Engineering Program

Specialization Production and Computer Aided Manufacturing Technology
Course Number ٠٢٠٢٠٢٢41
Course Title **Computer-Aided Manufacturing Workshop (CAM)**
Credit Hours (2)
Theoretical Hours (0)
Practical Hours (6)

Brief Course Description:

Operator monitor, dwell time, subroutine call, polygon programming, tool path correction, face turning, redrawing cycle, threading, industrial machine registry, peripheral instrument programming, PC design tutorial and NC programming, creating 2D geometry, tool path contour, chamfer, roughing and finishing passes, rotating geometry and tool path, creating drill tool paths, working in 3D geometry, facing and pocketing, creating multi-axes tool path, machining solids.

Course Objectives:

At the end of this course student will be able to:

1. Execute CNC programs with subroutine
2. Execute CNC programs with full cycle
3. Execute CNC programs with surface finishing
4. Convert 3D designs to CAM in (a CAM program such as: MasterCam software)
5. Execute 3D design
6. Install CNC programs with Pc interface
7. Test and correcting CNC programs
8. Operate CNC machines

Detailed Course Description:

Number	Title	Content	Time
	Introduction to production and manufacturing systems		
	Metal removal	Metal removal processes Metal removal machine tools Machining parameters Basic relationships and calculations	
	NC and CNC machine tools		
	Structure, types and specifications		
	Control resolution, accuracy and repeatability of positioning systems		
	Process planning		
	Instruction coding	ISO coding system	
	Working in 3D geometry	Facing and pocketing Creating multi-axes tool path Machining solids	
	CNC Lathe machine	Transfer CAM program from PC to machine, make necessary correction, testing programs and operate the machine	
	CNC Machining Center	Transfer CAM program from PC to machine, make necessary correction, testing programs and operate the machine	
	CNC wire cutting machine	Transfer CAM program from PC to machine, make necessary	

		correction, testing programs and operate the machine	
	Mastercam	3D designs, converting designs to CAM, transferring CAM programs to the machine.	

Evaluation Strategies:

Evaluation		**Percentage**	**Date**
Exams	Midterm	20%	
	Final Exam	50%	
Projects and Assignments and reports		30%	

Teaching Methodology:

- Lecturing
- Technical videos watching
- Workshop practicing

Text Books & References:

Text Books:

- Provided workshop manual and related supplemental sheets
- CNCCAD/CAM manuals

References:

- Groover, Fundamentals of Modern Manufacturing, 4th Ed
- CNC 800T programming manual
- MTC software CNC turning
- EMCO technics, programming instr. Emcotronic T2
- Metalwork Technology and practice, Victor E. Repp, USA
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