COMPUTER AIDED PROCESS PLANNING
(Elective - II)

Course Code: 15ME2118   **L P C**
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Course Outcomes: At the end of the course, the student will be able to

CO1: Generate the structure of automated process planning system and uses the principle of generative and retrieval CAPP systems for automation

CO2: Select the manufacturing sequence and explains the reduction of total set up cost for a particular sequence

CO3: Predict the effect of machining parameters on production rate, cost and surface quality and determines the manufacturing tolerances

CO4: Explain the generation of tool path and solve optimization models of machining processes

CO5: Create awareness about the implementation techniques for CAPP

UNIT – I   (10-Lectures)

Introduction to CAPP: Information requirement for process planning system, role of process planning, advantages of conventional process planning over CAPP, structure of automated process planning system, feature recognition, methods

Generative CAPP system: Importance, principle of generative CAPP system, automation of logical decisions, knowledge based systems, inference engine, implementation, benefits

Retrieval CAPP system: Significance, group technology, structure, relative advantages, implementation, and applications

UNIT-II   (10-Lectures)

Process planning and concurrent engineering: process planning, CAPP, concurrent engineering, design for manufacturing, advanced manufacturing planning.

Selection of manufacturing sequence: Significance, alternative-manufacturing processes, reduction of total set-up cost for a particular sequence, quantitative methods for optimal section, examples

UNIT –III   (10-Lectures)
Determination of machining parameters: reasons for optimal selection of machining parameters, effect of parameters on production rate, cost and surface quality, different approaches, advantages of mathematical approach over conventional approach, solving optimization models of machining processes
Determination of manufacturing tolerances: design tolerances, manufacturing tolerances, methods of tolerance allocation, sequential approach**,** integration of design and manufacturing tolerances, advantages of integrated approach over sequential approach

UNIT –IV   (10-Lectures)
Generation of tool path: Simulation of machining processes, NC tool path generation, graphical implementation, determination of optimal index positions for executing fixed sequence, quantitative methods

UNIT –V   (10-Lectures)
Implementation techniques for CAPP: MIPLAN system, Computer programming languages for CAPP, criteria for selecting a CAPP system and benefits of CAPP, computer integrated planning systems, and capacity planning system

TEXT BOOKS:
1. Mikell P. Groover, "*Automation, Production systems and Computer Integrated Manufacturing*", 8th edition, PHI, New Delhi, 2010.
2. Dr.Sadhu Singh, "Computer Aided Design and manufacturing", Khanna publishers, 2000.

REFERENCES:
1. Change T C and Richard A Wysk, "*An Introduction to automated process planning systems*", Prentice Hall, 1985.
2. H.P. Wang and J.K. Li, "*Computer Aided Process Planning*", Elsevier Science and Technology Publishers, 1st edition, 1991.