

MM 323E Production Systems				DEPARTMENT of MECHANICAL ENGINEERING					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project /Field Study	Homework	Other	Total	Credit	ECTS Credit
5	42	-	-	-	10	32	84	3	5.0
Language	English								
Compulsory / Elective	Compulsory								
Prerequisites	MM 206 E								
Course Contents	Introduction: Terminology and Definitions (Automation, Manufacturing Industries). Detroit Type Automation: Definitions, Automated Flow Lines, Transfer Mechanisms. Analysis of Automated Flow Lines: Terminology, Mathematical Analysis (Full and partial automation). Numerical Control (NC) of Machine Tools: Components of NC Systems, Computer Numerical Control (CNC). Group Technology (GT): Parts Classification and Coding, Production Flow Analysis (PFA), Machine Cell Design. Flexible Manufacturing Cells (FMC): Equipment, Control of FMCs. Planning of Manufacturing Systems: Machine Requirement Planning (MRP). Basic principles of Quality Control: Control Charts, Control Limit Calculation								
Course Objectives	Understanding and analysis of automated flow lines in manufacturing.								
Learning Outcomes and Competences	Being able to understand and analyze the performance of the automated flow lines in manufacturing.								
Textbook and /or Reference	1- Mikell P. Groover, "Automation, Production Systems, and Computer Integrated Manufacturing", Prentice-Hall, Inc, Englewood Cliffs, New Jersey, 1991, ISBN: 0-13-054652-6. 2- Tien-Chien Chang, Richard A. Wysk and Hsui-Pin Wang, "Computer Aided Manufacturing", Prentice-Hall, Inc.,Upper Saddle River, New Jersey, 1998, ISBN: 0-13-754524-X.								
Assessment Criteria						If any, mark as (x)		Percentage (%)	
	Midterm Exams					X		50	
	Quizzes								
	Homeworks					X		10	
	Projects								
	Term Paper								
	Laboratory Work								
	Other								
Final Exam					X		40		
Instructors	Assoc.Prof. Mustafa YURDAKUL								
Week	Subject								
1	Introduction: Terminology and Definitions (Automation, Manufacturing Industries)								
2	Detroit Type Automation: Definitions, Automated Flow Lines, Transfer Mechanisms								
3	Analysis of Automated Flow Lines: Terminology, Mathematical Analysis (Full and								
4	Analysis of Automated Flow Lines: Terminology, Mathematical Analysis (Full and								
5	Analysis of Automated Flow Lines: Terminology, Mathematical Analysis (Full and								
6	Analysis of Automated Flow Lines: Terminology, Mathematical Analysis (Full and								
7	Numerical Control (NC) of Machine Tools: Components of NC Systems, Computer Numerical Control (CNC)								
8	Group Technology (GT): Parts Classification and Coding, Production Flow Analysis (PFA), Machine Cell Design								
9	Group Technology (GT): Parts Classification and Coding, Production Flow Analysis (PFA), Machine Cell Design								
10	Group Technology (GT): Parts Classification and Coding, Production Flow Analysis (PFA), Machine Cell Design								
11	Flexible Manufacturing Cells (FMC): Equipment, Control of FMCs								
12	Flexible Manufacturing Cells (FMC): Equipment, Control of FMCs								
13	Planning of Manufacturing Systems: Machine Requirement Planning (MRP)								
14	Basic principles of Quality Control: Control Charts, Control Limit Calculation								