



Master Programs

Please do not exceed one page for all the information

Master Program	Computational Mathematics and Control Theory with Applications in AI-CMCA
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	<p>This Master 2 research program equips students with the necessary theoretical foundation and computational skills to pursue research in applied mathematics. The program provides advanced training in modern methods for analyzing, simulating, and controlling complex dynamical systems. Students gain expertise in both the theoretical underpinnings and numerical aspects of these models, with particular emphasis on the effective implementation of associated approximation algorithms. The program integrates cutting-edge topics including AI, machine learning, and physics-informed neural networks for scientific computing. Applications span engineering, medicine, and biology, with emphasis on real-world modeling and computational implementation. The curriculum combines rigorous theory with practical software tools such as Matlab, Python, and FreeFem++, culminating in a research-oriented Master thesis.</p>
Program Learning Outcomes	<ul style="list-style-type: none"> • Develop and implement numerical methods (finite element, finite volume, spectral methods) to approximate and simulate solutions of advanced mathematical modeling • Design and evaluate control strategies for dynamical systems using principles of observability, controllability, and optimal control theory. • Use modern computational tools and programming languages (e.g., Matlab, Python, FreeFem++) to build, simulate, and validate mathematical models • Employ mathematical foundations of AI and machine learning to construct, analyze, and apply neural network-based models, including physics-informed approaches for PDEs. • Conduct independent research, formulate scientific questions, and communicate results effectively in written and oral form
Fields of Work	Research and Academia/ Industry and Consulting: <ol style="list-style-type: none"> 1. Doctoral studies and academic careers 2. Postdoctoral Fellow 3. Control systems engineer 4. Research Scientist 5. Quantitative Analyst 6. Data Scientist and AI industries 7. Operations Research Analyst 8. Computational Engineer 9. Risk Analyst 10. Modeling and Simulation Specialist
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:</p> <p> <input type="checkbox"/> Chemistry <input type="checkbox"/> Biochemistry <input type="checkbox"/> Animal Biology <input type="checkbox"/> Plant Biology <input checked="" type="checkbox"/> Math <input type="checkbox"/> Computer Science <input type="checkbox"/> Electronics <input type="checkbox"/> Physics </p>
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