

MODULE HANDBOOK

Master of Engineering

Master Engineering Management (FS-OI-MAEM-60)

60 ECTS

Distance Learning or myStudies

Classification: Consecutive

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2021-10-01

1. Semester

Internet of Things

Module Code: DLMBMMIIT1

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
1. Semester	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Sebastian Lempert (Internet of Things)

Contributing Courses to Module

- Internet of Things (DLMBMMIIT01)

Module Exam Type

Module Exam

Study Format: Distance Learning
Exam, 90 Minutes

Study Format: myStudies
Exam, 90 Minutes

Split Exam

Weight of Module

see curriculum

Module Contents

- Consumer use cases and risks
- Business use cases and risks
- Social-economic issues
- Enabling technologies and networking fundamentals

Learning Outcomes**Internet of Things**

On successful completion, students will be able to

- distinguish and discuss a broad range of use cases for the internet of things (IoT).
- understand and reflect upon the different perspectives on IoT.
- apply distinct techniques to engineer internet-of-things products.
- evaluate and identify appropriate IoT communication technology and standards according to given IoT product requirements.
- reflect on the respective theoretical foundation, evaluate different approaches, and apply appropriate approaches to practical questions and cases.

Links to other Modules within the Study Program

This module is similar to other modules in the field of Computer Science & Software Development

Links to other Study Programs of the University

All Master Programs in the IT & Technology field

Internet of Things

Course Code: DLMBMMIT01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		5	none

Course Description

The internet of things (IoT), once a rough vision, has become reality today in a broad manner. There is a plethora of devices and services available to both consumers and businesses. From smart homes to smart cities, from smart devices to smart factories – internet-of-things technologies impact on our lives and environments. This course follows a top-down approach, discussing a broad set of aspects connected with the internet of things. It starts with use cases and risks from the perspectives of customers and businesses and winds up with a technical foundation of the internet of things. To address the engineering perspective, a set of techniques is proposed.

Course Outcomes

On successful completion, students will be able to

- distinguish and discuss a broad range of use cases for the internet of things (IoT).
- understand and reflect upon the different perspectives on IoT.
- apply distinct techniques to engineer internet-of-things products.
- evaluate and identify appropriate IoT communication technology and standards according to given IoT product requirements.
- reflect on the respective theoretical foundation, evaluate different approaches, and apply appropriate approaches to practical questions and cases.

Contents

1. Introduction into the Internet of Things
 - 1.1 Foundations and Motivations
 - 1.2 Potential and Challenges
2. Social and Business Relevance
 - 2.1 Innovations for Consumers and Industry
 - 2.2 Impact on Human and Work Environment
 - 2.3 Privacy and Security

3. Architectures of Internet of Things and Industrial Internet of Things
 - 3.1 Elements of IoTs and IIoTs
 - 3.2 Sensors and Nodes
 - 3.3 Power Systems
 - 3.4 Fog Processors
 - 3.5 Platforms
4. Communication Standards and Technologies
 - 4.1 Network Topologies
 - 4.2 Network Protocols
 - 4.3 Communication Technologies
5. Data Storage and Processing
 - 5.1 NoSQL and MapReduce
 - 5.2 Linked Data and RDF(S)
 - 5.3 Semantic Reasoning
 - 5.4 Complex Event Processing
 - 5.5 Machine Learning
 - 5.6 Overview of Existing Data Storage and Processing Platforms
6. Fields of Application
 - 6.1 Smart Home/Living
 - 6.2 Smart Buildings
 - 6.3 Ambient Assisted Living
 - 6.4 Smart Energy/Grid
 - 6.5 Smart Factory
 - 6.6 Smart Logistics
 - 6.7 Smart Healthcare
 - 6.8 Smart Agriculture

Literature**Compulsory Reading****Further Reading**

- Lea, P. (2018). Internet of things for architects: Architecting IoT solutions by implementing sensors, communication infrastructure, edge computing, analytics, and security. Birmingham: Packt Publishing Ltd. (Database: Dawson).
- McEwen, A., & Cassimally, H. (2013). Designing the internet of things. Chichester: John Wiley & Sons. (Database: ProQuest).
- Raj, P., & Raman, A. C. (2017). The Internet of Things: Enabling technologies, platforms, and use cases. Boca Raton, FL: Auerbach Publications. (Database: ProQuest).
- Weber, R. H., & Weber, R. (2010). Internet of Things. Heidelberg: Springer. (Database: Dawson).

