COURSE SPECIFICATIONS

University: Benha University
Faculty: High Institute of Technology

Course specifications

Course Description

- General requirements of machine tools and performance monograms – Standardization of spindle speeds and feet rates – Layout of speed change gears (application for design of machine tools gear boxes) – Design of constructional elements (Frames, Sideways, Spindles and bearings, Cutting, Feed and Control drives) - Hydraulic drives – Vibrations in machine tools.

Programs take this course through their curricula

- Degree of Engineering and Technology in Mechanical Engineering (Production and Power)

Departments offering these programs are:

- Mechanical Engineering

Academic year / Level

- Fifth year

Date of specification approval

- 2008 G.

<table>
<thead>
<tr>
<th>M474 Machine Tool Design (3, 2, - , 4)</th>
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<tbody>
<tr>
<td>General requirements of machine tools and performance nomograms – Standardisation of spindle speeds and feet rates – Layout of speed change gears (application for design of machine tools gear boxes) – Design of constructional elements (Frames, Sideways, Spindles and bearings, Cutting, Feed and Control drives) - Hydraulic drives – Vibrations in machine tools.</td>
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A- Basic Information
Title: Machine Tool Design  Code: M 474
Credit Hours: 3  Lecture: 2
Tutorial: -  Practical: 4  Total: 6

B- Professional Information
1 - Overall aims of course
• Use computing techniques for integrated manufacturing system
• Manipulate manufacturing with computers
• Learn principles of computer controlling of machining
• Learn programming ladder techniques
• Learn Robotic industrial applications

2- Intended learning outcomes of course (ILOs)
• Using computers for controlling manufacturing
• Use programming to manipulate signal processes
• Learn computer applications for controlling processes

a. Knowledge and understanding:
   a.1 Know the professional use of computer interfacing in workshop
   a.2 Familiarization with computer controlled processes
   a.3 Know ladder programming techniques

b. Intellectual skills
   b.1 Using computers for controlling industrial applications.
   b.2 Composing interfacing with machines and make suitable programs to accomplish it.
   b.3 Use simulation systems to making sure of the correctness of the programmed interfacing.

c- Professional and practical skills
   c.1 Making simple and efficient connections for controlling purposes
   c.2 Making simple and efficient connections for monitoring purposes
c.3 Develop real experience working skills

d- General and transferable skills

d.1 Gain enough experience to decide on CIM systems
d.2 Familiarization with commercially used CIM systems
d.3 Develop stand alone programmed and pieces of codes for future use

3- Contents

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. of Hours</th>
<th>Lecture</th>
<th>Tutorial/Practical</th>
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<tbody>
<tr>
<td>General requirements of machine tools and performance monograms</td>
<td>2</td>
<td>1</td>
<td>6</td>
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<tr>
<td>Standardization of spindle speeds and feet rates</td>
<td>4</td>
<td>2</td>
<td>8</td>
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<tr>
<td>Layout of speed change gears (application for design of machine tools gear boxes)</td>
<td>6</td>
<td>3</td>
<td>18</td>
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<tr>
<td>Design of constructional elements (Frames, Sideways, Spindles and bearings, Cutting, Feed and Control drives)</td>
<td>4</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Hydraulic drives</td>
<td>4</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Vibrations in machine tools</td>
<td>4</td>
<td>2</td>
<td>12</td>
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4- Teaching and learning methods

4.1 Direct instruction
4.2 Supervised tutoring
4.3 Computers laboratory
4.4 Project advising
4.5 Project and report

5- Student assessment methods

5.1 Class work grading to assess knowledge and intellectual skills
5.2 Quizzes to assess understanding and professional skills
5.3 MidTerm to assess intellectual and transferable skills
5.4 Project Report to assess intellectual and transferable skills
5.5 Final Exam to assess intellectual and transferable skills

Assessment schedule

Assessment 1 CW every week
Assessment 2 Quizzes twice or thee time
Assessment 3 Mid Term end of the term
Assessment 4 Final Exam end of the term

Weighting of assessments

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Mid-term examination</td>
<td>20 %</td>
</tr>
<tr>
<td>Final-term examination</td>
<td>60 %</td>
</tr>
<tr>
<td>Semester work</td>
<td>10 %</td>
</tr>
<tr>
<td>Report</td>
<td>10 %</td>
</tr>
<tr>
<td>Total</td>
<td>100 %</td>
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6- List of references


6.2- Essential books (text books)
- Lecture Notes

6.3- Recommended books
- Same books

6.4- Periodicals, Web sites, … etc
- [http://engg.kau.edu.sa/~el-assal](http://engg.kau.edu.sa/~el-assal)

7- Facilities required for teaching and learning

Possible E-Learning

Course coordinator: Prof. Dr. Ahmed El-Assal
Head of Department:
Date: 30 / 6/2009