

<p>Kingdom of Saudi Arabia Ministry of Higher Education <b>Qassim University</b> College of Engineering</p>		<p>المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة</p>
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## *Selected Topics in Engineering Manufacturing Processes*

**College: College of Engineering (Qassim University)**

**Department: Mechanical Engineering Department**

**First: Course Definition**

**1- Course Code: ME 630**

**2- Units: 3 credit hrs**

**3 – Semester : 4<sup>th</sup>**

**4 -Prerequisite : ME 631, ME651**

**5- Co-requisite: Nil**

**6- Location (if not on main Campus):**

**Second: Course Objectives**

- To enable the students to start searching advanced topics in Advanced Manufacturing Processes
- Work on advancement of Advanced manufacturing Processes
- Using state of the art techniques and methodologies, search appropriate topic for further research

**Third: Course Specifications**

<b>1- Topics to be covered</b>		
Subject	No of Weeks	Units
Role of manufacturing processes	1	3
Advancement in Manufacturing Processes	1	3
Techniques in Rapid Prototyping	2	6
Reading and Interpreting STL files	1	3
Modeling in Solid modeling	2	6

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Preform in Forging process	1	3
Porosity issues and way to reduce in Casting	1	3
Plprocess advancements astic extrusion	1	3
Ultrasonic and waterjet machining benefits	1	3
Life cycle analysis of Polymers	1	3
Advanced Manufacturing Systems	1	3
Economics of Advanced Manufacturing Processes	1	3
Research Methodology in Manufacturing	1	3
Final Exam		

## 2- Course components (Total hrs in the Semester)

Lecture	Exercise or lab	Other
45	---	---

## 3- Intended Learning Outcomes of the Course (ILO's)

### **a. Knowledge**

#### *i) Description of the knowledge to be acquired:*

Learning of latest techniques in processes  
Understanding state of the art in the manufacturing process and systems  
Understanding and learning how to bridge gap between manufacturing processes and systems

#### *ii) Teaching strategies to be used to develop that knowledge*

- Lectures
- Class discussions
- Reading assignments and research (internet or books)

#### *iii) Methods of assessment of knowledge acquired*

- Home assignments
- Quizzes
- Exams

### **b- Cognitive (Intellectual) Skills**

#### *i) Cognitive skills to be developed*

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- Discuss the usefulness and research of advanced manufacturing processes to be used for real life problems
- Usefulness of various advanced tools that aid in manufacturing processes.
- Combining material/failure theory/strength/ etc in order to design a capstone project at advanced levels.

*ii) Teaching strategies to be used to develop these cognitive skills*

- Lectures
- Case studies
  - Class discussions
  - Reading and research assignments

*iii) Methods of assessment of student's cognitive skills*

- Home assignments
- Quizzes
- Exams
- Projects

***c. Interpersonal Skills and Responsibility***

*i) Description of the interpersonal skills and capacity to carry responsibility to be developed*

- Sharing of ideas with colleagues
- Searching latest topics in the field of Advanced Manufacturing Processes

*ii) Teaching strategies to be used to develop these skills*

- Class work and discussions
- Team projects
  - Home assignments

*iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility*

- Peer-peer assessments in various projects
- Home assignments with specified and enforced deadlines

***d. Communication, Information Technology and Numerical Skills***

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<p><b>i) Description of the skills to be developed in this domain</b></p> <ul style="list-style-type: none"> <li>- Using internet in effective way to search related topics</li> <li>- Scopus databases be introduced at this stage too</li> </ul> <p><b>ii) Teaching strategies to be used to develop these skills</b></p> <p>Class discussion</p> <ul style="list-style-type: none"> <li>- Home assignments</li> <li>- Project assignments</li> </ul> <p><b>iii) Methods of assessment of students numerical and communication skills</b></p> <p>Project reports with time defined presentations</p>
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***e. Psychomotor (if applicable) & Other Non-cognitive Skills***

<p><b>i) Description of the psychomotor or other skills to be developed and the level of performance required</b></p> <p>Nil</p>
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<p><b>ii) Teaching strategies to be used to develop these skills-</b></p> <p>Nil</p>
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<p><b>iii) Methods of assessment of student's psychomotor skills</b></p> <p>Nil</p>
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**4- Student Assessment Schedule**

Assessment	Assessment task (test, group project, examination etc.)	Weight of
1	Mini Project	8 %
2	General Performance/ Attendance	2 %
3	Mid Term Exam1	15 %
5	Take Home exams1 (Difficult Research Issues)	7.5 %
6	Take Home exams2 (Difficult Research Issues)	7.5%
6	Quizzes+ Homework	10 %
7	Final Exam	50 %

**5- Student Support**

<p>Office hours: 4hrs a week</p>
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**6- Learning Resources**

***i) Essential Books (References)***  
**Materials and Process in manufacturing ninth edition E Paul DeGarmo Wily 2003sons**

M. P. Groover Automation, Production System and Computer Integrated Manufacturing Third Edition, Pearson Education 2008

***ii) Course Notes***  
**NIL**

***iii) Recommended Books***  
**KUNWOO LEE Principles of CAD/CAM/CAE Systems Prentice Hall, NJ 1999-**

***iv) Electronic Books & Web Sites:***  
 Course website (Course material, recommended articles, homework, project details, announcements etc)

***v) Periodicals***  
**International Journal of Advanced Manufacturing Technology**

**7- Course Evaluation and Improvement Processes**

***i) Strategies for Obtaining Student Feedback on Effectiveness of Teaching***

***ii) Other Strategies for Evaluation of Teaching by the Instructor or by the Department***

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***iii) Processes for Improvement of Teaching***

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**feedbacks**  
Updating the course with latest IT developments so that pupils gain maximum of it

*iv) Processes for verifying standards of student achievement (e.g. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution)*  
-Marking of student work/result with course coordinator/chairman  
-Analyze and compare the performance with rest of courses

*v) Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.*

- The course evaluations completed by the instructor are reviewed every semester by a subject committee. Summarized and put up to the Department Council Meeting.
- Further analysis and discussion; the suggestions for modification of the course are brought to the college council.
- Approval from the college council; the suggestions can be incorporated in the course