Study Format Distance Learning

Study Format Distance Learning	Course Type Online Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

Study Format myStudies

Study Format myStudies	Course Type Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

DLMBMMIT01

Manufacturing Methods Industry 4.0

Module Code: DLMBMMIT2

Module Type see curriculum	Admission Requirements none	Study Level MA	CP 5	Student Workload 150 h
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Semester / Term 1. Semester	Duration Minimaldauer: 1 Semester	Regularly offered in WiSe/SoSe	Language of Instruction and Examination English
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Module Coordinator

Prof. Dr. Leonardo Riccardi (Manufacturing Methods Industry 4.0)

Contributing Courses to Module

- Manufacturing Methods Industry 4.0 (DLMBMMIT02)

Module Exam Type

Module Exam

Study Format: myStudies
Exam, 90 Minutes

Study Format: Distance Learning
Exam, 90 Minutes

Split Exam

Weight of Module

see curriculum

Module Contents

- Forming
- Cutting
- Rapid prototyping
- Rapid tooling
- Direct manufacturing

Learning Outcomes**Manufacturing Methods Industry 4.0**

On successful completion, students will be able to

- evaluate different manufacturing methods against given product and process requirements.
- define and design modern additive techniques in contrast to traditional manufacturing.
- assess and estimate the impact of current trends on manufacturing like cyber-physical systems to given manufacturing challenges and practical problems.
- apply modern processes like rapid prototyping, rapid tooling, and direct manufacturing.

Links to other Modules within the Study Program

This module is similar to other modules in the field of Computer Science & Software Development

Links to other Study Programs of the University

All Master Programs in the IT & Technology field

Manufacturing Methods Industry 4.0

Course Code: DLMBMMIIT02

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		5	none

Course Description

The aim of the course is to enable students to evaluate and identify appropriate manufacturing methods in the context of Industry 4.0. For that purpose, the course provides a comprehensive introduction of such processes based on traditional, standardized manufacturing techniques that have influenced and are still influencing production processes through technological developments under the generic term Industry 4.0. These include technological advances in additive manufacturing processes that enable applications such as rapid prototyping, rapid tooling, and direct manufacturing. Finally, the course deals with the consequences of the digitization and networking of production facilities and their elements in terms of a cyber-physical system.

Course Outcomes

On successful completion, students will be able to

- evaluate different manufacturing methods against given product and process requirements.
- define and design modern additive techniques in contrast to traditional manufacturing.
- assess and estimate the impact of current trends on manufacturing like cyber-physical systems to given manufacturing challenges and practical problems.
- apply modern processes like rapid prototyping, rapid tooling, and direct manufacturing.

Contents

1. Introduction to Manufacturing Methods
 - 1.1 Basic Concepts
 - 1.2 Historical Development of Manufacturing
 - 1.3 About the Long Tail
2. Manufacturing Methods
 - 2.1 Casting and Molding
 - 2.2 Shaping
 - 2.3 Machining
 - 2.4 Joining
 - 2.5 Coating

3. Additive Manufacturing and 3D printing
 - 3.1 Basics and Legal Aspects
 - 3.2 Material Extrusion
 - 3.3 Vat Polymerization
 - 3.4 Powder Bed Fusion
 - 3.5 Material Jetting
 - 3.6 Binder Jetting
 - 3.7 Direct Energy Deposition
 - 3.8 Sheet Lamination
4. Rapid Prototyping
 - 4.1 Definitions
 - 4.2 Strategical and Operative Aspects
 - 4.3 Application Scenarios
5. Rapid Tooling
 - 5.1 Definitions
 - 5.2 Direct and Indirect Methods
 - 5.3 Application Scenarios
6. Direct/Rapid Manufacturing
 - 6.1 Potentials and Requirements
 - 6.2 Implementation Examples
7. Cyber-Physical Production Systems
 - 7.1 Introduction
 - 7.2 Cyber-Physical Production Systems
 - 7.3 Impact on Design and Maintenance of Plants
 - 7.4 Dynamic Reconfiguration of Plants
 - 7.5 Application Examples

Literature**Compulsory Reading****Further Reading**

- Anderson, C. (2012). Makers. The new industrial revolution. New York, NY: Crown Business.
- Gebhardt, A. (2012). Understanding additive manufacturing. Rapid prototyping – Rapid tooling – Rapid manufacturing. Munich: Hanser.
- Groover, Mikell P. (2012). Fundamentals of modern manufacturing: Materials, processes, and systems. Hoboken, NJ: John Wiley & Sons Inc.

