



Industrial 4.0 Intelligent Operations Certificate Program

× IM: Industrial Management; MI: Information Management; CS: Computer Science and Information Engineering

Category	Credits	Course Names	Offering Department	Level ¹
Obligatory Courses²				
General Introduction /	2	Introduction to Industry 4.0	Center for General Education/IM	Undergraduate
Practical Project Courses	2+2	Special Topics (I) Special Topics (II)	IM, MI , CS	Junior / Senior
Basic Core Courses (choose one out of three)				
Introductory Courses	3	Introduction to Industrial Management	IM	Freshman
	3	Introduction to Information Management	MI	Freshman
	3	Introduction to Computer Science	CS	Freshman
Elective Core Courses (choose four courses from three different areas)³				
Big Data	3	Data Mining Applications	IM	Senior / Graduate
		Big Data Analytics and Applications	IM	Senior / Graduate
		Database Management System	IM / MI	Sophomore
		Computer Graphics and Information Visualization	MI	Junior / Senior
		Database Transaction Processing: Theory and Practice	MI	Junior / Senior
		Artificial Intelligence Technologies and Business Applications	MI	Senior / Graduate





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		Data Mining	CS / MI	Senior / Graduate
		Big Data Analytics	CS	Senior / Graduate
		AI and Machine Learning	CS	Junior / Senior
		Database Systems	CS	Junior
Internet of Things and Cloud Computing	3	Introduction to Simulation	IM	Junior / Senior
		Information Security and Risk Management for IoT applications	MI	Senior / Graduate
		Cloud Computing Technology and Practice	MI	Junior / Senior
		Mobile Device Programming	MI / CS	Sophomore / Junior / Senior
		Cloud Computing and Services	CS	Senior / Graduate
		Cloud Computing Information Security	CS	Senior / Graduate
		Computer Simulation	CS	Senior / Graduate
Intelligent Operations and Management	3	Lean Production and Management	IM	Senior / Graduate
		Enterprise Resources Planning	IM	Junior / Senior
		Introduction to Electronic Business (Lab.)	IM	Junior
		Intelligent Operations Management	IM	Junior / Senior
		Management Information System	IM / MI	Sophomore / Junior





Notes

1. **Level:** The level of course indicates in which year of the undergraduate program is usually offered, and may serve as an orientation for students when to take the course.
2. **Special Topic Courses** are courses where students carry out practical projects under the supervision of two advisors. The topic of the project has to be related to *Industry 4.0 Intelligent Operation* and must be approved by the Program Review Committee. The advisors have to be full-time faculty members of the IM, MI, or CI, and they have to be from two different departments. The results of the Special Project Courses will be presented in a competition held by the Industry 4.0 Implementation Centre.
2. **Elective Core Courses:** Students must pass four core courses from the above table, including at least one course in each of the three fields and at least one course from the department which is not the student's major department.

Commented [e1]: