from outside Lebanese University</p> <p>Major: <input type="checkbox"/> Chemistry <input type="checkbox"/> Biochemistry <input type="checkbox"/> Animal Biology <input type="checkbox"/> Plant Biology <input type="checkbox"/> Math <input checked="" type="checkbox"/> Computer Science <input type="checkbox"/> Electronics <input type="checkbox"/> Physics <input type="checkbox"/> Please add other accepted majors if applicable</p>
Coordinator of Master Program	Pr. Bassem Haidar Pr. Carole Bassil Contact information: UL Email address: bassem.haidar@ul.edu.lb Alternative email: bassem.haidar@gmail.com Phone number (optional): +961- 3 - 971790 UL Email address: cbassil@ul.edu.lb Phone number (optional): +961- 3 - 541308

**Professional Master - M2
Cybersecurity
2024-2025**

Semester 3	Course						
	Code	Title	Credits	C	TS	LS	Hours
	CBRS 500	Applied Cryptography	3	16		14	30
	CBRS 501	Network Security	3	16		14	30
	CBRS 502	Web Security	3	16		14	30
	CBRS 503	Secure Programming	3	16		14	30
	CBRS 504	Secure Architectures	3	16		14	30
	CBRS 505	Security for Mobile Networks and for the Network of the Future	3	24			24
	CBRS 506	Information Security Management	3	16		14	30
	CBRS 507	Technologies and Tools of Cybersecurity	3	16		14	30
	CBRS 509	Laws and Cybersecurity	2	20			20
	CBRS 510	Data Driven Cyber-Security	3	16		14	30
	ENGL 591	Scientific English & Communication skills	1		20		20
	Total		30	172		112	304

Semester 4	Course						
	Code	Title	Credits	C		LS	Hours
	CBRS 580	Master Thesis	30				
	Total		30				



Master Programs

Master Program	Title: GEOspatial Artificial Intelligence (GEOAI)
Master Type	<input type="checkbox"/> M1+ M2 Professional <input checked="" type="checkbox"/> M2 Professional <input type="checkbox"/> M2 Research
Teaching Language	<input checked="" type="checkbox"/> English <input type="checkbox"/> French <input type="checkbox"/> Mixed - English & French
Place of Teaching (Campus)	<input checked="" type="checkbox"/> Hadath <input type="checkbox"/> Fanar <input type="checkbox"/> Tripoli <input type="checkbox"/> Nabatiyeh
About the Program	GeoAI is the integration of artificial intelligence (AI) with spatial data, science, and geospatial technology to increase understanding and solve spatial problems. GeoAI includes the application of traditional AI techniques to generate spatial data through the extraction, classification, and detection of information from structured and unstructured data. GeoAI is also the use of spatially explicit AI techniques that are designed to solve spatial problems through the analysis of spatial data, and includes techniques for detecting patterns, making predictions, spatiotemporal forecasting, and more.
Program Learning Outcomes	<ul style="list-style-type: none"> • Extract rich geospatial data with deep learning Save time by automating the extraction, classification, and detection of information from data such as imagery, video, point clouds, and text. • Perform predictive analysis using machine learning Build more accurate models. Detect clusters, calculate change, find patterns, and forecast outcomes with spatial algorithms backed by experts. • Improve data quality, consistency, and accuracy Streamline manual data generation workflows by using the power of automation to increase efficiency and reduce costs.
Fields of Work	<ul style="list-style-type: none"> • State and local government • Public safety • National mapping and statistics • Defense and intelligence • Insurance • Business
Admission Requirements	<p>GPA: Minimum GPA of 55/100 for students from Lebanese University Minimum GPA of 3.2 for students from outside Lebanese University</p> <p>Major: <input type="checkbox"/> Chemistry <input type="checkbox"/> Biochemistry <input type="checkbox"/> Animal Biology <input type="checkbox"/> Plant Biology <input checked="" type="checkbox"/> Math <input checked="" type="checkbox"/> Computer Science <input type="checkbox"/> Electronics <input type="checkbox"/> Physics</p>
Coordinator of Master Program	<p>Pr. Ahmad FAOUR</p> <p>Contact information: UL Email address: ahmad.faour@ul.edu.lb Alternative email: afaour@gmail.com Phone number (<i>optional</i>): +961- 03 - 757933</p>