Study Format myStudies

Study Format myStudies	Course Type Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

Study Format Distance Learning

Study Format Distance Learning	Course Type Online Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

DLMBMMIT02

Leadership

Module Code: DLMBLSE

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	None	MBA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
1. Semester	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Georg Berkel (Leadership)

Contributing Courses to Module

- Leadership (DLMBLSE01)

Module Exam Type

Module Exam

Study Format: myStudies
Exam, 90 Minutes

Study Format: Distance Learning
Exam, 90 Minutes

Split Exam

Weight of Module

see curriculum

Module Contents

- Foundations of professional leadership
- Leadership and motivation in the corporation
- Leadership and corporate culture
- Leadership and change management

Learning Outcomes

Leadership

On successful completion, students will be able to

- recognize underlying beliefs and attitudes towards leadership and compare the influence of various theories of leadership on the identification and development of leaders.
- recognize the impact of cultural environments on leadership, and understand the challenges and opportunities of cross-cultural management.
- outline the influence of social roles on leaders and employees, and assess the influence of roles types on the interactions between leaders and those they are leading.
- ,as a leader, support employees by drawing on empirical evidence to effectively meet the expectations of employees.
- recognize the roles and conflicting interests inherent to leadership positions and develop strategies to address locomotion and cohesion.
- discriminate between effective and non-effective methods for managing staff and organizational activities, and apply those techniques and tools in practice to maximize the satisfaction and effectiveness of staff.
- perform the various responsibilities delegated to a leader such as communicate with employees, lead planning activities, delegate tasks, and plan and lead controlling activities.
- create a plan to support employees through the process of change within an organization.
- assess personal leadership style using a variety of measures and evaluate leadership activities relative to transactional and transformational leadership styles.

Links to other Modules within the Study Program

This module is similar to other modules in the field of Business Administration & Management.

Links to other Study Programs of the University

All Master Programmes in the Business & Management field.

Leadership

Course Code: DLMBLSE01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MBA	English		5	None

Course Description

In today's knowledge-based society, employees are a firm's most valuable resource. A key responsibility of leadership is to develop the knowledge, expertise, and skills of employees. Good leadership is crucial for the continued success of a firm in the face of increasingly competitive markets. This course presents the necessary competencies of the leader in a modern, knowledge-based organization. Central questions raised by modern leadership theory are presented and discussed. In doing so, the course focuses on requirements and instruments of professional leadership, aspects of situational leadership, and leadership communication and interactions, both in the context of strategic management and change processes. The methodological and conceptual foundations of leadership are presented to students, along with empirical examples and best-practice principles, with the intent for students to master the challenges of enhancing the firm's most valuable asset—its employees—via professional and contemporary leadership practices.

Course Outcomes

On successful completion, students will be able to

- recognize underlying beliefs and attitudes towards leadership and compare the influence of various theories of leadership on the identification and development of leaders.
- recognize the impact of cultural environments on leadership, and understand the challenges and opportunities of cross-cultural management.
- outline the influence of social roles on leaders and employees, and assess the influence of roles types on the interactions between leaders and those they are leading.
- ,as a leader, support employees by drawing on empirical evidence to effectively meet the expectations of employees.
- recognize the roles and conflicting interests inherent to leadership positions and develop strategies to address locomotion and cohesion.
- discriminate between effective and non-effective methods for managing staff and organizational activities, and apply those techniques and tools in practice to maximize the satisfaction and effectiveness of staff.
- perform the various responsibilities delegated to a leader such as communicate with employees, lead planning activities, delegate tasks, and plan and lead controlling activities.
- create a plan to support employees through the process of change within an organization.
- assess personal leadership style using a variety of measures and evaluate leadership activities relative to transactional and transformational leadership styles.

