Syllabus

Course description

<table>
<thead>
<tr>
<th>Course title</th>
<th>Project Economics and Management</th>
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<tbody>
<tr>
<td>Course code</td>
<td>47500</td>
</tr>
<tr>
<td>Scientific sector</td>
<td>ING-IND/17, ING-IND/35</td>
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<tr>
<td>Degree</td>
<td>Master</td>
</tr>
<tr>
<td>Semester</td>
<td>1st</td>
</tr>
<tr>
<td>Year</td>
<td>1st</td>
</tr>
<tr>
<td>Academic Year</td>
<td>2018-2019</td>
</tr>
<tr>
<td>Credits</td>
<td>10 ECTS</td>
</tr>
<tr>
<td>Modular</td>
<td>Yes</td>
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Total lecturing hours
Module1: 32h lecture
Module2: 32h lecture

Total lab hours
Module1: 16h exercise
Module2: 16h exercise

Total exercise hours
Module1: 16h exercise
Module2: 16h exercise

Attendance
Recommended

Prerequisites
None

Course page

Specific educational objectives
The course is one of the basics of the scientific area of Industrial Engineering. The course gives a general overview of the main scientific contents. During the course, the presented theoretical topics will be integrated through targeted application-oriented exercises and through a real game-based business simulation. The learning objectives are to introduce engineering students in the fundamentals of project management. Specifically, it will deal with the subjects of project planning, project scheduling and project monitoring. In addition, students will be introduced to organizational projects. They will learn how project, programme, and portfolio management could help companies to gain competitive advantages and to manage organisational changes.

Module 1
Project Management

Lecturer
Dr. Patrick Dallasega
patrick.dallasega@unibz.it

Scientific sector of the lecturer
ING-IND/17

Teaching language
English

Office hours
See on timetable

Teaching assistant (If any)
-
<table>
<thead>
<tr>
<th>Office hours</th>
<th>-</th>
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</table>
| **List of topics covered** | 1. Introduction to Project Management  
2. Project planning  
   a) The Work Breakdown Structure (WBS)  
   b) The Organizational Breakdown Structure (OBS)  
   c) The Cost Breakdown Structure (CBS)  
   d) Budget calculation  
3. Project scheduling methods  
   a) Network diagram techniques (AOA, AON)  
   b) The Critical Path Method (CPM)  
   c) The Program Evaluation Review Technique (PERT)  
   d) Project crashing (Cost Change per Time Unit)  
   e) Resource allocation  
4. Project progress measurement and forecast  
   a) Progress measurement  
   b) The Earned Value Analysis (EVA)  
   c) The Earned Value Performance Measurement (EVPM)  
   d) Performance indexes  
5. Construction Project Management  
   a) Lean Management – Lean Construction  
   b) The Last Planner System  
   c) The Location Based Management System  
   d) Industry 4.0 – Construction 4.0  
6. Project Risk Management  
   a) Methodologies for project risk identification  
   b) Methodologies for project risk evaluation  
7. Exercises  
   a) Exercises on AOA, AON  
   b) Exercises on CPM, PERT  
   c) Exercises on EVA  
   d) Exercises using Microsoft Project  
   e) Last Planner Simulation game  
   f) Excursion  

| Teaching format | Frontal lectures by means of Power Point presentations or on the blackboard, exercises and case studies, computer laboratory, excursions. |

<table>
<thead>
<tr>
<th>Module 2</th>
<th>Project Economics</th>
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<tbody>
<tr>
<td>Lecturer</td>
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<td><strong>Scientific sector of the lecturer</strong></td>
<td>ING-IND/35</td>
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<td><strong>Teaching language</strong></td>
<td>English</td>
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<tr>
<td><strong>Office hours</strong></td>
<td>See on timetable</td>
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<tr>
<td><strong>Teaching assistant (if any)</strong></td>
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| **List of topics covered**  
(Module 2 ING-IND/35) | 1. Project Management Skills & Challenges for People & Organization Development in the modern SMEs. The organizational context of project, programme and portfolio management (interfaces to other |
| Teaching format | Frontal lectures by means of Power Point presentations or on the blackboard, exercises and case studies. |

2. (Multi)Project-Management & Portfolio Management Techniques
   a) PPPM-definition: Project, Programme and Portfolio Management
   b) PPP Processes
   c) Corporate Governance and PPP Governance

3. Project Types, Approaches and Rating Methods
   a) Project types and life cycle
   b) How to manage different project types

4. Project Financing and KPIs
   a) Project Management Metrics
   b) Performance scorecards
   c) Understanding and using performance metrics

5. Project Controlling & Reviews

6. Exercises on Programme Management and Portfolio
**Learning outcomes**

### Intended Learning Outcomes (ILO)

**Knowledge and understanding**

1. The students know the basic and most common methodologies of Project Management (Planning, Scheduling and Monitoring) and the main used tools.
2. The students are able to understand the issues relating to the development, implementation and management of production and logistics systems;

**Applying knowledge and understanding**

3. Students will be able to apply theoretical concepts of planning, organizing and managing projects.
4. By means of exercises performed in the computer laboratory the student will be able to use software tools like Microsoft Project which is one of the most used tools of local companies.

**Making judgements**

5. The students are able to interpret Key Performance Indicators of project economics and management to understand if projects are over, under or on budget and time.

**Communication skills**

6. Ability to structure and prepare a presentation describing project management concepts with business language.

**Ability to learn**

7. Ability to autonomously extend the knowledge acquired during the study course in different industrial contexts.

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Form</th>
<th>Length / duration</th>
<th>ILOs assessed</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Written exam</td>
<td>2 x 1,5 hours</td>
<td>1,2,3,5</td>
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<tr>
<td></td>
<td>Presentation case study</td>
<td>15 minutes per student group</td>
<td>4,5,6,7</td>
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**Assessment language**

English

**Evaluation criteria and**

Project Management – Module 1:
### criteria for awarding marks

The final grade is calculated from the results of the written exam. The theoretical part counts 60% and the exercise part counts 40% of the final grade.

**Final grade:**
The final grade results from the average of Module 1 and Module 2.

### Required readings

Lecture notes and documents for exercise will be available on the reserve collections

A selection of the material presented in class and useful material will be available in the course reserve collection database

### Supplementary readings

- "Project Management for Construction" by Hendrickson http://www.ce.cmu.edu/pmbook/
- Pmi lexicon pm terms PMI.org
- Project Management – Competency Development Framework
- http://www.ipma-usa.org/ IPMA ICB 4.0 WEB