**Professional Master - M2
GEO-spatial Artificial Intelligence (GEOAI)
2024-2025**

Semester 3	Code	Title	Credits	C	TD	TP	Hours	
	Common Courses							
	MLAI 504	Neural Networks and Deep Learning	3	7		28	35	
	MLAI 508	Natural Language Processing	3	7		28	35	
	ENGL 591	Scientific English & Communication skills	1		20		20	
	Geographic Information System & Data Science (GIS)							
	GISD 501	Spatial Analysis with GIS	2	7	0	13	20	
	GISD 504	Remote Sensing	2	7	0	13	20	
	GISD 509	Geodatabases Concepts: Design & Modelling (including Geospatial Ontologies and Semantics)	2	7	0	13	20	
	GISD 510	Web GIS (Management and development)	3	7		15	22	
GISD 511	Big Data Analytics: Tools and Techniques	3	14	11	0	25		
GISD 512	Python for Geospatial AI	3	14	11	0	25		
GISD 513	Project Management & Leadership Skills Development. Key Skills of Entrepreneurship & Innovation Adoption	2	7		13	20		
GISD 514	AI for Earth Observation	3	14		11	25		
GISD 515	Advanced Topics in Computer Vision	3	15		10	25		
Total			30	106	42	144	292	

Semester 4	Course						
	Code	Title	Credits	C	TS	LS	Hours
	GISD 580	Master Thesis	30				
Total			30				



Master Programs

Master Program	Master's in Artificial Intelligence
Master Type	<input type="checkbox"/> M1+ M2 Professional <input checked="" type="checkbox"/> M2 Professional <input type="checkbox"/> M2 Research
Teaching Language	<input checked="" type="checkbox"/> English <input type="checkbox"/> French <input type="checkbox"/> Mixed - English & French
Place of Teaching (Campus)	<input checked="" type="checkbox"/> Hadat <input type="checkbox"/> Fanar <input type="checkbox"/> Tripoli <input type="checkbox"/> Nabatieh
About the Program	<p>The Master in Artificial Intelligence program provides students the advanced knowledge, skills and tools used to create appropriate solutions in the field of AI. The program covers the main AI sub-domains such as Computer Vision, Data Analytics, Natural Language Processing, Machine Learning and Deep Learning.</p> <p>Students will be well-equipped with the knowledge, tools and skills required to design, implement and evaluate algorithms and models used in AI, as well as the ability to implement them in the real world to solve real problems.</p> <p>The program stresses on the ethical considerations and the social impact of AI.</p>
Program Learning Outcomes	<ul style="list-style-type: none"> • Learn the essential knowledge about AI concepts. • Learn how to implement and produce AI applications (python, TensorFlow, PyTorch, etc.) • Learn how to manipulate (handle and preprocess) data. • Learn how to solve real world problems using AI field.
Fields of Work	Students graduating from this program are able to work as: Machine Learning engineer, data scientist, AI product manager, computer vision engineer, NLP engineer, BI developer.
Admission Requirements	<p>GPA: Minimum GPA of 50/100 for students from Lebanese University Minimum GPA of 3.2 for students from outside Lebanese University</p> <p>Major: <input type="checkbox"/> Chemistry <input type="checkbox"/> Biochemistry <input type="checkbox"/> Animal Biology <input type="checkbox"/> Plant Biology <input checked="" type="checkbox"/> Math <input checked="" type="checkbox"/> Computer Science <input checked="" type="checkbox"/> Electronics <input checked="" type="checkbox"/> Physics <input checked="" type="checkbox"/> Data Science <input checked="" type="checkbox"/> Business Computer</p>
Coordinator of Master Program	<p>Pr. Rami Tawil Contact information: UL Email address: rami.tawil@ul.edu.lb Alternative email: rami.tawil@hotmail.com Phone number (<i>optional</i>): +961- 70 – 011 422</p>