Contents

1. An Overview of Leadership
 - 1.1 Leadership and Personality: Trait Theories
 - 1.2 Leadership as a Skill: Attribute and Behavior Theories
 - 1.3 Positive Reinforcement: Behavioral Theories
 - 1.4 Leadership Dependent on the Situation: Situational Approaches
 - 1.5 Situational and Contingency Theories
 - 1.6 Theory of Functional Leadership Behavior
 - 1.7 Integrated Psychological Theory
 - 1.8 Transactional and Transformative Leadership
 - 1.9 Leadership as an Emotionally Charged Process
 - 1.10 Neo-Emergent Theory
2. Leadership as a Social Role
 - 2.1 Roles and Groups
 - 2.2 Role Types
 - 2.3 Formal Conditions for Social Roles – Corporate Context Determining Roles in Organizations
 - 2.4 The Individual and The Group – Conforming and Deviating Behavior
 - 2.5 The Problems of Formalized Role Understanding and Self-Concept
3. Leadership from the Employee’s Perspective
 - 3.1 General Expectations for Managers
 - 3.2 Truthfulness and Authenticity
 - 3.3 Handling Conflicts Competently
 - 3.4 Conflicts in Groups
 - 3.5 Conflict Resolution Pattern According to Matzat
 - 3.6 Enthusiasm
 - 3.7 Ability to Cope with Pressure
 - 3.8 Assertiveness
 - 3.9 Empathy
 - 3.10 Expertise

4. Leadership from the Manager's Perspective
 - 4.1 Self-Concept as a Manager
 - 4.2 Locomotion and Cohesion
 - 4.3 Individual Problems and Learning Dimensions of Management Behavior
 - 4.4 The Concept of Human Nature and Its Influence on Management Behavior: Theories from Maslow, McGregor, and Herzberg
 - 4.5 Ambiguity Tolerance
5. Management Tools
 - 5.1 Management Tools - Definition
 - 5.2 Organizational Management Tools
 - 5.3 Personnel Management Tools
6. Managerial Functions
 - 6.1 Responsibilities of a Manager
 - 6.2 Communication
 - 6.3 Foundations of Interpersonal Communication
 - 6.4 Planning
 - 6.5 Setting Objectives
 - 6.6 Delegating
 - 6.7 Controlling
 - 6.8 Creating a Feedback Culture
7. Organizational Change
 - 7.1 Knowledge
 - 7.2 Cultural Value Change and Subjectification
 - 7.3 Globalization
 - 7.4 Technological Progress
 - 7.5 Change Management – Leadership in Times of Change
8. Successful Employee Management
 - 8.1 Measuring Leadership Style and Leadership Behavior
 - 8.2 Measuring Transactional and Transformational Leadership with the Multifactor Leadership Questionnaire (MLQ)
 - 8.3 Correlation of Leadership Behavior with Subjective and Objective Success Criteria
 - 8.4 Validation of Leadership Success Using Situational Factors
 - 8.5 Leadership Principles Guiding Leadership Behavior

Literature**Compulsory Reading****Further Reading**

- Gneezy, U., & Rustichini, A. (2000). Pay enough or don't pay at all. *The Quarterly Journal of Economics*, 115(3), 791–810. (Database: EBSCO).
- Goleman, D., Boyatzis, R., & McKee, A. (2004). *Primal leadership: Learning to lead with emotional intelligence*. Boston, MA: Harvard Business School Press.
- Hechter, M., & Opp, K.-D. (2001). *Social norms*. New York, NY: Russell Sage Foundation.
- Herzberg, F., Mausner, B., & Bloch Synderman, B. (1993). *The motivation to work*. New Brunswick: Transaction Publishers. (Database: EBSCO).
- Kouzes, J. M., & Posner, B. Z. (1999). *Encouraging the heart: A leader's guide to rewarding and recognizing others*. San Francisco, CA: Jossey-Bass. (Database: CIANDO).
- Maslow, A. (1954). *Motivation and personality*. New York, NY: Harper & Row.
- Norton, R. W. (1975). Measurement of ambiguity tolerance. *Journal of Personality Assessment*, 39(6), 607–619. (Database: EBSCO).
- Trilling, L. (1972). *Sincerity and authenticity*. Cambridge, MA: Harvard University Press. (Database: EBSCO).

