Module Title: 4B6 Manufacturing Systems and Project Management

Code: ME4B06

Level: Senior Sophister (Optional module)

Credits: 5

Lecturer(s): Associate Prof. Kevin O’Kelly (okellyk@tcd.ie)

Module Organisation
This module runs for the 12 weeks of semester one (except during study/assignment week) and comprises three lectures per week plus one one-hour tutorial per week. Total contact time is 44 hours.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Start Week</th>
<th>End Week</th>
<th>Associated Practical Hours</th>
<th>Lectures</th>
<th>Tutorials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>12</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Contact Hours: 44

Module Description, Aims and Contribution to the Programme
This module provides a general introduction to operations management of manufacturing systems. It will explore strategies for operating and optimising the production of products in different varieties and volumes with limited resources and in competitive environments. The impacts of design decisions on manufacturing performance and the physical organisation of plants are explored through various DFM and plant layout strategies.

Formal project management methods will be introduced reflecting the growing use of continuous improvement through project management.

Learning Outcomes
On completion of this module, the student will be able to:

Learning outcome for Operations Management
1. describe manufacturing planning and control strategies (e.g. MRP, MRP II, JIT);
2. construct a materials requirement plan from a bill of materials and master schedule using finite and infinite capacity;
3. assess the influence of costs on a plan;
4. link DFM and layout strategies with production planning and control;
5. identify the key differences between product and process layouts;
6. identify and quantify key metrics for creating manufacturing cells;
**Learning outcomes for Project Management**

7. define objectives and deliverables in a project environment;
8. understand the role of project management in contemporary business practice;
9. write a project proposal including preliminary budgets and project controls;
10. apply planning methods including resource, time and cost planning;
11. understand quantitative tools for risk assessment
12. use graphical methods for presenting project schedules and plans;
13. utilize contemporary techniques and technology for project management;
14. apply module material to a project using MS Project software.

**Module Syllabus**

- Materials requirements planning;
- Just in time manufacturing;
- Capacity planning;
- Production activity control and the master production schedule;
- Purchasing;
- Introduction to costing;
- Management by project;
- Project life cycle;
- Elements of project management – phase structure;
- Project assessment;
- Project planning;
- Project control;
- Completion and handover;
- Applied project management: factory layouts;
- Process based layouts;
- Product based layouts;
- Case study.

**Teaching Strategies**

The module encompasses a diverse range of teaching and learning strategies. This is The module is taught using a combination of lectures, assignments, and tutorials. The bulk of the module material (notes, tutorials) are provided as handouts. There is a group based tutorial project developing skills in computer-based Project Management.

**Recommended Text(s)**

- *Production and Operations Management*, Heizer and Render, 3rd or later edition, Allyn and Bacon, 2002

**Assessment**

This module is assessed by a formal written two-hour examination (80% of final mark) together with practical work (20% of final mark).