**Professional Master - M2
Artificial Intelligence (MIAI)
2024-2025**

		Course					
		Code	Title	Credits	C	TS	LS
Semester 3	MIAI 500	Knowledge Representation and Reasoning	3	7	10	10	27
	MIAI 501	Essential Mathematics for Artificial Intelligence	2	7	13	0	20
	MIAI 502	Reinforcement Learning	3	7	10	10	27
	MIAI 503	Ethics of Artificial Intelligence	2	20	0	0	20
	MIAI 504	Neural Networks and Deep Learning	3	7	0	20	27
	MIAI 505	Advanced Techniques in Machine Learning	3	7	0	20	27
	MIAI 506	Big Data Analytics	3	7	10	10	27
	MIAI 507	Computer Vision and Applications	3	7	0	20	27
	MIAI 508	Natural Language Processing	3	7	0	20	27
	MIAI 509	Programming for Artificial Intelligence	2	0	0	20	20
	MIAI 510	Selected AI Applications	2	7	0	13	20
	ENGL 591	Scientific English & Communication skills	1	20	0	0	20
	Total			30	103	43	143

		Course					
		Code	Title	Credits			Hours
Semester 4	MIAI 580	Master Thesis	30				
	Total			30			



Master Programs

Master Program	Web Development
Master Type	<input type="checkbox"/> M1+ M2 Professional <input checked="" type="checkbox"/> M2 Professional <input type="checkbox"/> M2 Research
Teaching Language	<input checked="" type="checkbox"/> English <input type="checkbox"/> French <input type="checkbox"/> Mixed - English & French
Place of Teaching (Campus)	<input type="checkbox"/> Hadat <input checked="" type="checkbox"/> Fanar <input type="checkbox"/> Tripoli <input type="checkbox"/> Nabatieh
About the Program	The world relies heavily on the Internet, making it crucial for companies to have web applications that meet the demands of increasingly discerning customers. The Master 2 Web Development program is designed for computing professionals who work on large-scale web applications. This program aims to equip individuals with the skills to design, create, and implement web applications, while also understanding the organizational implications and specialized techniques used on the Internet. Additionally, the program incorporates Artificial Intelligence and Deep Learning, providing the knowledge to integrate these advanced technologies into web applications, enhancing their functionality and user experience.
Program Learning Outcomes	<ul style="list-style-type: none"> • Advanced Web Development Skills: Graduates will be proficient in designing, creating, and implementing large-scale web applications, using modern web technologies and frameworks. • AI and Deep Learning Integration: Graduates will be able to incorporate artificial intelligence and deep learning technologies into web applications, enhancing functionality and user experience through AI-driven and deep learning solutions. • Industry Best Practices: Graduates will be familiar with industry best practices and emerging trends in web development, AI, and deep learning, ensuring they can stay current in a rapidly evolving field.
Fields of Work	Graduates of the Master 2 Web Development program can pursue careers as web developers, software engineers, and UX/UI designers, leveraging advanced skills in AI and deep learning. They can also work as technical consultants, enhancing web applications with cutting-edge technologies. Opportunities exist in diverse sectors, including tech companies, startups, and digital agencies.
Admission Requirements	<p>GPA: Minimum GPA of 55/100 for students from Lebanese University Minimum GPA of 3.2 for students from outside Lebanese University</p> <p>Major: <input type="checkbox"/> Chemistry <input type="checkbox"/> Biochemistry <input type="checkbox"/> Animal Biology <input type="checkbox"/> Plant Biology <input type="checkbox"/> Math <input checked="" type="checkbox"/> Computer Science <input type="checkbox"/> Electronics <input type="checkbox"/> Physics</p>
Coordinator of Master Program	<p>Pr. Jacques DEMERJIAN</p> <p>Contact information: UL Email address: jacques.demerjian@ul.edu.lb Alternative email: Jacques.demerjian@gmail.com Phone number: +961- 70 - 108805</p>