Study Format myStudies

Study Format myStudies	Course Type Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input checked="" type="checkbox"/> Vodcast <input type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input checked="" type="checkbox"/> Live Tutorium/Course Feed <input checked="" type="checkbox"/> Slides

Study Format Distance Learning

Study Format Distance Learning	Course Type Online Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input checked="" type="checkbox"/> Vodcast <input type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input checked="" type="checkbox"/> Live Tutorium/Course Feed <input checked="" type="checkbox"/> Slides

Seminar: Current Issues in Engineering Management

Module Code: DLMEMCIEM

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
1. Semester	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Dominique-Pascal Groß (Seminar: Current Issues in Engineering Management)

Contributing Courses to Module

- Seminar: Current Issues in Engineering Management (DLMEMCIEM01)

Module Exam Type

Module Exam

Study Format: Distance Learning
Written Assessment: Research Essay
Study Format: myStudies
Written Assessment: Research Essay

Split Exam

Weight of Module

see curriculum

Module Contents

This module allows students to research an actual topic in the field of Engineering Management by applying the knowledge they gathered from other courses in the program. Following a structured research approach, students write a research paper on their own and present and discuss their results.

Learning Outcomes**Seminar: Current Issues in Engineering Management**

On successful completion, students will be able to

- research and assess scientific content and topics independently and acquire profound engineering management knowledge based on the research and interpretation of international, peer-reviewed journals and the basic engineering management literature.
- discover deepened and consolidated practice-relevant management engineering knowledge.
- interpret problem areas and trends to discuss them in a theoretical and practical context.
- examine current topics of engineering management to apply the knowledge the students gained from engineering management courses.
- develop analytical and critical skills and competencies to assess and develop contemporary strategic approaches.
- write a research paper on their present and discuss their results.
- critically scrutinize studies, new insights, and theoretical references independently and interpret them in terms of the objectives of their work.
- build readiness for the final thesis and master the fundamentals of scientific work for the preparation of a research paper.

Links to other Modules within the Study Program

This module is similar to other modules in the field of Engineering

Links to other Study Programs of the University

All Master Programs in the IT & Technology field

Seminar: Current Issues in Engineering Management

Course Code: DLMEMCIEM01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		5	none

Course Description

This course is designed to give students the opportunity to research an actual topic in the field of Engineering Management in order to apply the knowledge they gathered from concomitant courses. Students have to write a research paper on their own and present and discuss their results. Besides, students can deepen their knowledge in their field of research and broaden it by discussing papers of their fellow students.

Course Outcomes

On successful completion, students will be able to

- research and assess scientific content and topics independently and acquire profound engineering management knowledge based on the research and interpretation of international, peer-reviewed journals and the basic engineering management literature.
- discover deepened and consolidated practice-relevant management engineering knowledge.
- interpret problem areas and trends to discuss them in a theoretical and practical context.
- examine current topics of engineering management to apply the knowledge the students gained from engineering management courses.
- develop analytical and critical skills and competencies to assess and develop contemporary strategic approaches.
- write a research paper on their present and discuss their results.
- critically scrutinize studies, new insights, and theoretical references independently and interpret them in terms of the objectives of their work.
- build readiness for the final thesis and master the fundamentals of scientific work for the preparation of a research paper.

Contents

- This course allows students to research an actual topic in the field of Engineering Management by applying the knowledge they gathered from other courses in the program. Students have to write a research paper on their own and present and discuss their results. Besides, students can deepen their knowledge in their field of research and broaden it through discussing papers of their fellow students. The topics are interpreted and analyzed by the students within the framework of the underlying scientific questions and condensed into scientific statements that compose a written research paper. Regardless of the respective question, the research paper always contains an introduction, the development and discussion of the thematically relevant literature and scientific theory, the methods,

results, and discussion. The topics for the research paper refer to several areas of engineering management, for example, project management, project organization, and structures, controlling of engineering, integrated management, operations management, management of technology, project planning for (new) product development, and product engineering, systems engineering, innovation management, change management, and people management issues. The current topic catalog is developed by the tutor and shared with the students to form the basis of the content of the module.

Literature

Compulsory Reading

Further Reading

- Siegel, N. G. (2019): Engineering Project Management, John Wiley & Sons, New Jersey.
- Kerzner, H. (2017): Project Management. A Systems Approach to Planning, Scheduling, and Controlling, 12th edition, John Wiley & Sons, New Jersey.
- Mantel, S. J., et.al. (2011): Project Management in Practice, 4th edition, John Wiley & Sons, New Jersey.
- Eisner, H. (2008): Essentials of Project and Systems Engineering, John Wiley & Sons, New Jersey.
- Blanchard, B. S. (2004): System engineering Management, John Wiley & Sons, New Jersey.
- Bennett, F. L. (1996): The Management of Engineering. Human, Quality, Organizational, Legal, and Ethical Aspects Professional Practice, John Wiley & Sons, New York.

