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Department of Mechatronics Engineering	
Automation &Production Systems (67681)	
Total Credits	**3**
major compulsory	
Prerequisites	P1 : Manufacturing Processes I (65340)

Course Contents

Course Description Introduction to industrial automation. Manufacturing operations, material handling and identification technologies (Material handling, material transport systems, storage systems, and automatic data capture). Manufacturing systems include: single station manufacturing cells, group technology and cellular manufacturing, flexible manufacturing systems, manual assembly lines, transfer lines and similar automated manufacturing systems, and automated assembly systems. Course Outline: - Introduction to Industrial Automation (Ch.1) - Manufacturing Operations and Metrics, basic elements of automated systems (Ch.2, Ch.3 &Ch.4) - Material Transport and Storage Systems (Ch.10 &Ch.11) - Automatic Identification and Data Capture (Ch.12) (self study + Quiz) - Single-Station Manufacturing Cells (Ch.14) - Manual Assembly Lines (Ch.15) - Automated Production Lines (Ch.16) - Automated Assembly Systems (Ch.17) - Cellular Manufacturing (Ch. 18) - Flexible Manufacturing Systems (Ch.19) (as time allows)

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Classify, describe, analyze and evaluate different manufacturing systems and support systems based on predefined requirements	H	40 %
2	Understand the basic elements of industrial automated systems, and how they can be used to improve the performance of production systems	A	30 %
3	Solve problems based on a predefined set of technical requirements in a number of industrial applications	E	30 %

Textbook and/ or Refrences

Automation, Production Systems, and Computer-Integrated Manufacturing; by Groover 3ed Edition, Prentice Hall International, 2008.

Assessment Criteria	Percent (%)
First Exam	20 %
Second Exam	20 %
Quizzes	10 %
Final Exam	50 %

Course Plan

Week	Topic
1-2	Introduction to Industrial Automation (Ch.1)
2-5	Manufacturing Operations and Metrics, basic elements of automated systems (Ch.2, Ch.3 &Ch.4)
5-7	Material Transport and Storage Systems (Ch.10 &Ch.11)
7	Automatic Identification and Data Capture (Ch.12) (self study + quiz)
8-9	Single-Station Manufacturing Cells (Ch.14)
9-11	Manual Assembly Lines (Ch.15)
12-13	Automated Production Lines (Ch.16)

13-14	Automated Assembly Systems (Ch.17)
14-16	Cellular Manufacturing (Ch. 18)
16	Flexible Manufacturing Systems (Ch.19) (as time allows)