**Professional Master in web development - M2
2024-2025**

Semester 3	Course						
	Code	Title	Credits	C	TS	LS	Hours
	DWEB 511	Planning and execution management	6	30	6	12	48
	DWEB 513	Data warehouse and data mining techniques	2	12	6	6	24
	DWEB 514	WEB Development	5	24	8	16	48
	DWEB 516	Content management platforms	3	16	6	8	30
	DWEB 517	Mobile Development	4	24	6	6	36
	DWEB 519	Web Services	3	12	6	12	30
	DWEB 520	Business process modeling	5	24	11	15	50
	ENGL 571	Scientific English	2		24		24
Total			30	142	73	75	290

Semester 4	Course						
	Code	Title	Credits	C	TS	LS	Hours
	DWEB 580	Master Thesis	30				
Total			30				



Master Programs

Please do not exceed one page for all the information

Master Program	Software Engineering
Master Type	<input type="checkbox"/> M1+ M2 Professional <input checked="" type="checkbox"/> M2 Professional <input type="checkbox"/> M2 Research
Teaching Language	<input type="checkbox"/> English <input type="checkbox"/> French <input checked="" type="checkbox"/> Mixed - English & French
Place of Teaching (Campus)	<input type="checkbox"/> Hadat <input type="checkbox"/> Fanar <input checked="" type="checkbox"/> Tripoli <input type="checkbox"/> Nabatieh
About the Program	The Master's in Software Engineering program aims to develop experts in designing, validating, and deploying high-quality software for both centralized, distributed and mobile environments. This comprehensive program equips students with the practical knowledge required to thrive in the professional world. It addresses the growing demand for skilled professionals in Lebanon and the Middle East, where service companies are rapidly expanding. These companies need to meet international standards by mastering advanced concepts and techniques such as object-oriented programming, component-based development, distributed systems, and artificial intelligence practices. Additionally, the program emphasizes the acquisition of essential business skills, including managing large-scale projects and implementing quality assurance practices.
Program Learning Outcomes	<ul style="list-style-type: none"> • knowledge of the latest innovations in the field. • Student will be exposed to the software development market through the internship that is part of the program.
Fields of Work	Software analyst, Software developer, project manager, database administrator.
Admission Requirements	<p>GPA: Minimum GPA of 55/100 for students from Lebanese University Minimum GPA of 3.2 for students from outside Lebanese University</p> <p>Major: <input type="checkbox"/> Chemistry <input type="checkbox"/> Biochemistry <input type="checkbox"/> Animal Biology <input type="checkbox"/> Plant Biology <input type="checkbox"/> Math <input checked="" type="checkbox"/> Computer Science <input type="checkbox"/> Electronics <input type="checkbox"/> Physics <input type="checkbox"/> Please add other accepted majors if applicable</p>
Coordinator of Master Program	Pr. Hala Naja Contact information: UL Email address: hjazzar@ul.edu.lb Alternative email: hala.naja70@gmail.com Phone number (<i>optional</i>): +961- xx - xxxxxx

**Professional Master - M2
Software Engineering
2024-2025**

	Course						
	Code	Title	Credits	C	TS	LS	Hours
Semester 3	ILOG 514	Component Based Programming	3	18		6	24
	ILOG 516	Web Applications : Architecture and Implementation	3	18		6	24
	ILOG 518	Systems Security in Networks	3	18		6	24
	ILOG 520	New generation of databases	3	18		6	24
	ILOG 522	Communication skills	1	12			12
	ILOG 524	Project Management	3	18		6	24
	ILOG 526	Quality Assurance in Software Engineering	2	18		6	24
	ILOG 571	Workshop	2			30	30
	ENGL 591	Scientific English & Communication skills	1		20		20
	ILOG 542	Graphical Programming & ergonomics of Interfaces	3	18		6	24
	ILOG 548	Geographic Information System	3	18		6	24
	ILOG 550	Internet of Things	3	18		6	24
	Total			30	174		84

	Course						
	Code	Title	Credits	C		LS	Hours
Semester 4	ILOG 580	Master Thesis	30				5 Month
	Total			30			