Course Specifications

University: Benha University
Faculty: High Institute of Technology

Course specifications
Programme(s) on which the course is given: B.Sc. in Mechanical Engineering
Major or minor element of programmes: N.A.
Department offering the programme: Mechanical Engineering Technology (production)
Department offering the course: Mechanical Engineering Technology (production)
Academic year / Level: 3rd, second semester
Date of specification approval:

A- Basic Information
Title: Industrial Management
Code: M 312
Credit Hours: Lecture: 2
Tutorial: 2
Practical: Total: 4

B- Professional Information
1 - Overall aims of course
By the end of the course the students will be able to:

- Understand the forecasting techniques dealing with qualitative and quantitative models.
- Define a problem and develop a suitable mathematical models describing actual problem.
- Solve mathematical models and validate it using a suitable method.
- Use available operations research software.
- Discuss the factor affecting on plant layout.
- Understand the concept of wage plans and different types of wage plans.
- Work in teams to formulate and solve real case studies.
2- Intended learning outcomes of course (ILOs)

a. Knowledge and understanding:
   a.1 – Understand the forecasting important, type of forecasting models and type of forecasting techniques.
   a.2 - Understand the how to measurement forecasting error.
   a.3 - Understand and define a problem.
   a.4 - Understand the mathematical models.
   a.5 - Be able to solve mathematical models.
   a.6 – Understand the meaning of optimization.
   a.7 - Know the type of plant layout.
   a.8 - Understand the concept of wage plans and different types of wage plans.

b. Intellectual skills
   b.1 – Assess the formulation of a real problem into a mathematical model.
   b.2 – Use the graphical and simplex methods to solve linear programming problem.
   b.3 – Deal with various types of constraints and variables in linear programming problems.
   b.4 – Use of transportation and assignment algorithms.
   b.5 – Use of network techniques and specially: PERT/CPM techniques.
   b.6 – Deal with various types of plant layout.
   b.7 – Use the different types of wage plans.

c- Professional and practical skills
   c.1 – Improve capability in using the forecasting methods.
   c.2 – Identify data and structure of realistic problems.
   c.3 – Select the appropriate OR model to deal with real case studies.
   c.4 – Adapt the real data to suit the OR model or vice versa.
   c.5 – Deal with computer programs for industrial management.

d- General and transferable skills
   d.1 – Search for real objective functions and constraints
   d.2 – Write technical reports and conduct presentation about a real case study.
   d.3 – practice working in a team.
3- Contents

<table>
<thead>
<tr>
<th>Topic</th>
<th>Total No. of Hours</th>
<th>Lecture</th>
<th>Tutorial Practical</th>
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<tbody>
<tr>
<td>Overview and definitions</td>
<td>2</td>
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<tr>
<td>Forecasting and time series analysis</td>
<td>4</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Introduction to linear programming (problem formulation)</td>
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<td>2</td>
<td>4</td>
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<tr>
<td>Solution of LP using graphical method</td>
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<tr>
<td>Solution of LP using simplex method</td>
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<td>8</td>
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<td>The transportation problem</td>
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<td>The assignment problem</td>
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<td>The PERT/CPM techniques</td>
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<td>4</td>
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<tr>
<td>Plant location and Plant layout</td>
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<td>2</td>
<td>2</td>
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<tr>
<td>Types of wage plans</td>
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<td>Total</td>
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4– Teaching and learning methods

   4.1- Class Lectures
   4.2-Internet Search
   4.3-Practical Case Study
   4.4-Software Application

5- Student assessment methods

   5.1-Written exams (mid-term & final) to assess understanding scientific knowledge.
   5.2-Making presentation to assess ability to do report and leadership in a project environment
   5.3-Assignments and quiz to assess ability to solve problems and analyze results independently.
   5.4-Case study to assess practical and working in team.

Assessment schedule

   Assessment 1…………………… Week 2.
   Quiz ............................ week 3
   Assessment 2…………………. Week 5
   Mid term exam………………… Week 7
Assessment 3................ Week 9
Quiz........................ Week 10
Case study.................. Week 11
Assessment 4.............. Week 12
Final exam.................. Week 15

Weighting of assessments

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<tr>
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<tr>
<td>Final-term examination</td>
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<tr>
<td>Case study</td>
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<tr>
<td>Semester work</td>
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<td>Total</td>
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6- List of references

6.1- Course notes

6.2- Essential books (text books)

6.3- Recommended books

6.4- Periodicals, Web sites, … etc
www.ie.org

7- Facilities required for teaching and learning
- Appropriate teaching class accommodations including presentation board and data show.
- Computer Lab for software use

Course coordinator:

Head of Department:

Date: / /