

DeCAIR Course Syllabus Form

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Work Package Number & Title	Work Package 2: Development of new MSc and BSc programs in AIR		
Activity Number & Title	Activity 2.2: Designing and developing syllabi and content for the agreed upon courses in the new programs		
Work Package Leader	Francesco Masulli, University of Genoa		
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Revision History

Version	Date	Author	Description	Action *	Page(s)
1	4/11/2021	Naeem Al-Oudat	Original (base) document	C	1-5
2	16/1/2022	Naeem Al-Oudat	Revised version based on a peer review	U	1-5
3	2/2/2022	Naeem Al-Oudat	Revised based on an expert review	U	1-5

(*) Action: C = Creation, I = Insert, U = Update, R = Replace, D = Delete

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Course title	Emerging Technology in Intelligent Systems							
Course number	0112520							
Credit hours (lecture and lab)	3 (3 + 0)							
ECTS (weekly contact and self-study load)	6 (3 + 3)							
Prerequisites/co-requisites by course number and name	Passing 90 Credit Hours							
Prerequisites by topic (other than the formal prerequisites above)	Students are assumed to have good background in mathematics, particularly, calculus, linear algebra, statistics, probability, artificial intelligence (AI) and robotics. Additionally, the students should have good programming skills, preferably, using Python.							
Level and type (compulsory, elective)	Bachelors' elective course							
Year of study and semester	Fifth year, first semester							
Catalogue description	This undergraduate course concentrates on the state-of-the-art in fields of artificial intelligence and robotics. This course fills the gap between what is delivered during the first four years of study and the new technologies appeared in the field of intelligent systems.							
Objectives	Keep students updated with the latest technologies in their major.							
Intended learning outcomes	Upon successful completion of this course, students will be able to:							
	<table border="1"> <thead> <tr> <th>No</th> <th>Intended learning Outcome (ILO)</th> <th>Program learning outcome (PLO)*</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Acquire new technologies in the field</td> <td>7</td> </tr> </tbody> </table>	No	Intended learning Outcome (ILO)	Program learning outcome (PLO)*	1	Acquire new technologies in the field	7	
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	(*) The PLOs are listed in the appendix							
Teaching and learning methods	<p>Development of ILOs is promoted through the following teaching and learning methods:</p> <ul style="list-style-type: none"> • Lectures will be delivered through Microsoft Teams and will be recorded for later access. • The AI lab is open for the students to practice the practical aspects and solve the programming homework assignments. • The student attends the class presentations and participates in the discussions. • The student joins the related online team/group and participates in its discussions. • The student studies the reference material, including books and videos. • The student solves the programming assignments in machine learning. • The student carries out a term project related to the subjects offered. 							

	<ul style="list-style-type: none"> The student develops a professional report for the term report. The student presents the term project in class. 																								
Learning material type	Textbook, class handouts, some instructor keynotes, selected YouTube videos, and access to a personal computer and the internet.																								
Resources and references	<p>A- Required book(s), assigned reading and audio-visuals: Latest books and papers related to the offered subject.</p> <p>B- Recommended book(s), material and media: Any YouTube videos related to the.</p>																								
Topic outline and schedule	Topics and their schedule depend on the selected material to be taught																								
Evaluation tools	<p>Opportunities to demonstrate achievement of the ILOs are provided through the following assessment tools:</p> <table border="1"> <thead> <tr> <th>Assessment tool</th> <th>Mark</th> <th>Topic(s)</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>Homework assignments</td> <td>10%</td> <td>Programming aspects</td> <td>W2-W14</td> </tr> <tr> <td>Midterm exam</td> <td>30%</td> <td>Introduction through classical techniques</td> <td>W8</td> </tr> <tr> <td>Term project report and presentation</td> <td>20%</td> <td>Practical and presentation aspects</td> <td>W15</td> </tr> <tr> <td>Final exam</td> <td>40%</td> <td>All material</td> <td>W16</td> </tr> <tr> <td>Total</td> <td>100%</td> <td></td> <td></td> </tr> </tbody> </table>	Assessment tool	Mark	Topic(s)	Time	Homework assignments	10%	Programming aspects	W2-W14	Midterm exam	30%	Introduction through classical techniques	W8	Term project report and presentation	20%	Practical and presentation aspects	W15	Final exam	40%	All material	W16	Total	100%		
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Student requirements	The student should have a computer and internet connection.																								
Course policies	<p>A- Attendance policies:</p> <ul style="list-style-type: none"> Attendance is required. Class attendance will be taken every class and the university polices will be enforced in this regard. <p>B- Absences from exams and not submitting assignments on time:</p> <ul style="list-style-type: none"> A makeup exam can be arranged for students with acceptable absence causes. Assignments submitted late, but before announcing or discussing the solution can be accepted with 25% penalty. The project report must be handed in in time. <p>C- Health and safety procedures:</p> <ul style="list-style-type: none"> All health and safety procedures of the university and the school should be followed. <p>D- Honesty policy regarding cheating, plagiarism, misbehavior:</p> <ul style="list-style-type: none"> Open-book exams All submitted work must be of the submitting student. 																								

	<ul style="list-style-type: none"> • Other text or code must be properly quoted with clear source specification. • Cheating will not be tolerated. <p>E- Available university services that support achievement in the course:</p> <ul style="list-style-type: none"> • Microsoft Teams team and Moodle course page • AI Lab for practicing the practical aspects and solving the programming assignments. • Program announcements Facebook group
Additional information	None

Appendix

Learning Outcomes for the BSc in Intelligent Systems Engineering

Students who complete the BSc in Intelligent Systems Engineering (ISE) will be able to:

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. Communicate effectively with a range of audiences.
4. Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. Acquire and apply new knowledge as needed, using appropriate learning strategies.