ARTIFICIAL INTELLIGENCE IN MANUFACTURING

Subject Code: 13ME2103

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Pre requisites: Robotics

Course Educational Objectives:

1. The objective of the course is to provide students with the fundamentals of Artificial Intelligence and to discuss how AI techniques have been used for problems in manufacturing systems.
2. Significant contributions achieved in Intelligent Manufacturing Systems are evaluated and discussed.
3. Overall impact of Artificial Intelligence on Manufacturing Systems is assessed and future directions are predicted.

Course Outcomes:

The student will be able to

1. explain AI techniques used in solving problems in manufacturing systems
2. use expert systems software for manufacturing applications
3. link expert systems to other software such as DBMS, MIS, MDB; Process Control and Office Automation

UNIT-I

Artificial intelligence - definition - components - scope - application areas; knowledge - based systems (expert systems) - definition - justification - structure – characterization**.**

UNIT-II

Knowledge sources - expert - knowledge acquisition - knowledge representation - knowledge base - interference strategies - forward and backward chaining.

UNIT-III

Expert system languages - ES building tools or shells; typical examples of shells. expert system software for manufacturing applications in CAD, CAPP, MRP , adaptive control.

UNIT-IV

Robotics, process control, fault diagnosis, failure analysis; process selection, GT etc. linking expert systems to other software such as DBMS, MIS, MDB.

UNIT-V

Process control and office automation. case studies of typical applications in tool selection, process selection, part classification, inventory control, process planning.

TEXT BOOK:

1. Russell, Artificial Intelligence: A Modern Approach, 2/E, Pearson Education Inc., 2009.

REFERENCES:

1. M. Tim Jones, "*Artificial Intelligence: A Systems Approach*", Jones and Bartlett Publishers, Canada, 2009.

2. Deb. S.R., "*Robotics Technology and Flexible automation*", Tata McGraw-Hill, 1994