

COURSE SYLLABUS

Module 1: Foundations of Engineering Management, 15 credits

Module 1: Foundations of Engineering Management, 15 högskolepoäng

Course Code:	JM1R24	Education Cycle:	Second-cycle level
Confirmed by:	Council for Undergraduate and Masters Education May 2, 2023	Disciplinary domain:	Social sciences (75%) and natural sciences (25%)
Revised by:	Council for Undergraduate and Masters Education Apr 22, 2024	Subject group:	FE1
Valid From:	Aug 19, 2024	Specialised in:	A1N
Version:	2	Main field of study:	General Management

Intended Learning Outcomes (ILO)

Upon completing the course the student shall be able to:

Knowledge and understanding

1. Describe different organizational structures and elaborate their implications for individuals, teams, and managerial challenges.
2. Explain what is meant by organizational behavior and organizational culture and elaborate their role for decision-making and change in an engineering context.
3. Account for calculation theory and fundamental management accounting concepts in an engineering setting.
4. Account for current development trends in the area of strategic management accounting.
5. Explain basic concepts and processes of marketing management and supply chain management in an engineering context.
6. Describe how data is collected and used by businesses, including to explain and discuss different types of data (e.g., big data), and ethical concerns related to the data.
7. Explain and discuss the fundamental tasks in data management, e.g., exploring, describing and visualizing the data.
8. Explain and discuss the fundamental tasks in data analytics, including regressions (e.g., ordinary least squares, binary, and panel models), predictions, and causal interference (e.g., quasi-experiments).

Skills and abilities

9. Apply organizational theory to discuss the benefits and challenges in project-based organizations.
10. Apply different methods for short and long-term calculation and assess the suitability of the method applied.
11. Identify the need for different assessment data based on the choice of calculation method and assess the suitability for different engineering management situations along the value chain.

12. Apply calculation theory to analyze issues and propose solutions on live cases.
13. Apply academic terminology to analyze marketing and supply chain problems and provide relevant solutions.
14. Use a software tool for all parts of a data analysis project, i.e., data management, modeling and data reporting.
15. Identify relevant data sources and data mining techniques for given business problems.
16. Take an active part in group work.
17. Apply relevant reference literature (including scientific publications) to analyse, evaluate and synthesise business phenomena and problems.
18. Orally and in writing explain and discuss both one's own analysis and those of others.

Judgement and approach

19. Critically discuss the scientific, social, ethical, and personal responsibility aspects of managerial work in relation to the various parts of engineering management.
20. Use a scientific approach in analyzing and discussing managerial challenges and solutions.
21. Reflect on ethical consequences of big data and data analytics.

Contents

This course represents the **first module** of the Engineering Management Master programme. It is designed to familiarize students with key components of business administration, to enable their managerial roles and positions in the future. For this purpose, the course comprises the following four parts:

Organization theory – focuses on providing students understanding of organizational theory, including to recognize specific challenges and opportunities in project-based organizations, and the characteristics of organizational behavior and its implications for managing organizations.

Strategic management accounting – provides theoretical and practical knowledge in management accounting in an engineering business setting. The aim is to equip the students with theoretical and practical knowledge in accounting and finance in an engineering business setting. The course is designed to give students an overall picture of the calculative practices relevant on the managerial level. The course also provides an introduction to using a spreadsheet program for doing financial calculations and demonstrates how to build up a financial model for a company.

Marketing & supply chain for managers – focuses on providing students a foundation including the basic concepts and processes of marketing management and applying a systemic and global supply chain perspective on engineering business.

Business analytics – including methods for informed and data-driven decision making in business, using big data and artificial intelligence and reflecting on ethical consequences of using such data.

To facilitate integrated learning and increased understanding for the interrelatedness of the core functions in business administration, the module can close with a business simulation game.

Connection to research and practice

In this course, students are required to apply research-based literature but also acquire skills that are important for conducting managerial decision and take leading roles in development work.

Type of instruction

The course includes various teacher-led sessions (e.g. lectures, labs, and seminars), self-studies, peer-to-peer group work, and interaction with society.

The teaching is conducted in English.

Prerequisites

Bachelor's degree (i.e the equivalent of 180 credits at an accredited university) with at least 90 credits in engineering (or the equivalent).

Examination and grades

The course is graded A, B, C, D, E, FX or F.

The intended learning outcomes are mainly assessed as follows:

Organization theory- Individual written paper (ILOs: 1, 2, 9, 17, 18, 19, and 20) representing 3 credits

Strategic management accounting – Individual written exam (ILOs: 3, 4, 10, 11, 12, 16, 17, 18, 19, and 20) representing 3 credits

Strategic management accounting – Group project (ILOs: 16, 17, 18, 19) representing 3 credits

Marketing & supply chain for managers – Individual written exam (ILOs: 5, 13, and 19) representing 3 credits

Business analytics for managers – Individual paper (ILOs: 6, 7, 8, 14, 15, 17, 18, and 21) representing 1 credit

Business analytics for managers – Individual written exam (ILOs: 6, 7, 8) representing 2 credits

All parts of compulsory examination in the course must be passed with a passing grade before a final grade can be set. The final grade of the course is determined by the weighted grade of the examinations, set in accordance with JIBS grading policy.

Registration of examination:

Name of the Test	Value	Grading
Organization theory – Individual written paper	3 credits	A/B/C/D/E/FX/F
Strategic management accounting – Individual written exam	3 credits	A/B/C/D/E/FX/F

Strategic management accounting – Group project	3 credits	A/B/C/D/E/FX/F
Marketing & supply chain for managers – Individual written exam	3 credits	A/B/C/D/E/FX/F
Business analytics for managers – Individual paper	1 credit	A/B/C/D/E/FX/F
Business analytics for managers – Individual written exam	2 credits	A/B/C/D/E/FX/F

Course evaluation

It is the responsibility of the examiner to ensure that each course is evaluated. At the outset of the course, the programme evaluators in the course must be contacted. In the middle of the course, the examiner should meet the programme evaluators to identify strengths/weaknesses in the first half of the course.

At the end of the course, the examiner should remind students to fill in the survey. The examiner should also call a meeting with the programme evaluators to debrief the course, based on course evaluation data and comments. The next time the course runs, students should be informed of any measures taken to improve the course based on the previous course evaluations.

At the end of each study period, JIBS' Director of Quality and Accreditation crafts a "Course Evaluation Quarter Report", presenting the quantitative results from course evaluation surveys. The Associate Dean of Education, The Associate Deans of Faculty, Programme Directors, and JSA President and Quality receive the report.

Other information

Academic integrity

JIBS students are expected to maintain a strong academic integrity. This implies to behave within the boundaries of academic rules and expectations relating to all types of teaching and examination.

Copying someone else's work is a particularly serious offence and can lead to disciplinary action. When you copy someone else's work, you are plagiarizing. You must not copy sections of work (such as paragraphs, diagrams, tables and words) from any other person, including another student or any other author. Cutting and pasting is a clear example of plagiarism. There is a workshop and online resources to assist you in not plagiarizing called the Interactive Anti-Plagiarism Guide.

Other forms of breaking academic integrity include (but are not limited to) adding your name to a project you did not work on (or allowing someone to add their name), cheating on an examination, helping other students to cheat and submitting other students work as your own, and using non-allowed electronic equipment during

Course literature

A reading list associated with the specific issues will be available at the start of the course.

Daft, R., Willmott, H. & Murphy, J. (2020). *Organization Theory and Design*. Cengage Learning.