UNIVERSITETI /UNIVERSITY
"ISA BOLETINI"
MITROVICË

Course Curriculum Model (Syllabus)		
Faculty:	**FACULTY OF MECHANICAL AND COMPUTER ENGINEERING**	
Department:	**Mechanical engineering**	
Level:	Bachelor	
Code of the course:	307 ME	
Course:	**Manufacturig systems designe and analysis**	
Course Status:	-	Mandatory, **Elective**
Semester:	(V)	Winter/**Winter**
Number of hours per week:	2+2	
ECTS:	5	
Time / location:	Monday, 9^{00}-10^{30}, S308	
Year of studies:	2024/2025	
Lecturer:	Prof Ass Dr. Fitim Zeqiri	
Assistant:	MSc Granit Hajra	
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Telefon:		

Course description	This course is a review of the fundamentals of modern manufacturing processes, computer-aided design/ manufacturing tools, flexible manufacturing systems, and robots. The course addresses relationships between process machinery, process conditions, and material properties. Examples of how components are manufactured within hightech industries are presented.
Purpose (Goals)	The purpose is to analyze and evaluate discrete manufacturing systems in different types of production environments. The course will emphasize production flow, manufacturing cell design, inventory buffers, and performance metrics. Course will also cover continuous improvement techniques and strategy deployment.

Learning outcomes	After completing this course, participants will be able to: 1. Compare and contrast different types of discrete manufacturing systems 2. Describe terminology related to discrete manufacturing systems 3. Calculate and interpret common performance metrics for operations (e.g. cycle time, flow time, utilization, WIP) 4. Apply Little's Law to determine flow time given WIP and WIP given flow time 5. Evaluate different ways of assigning operators to cells or production lines (e.g. dedicated, rabbit chase, bucket brigade, flexible) 6. Explain continuous improvement philosophies and how they relate to manufacturing system fundamentals (brief introduction to Lean, Theory of Constraints, Agile Manufacturing, and Quick Response Manufacturing). 7. Leverage strategy deployment for effective implementation

	Weeks	Lecture
Program	***First week:***	Introduction to Manufacturing Systems
	Second week:	Process Systems for Manufacturing and Management Systems
	***Third week*:**	Management of Manufacturing, Value Systems for Manufacturing
	Fourth week:	Automation Systems for Manufacturing
	Fifth week:	Manufacturing Workstations Design and Automation.
	***Sixth week*:**	Machining cell. CNC machine tool. The design specification
	Seventh week:	Part Program and G-Code. Canned Cycles and optimisation
	Eighth week:	Process layouts: Flow Matrix.Precedence Diagram
	***Ninth week**:*	Product Layout and performance measurements.
	***Tenth week**:*	Line balansing. Lean manufacturing concepts.
	***Eleventh week**:*	Automatic Handling and Quality control and Inspection
	Twelfth week:	Technical and economic aspects of product manufacturing
	***Thirteenth week*:**	Product life cycle systems.
	Fourteenth week:	Information Systems for Manufacturing
	Fifteenth week :	Social Systems for Manufacturing

Literature	
Literature	[1] Ferit Idrizi , **Projektimi i Sistemit te Prodhimit**, skripte 2018 [2] Michell P. Groover, **Automation, production system and computer integrated Manufacturing**, Pearson, 2016 [3] Ferit Idrizi, **Dizajnimi i Hapesirave Prodhuese**, skripte, 2019 [4] Xun Xu, **Integrating Advanced Computer-Aided Design, Manufacturing, and Numerical Control**, 2009, IGI Global [5] E. A. Naser, A.K. Kamrani, **Computer-Based Design and Manufacturing**, 2007 Springer Science and Business Media, LLC [6] Lee J. Krajewski, Larry P. Ritzman, Manoj K. Malhotra, **Operations Management Processes And Supply Chains**, Pearson, 10th Ed.

Teaching methodology	Lectures, exercises, individual work, experimental work, seminar papers, colloquia, essays, field work, group work, etc. Completed according to the specifics of your subjects!			
	Contribution to student workload (which should correspond to student learning outcomes - 1 ECTS credit = 25 hours)			
	Activity	**Hours**	**Days/weeks**	**Total**
	Lectures	2	15	30
	Exercise sessions (with TA)	2	15	30
	Practical work	3	3	9
	Office hours	2	4	8
	Fieldwork	2	3	6
	Midterms, seminars	3	2	6
	Homework	2	3	6
	Self-study	4	2	8
	Final exam preparation	4	2	8
	Time spent in exams	2	3	6
	Projects, presentations, etc.	3	3	9
Totali				**126**

Evaluation	**Teaching methodology:** (according to the Statute and Regulation for studies of UMIB)		
	Tests / Colloquia (First Test) (Second test)	10% 10% 10%	
	Practical test during exercises (Essay)		
	Workshop seminar		
	Interpretation and presentation of artistic creativity and other works.		
	Assignments and courses during the semester	15%	
	Professional practice.		
	Other, Continuity		
	Final exam	55%	
	Total	: 100%	
	Final grade	Percent (%)	Grade
		91 – 100	10
		81 - 90	9
		71 - 80	8
		61 - 70	7
		51 - 60	6

Academic policies	**Criteria for regular attendance and rules of etiquette during the organization of the lesson are set.** **Computer work:** Graphic works, I have to draw and write with a computer. In the works it is obligatory to respect the criteria for both the visual and the content aspect of the required works. **Ethics in teaching:** Graphic works should be personal works of each student. There will be no tolerance for copying, "borrowing" from the Internet or any other material. The same or similar works will have negative evaluations in the final evaluation of the student. **Time:** In agreement with the students, the deadlines for submitting works will be determined. There will be no tolerance for delays in the submission of works. Failure to arrive at the time when the assignment is explained does not justify the student for not submitting the paper. The deadline will be given earlier. If you are going to travel abroad, then you need to submit the paperwork in advance. The student has the right to request a consultation with the professor whenever he / she deems it reasonable and necessary for the performance of his / her work. **Rules of conduct and academic policies:** ● active participation of students in lectures o participation in discussion, comments and free expression of opinion, opinion and academic position (with arguments) ● Mandatory independent work and use of additional sources of information (various scientific websites, scientific journals, conference proceedings, etc.) ● Respecting lecture schedules without compromising academic freedom (silent cell phones) of respecting the word, thoughts and ideas of colleagues, ● It is not allowed to arrive late and leave without a valid reason from the lecture, test or exam o preparation and holding of relevant lectures, (obligation of the teacher). ● if the student is absent more than four times without reason in lectures and exercises, does not receive the signature for attendance. o the student cannot take the exam without an official document, if the student is dissatisfied with the grade obtained, has the right to complain in writing to the dean, within two working days after the announcement of the results, UMIB Statute o if the student does not follow the rules, in the exam uses tools that are not allowed, it is evaluated with a negative grade.

Mitrovicë; 15/04/2023 Prof Ass Dr. Fitim **ZEQIRI**