Study Format Distance Learning

Study Format Distance Learning	Course Type Seminar
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Information about the examination	
Examination Admission Requirements	BOLK: no Course Evaluation: no
Type of Exam	Written Assessment: Research Essay

Student Workload					
Self Study 120 h	Contact Hours 0 h	Tutorial 30 h	Self Test 0 h	Independent Study 0 h	Hours Total 150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input type="checkbox"/> Shortcast <input type="checkbox"/> Audio <input type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input checked="" type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input checked="" type="checkbox"/> Slides

Study Format myStudies

Study Format myStudies	Course Type Seminar
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Information about the examination	
Examination Admission Requirements	BOLK: no Course Evaluation: no
Type of Exam	Written Assessment: Research Essay

Student Workload					
Self Study 120 h	Contact Hours 0 h	Tutorial 30 h	Self Test 0 h	Independent Study 0 h	Hours Total 150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input type="checkbox"/> Shortcast <input type="checkbox"/> Audio <input type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input checked="" type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input checked="" type="checkbox"/> Slides

International Marketing

Module Code: DLMMARE

Module Type see curriculum	Admission Requirements None	Study Level MA	CP 5	Student Workload 150 h
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Semester / Term 1. Semester	Duration Minimum 1 semester	Regularly offered in WiSe/SoSe	Language of Instruction and Examination English
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Module Coordinator

Prof. Dr. Josephine Zhou-Brock (International Marketing)

Contributing Courses to Module

- International Marketing (DLMMARE01)

Module Exam Type

Module Exam

Study Format: Distance Learning
Exam, 90 Minutes

Study Format: myStudies
Exam, 90 Minutes

Split Exam

Weight of Module

see curriculum

Module Contents

- Introduction to international marketing
- The international context of corporations
- International marketing strategies
- Features of the marketing-mix specific to the international context
- Trends in international marketing

Learning Outcomes**International Marketing**

On successful completion, students will be able to

- transfer well-known marketing management concepts to an international context, recognize limitations of their transferability, and continually develop these concepts.
- perform a structural analysis of the context surrounding specific internationalizing decisions, recognize the various contexts in these scenarios, and formulate alternative decisions.
- assess different strategic and political marketing alternatives in specific scenarios using relevant criteria and develop a decision template for developing marketing plans.
- combine actual issues from industry with the most recent scientific insights into successful marketing approaches in order to develop the skills and knowledge required to manage international marketing in a corporate setting.

Links to other Modules within the Study Program

This module is similar to other modules in the field of Marketing & Sales.

Links to other Study Programs of the University

All Master Programmes in the Marketing & Communication field.

International Marketing

Course Code: DLMMARE01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		5	None

Course Description

The most important task of international marketing is recognizing which international markets and business-related dependencies should be targeted for the marketing of products and services. The course begins with defining key terms and concepts associated with the field of marketing management and then extrapolates these to the international context. The first section of the course equips students with an understanding of how to perform a structured analysis of international markets, using elements of the “PEST Analysis” (political, legal, economical, socio-cultural, and technological frameworks). Strategical aspects of marketing as well as instruments used to analyze the marketing mix are discussed as they relate to the international context. Inadequate consideration of marketing orientation as well as underestimating the impact of cultural differences both present serious threats to the success of any corporation. This course shall therefore analyze and discuss contemporary case studies involving multinational corporations to elucidate these potential threats. Industry-based case studies also offer students the opportunity to put into practice the knowledge and tools acquired in this course to address some of the specific challenges of international marketing.

Course Outcomes

On successful completion, students will be able to

- transfer well-known marketing management concepts to an international context, recognize limitations of their transferability, and continually develop these concepts.
- perform a structural analysis of the context surrounding specific internationalizing decisions, recognize the various contexts in these scenarios, and formulate alternative decisions.
- assess different strategic and political marketing alternatives in specific scenarios using relevant criteria and develop a decision template for developing marketing plans.
- combine actual issues from industry with the most recent scientific insights into successful marketing approaches in order to develop the skills and knowledge required to manage international marketing in a corporate setting.

Contents

1. Introduction to International Marketing
 - 1.1 Issues Related to International Marketing
 - 1.2 Environmental Factors in International Market Development
 - 1.3 Features of Buying Behavior in International Marketing

2. International Marketing Strategies
 - 2.1 Marketing Segmentation and Market Selection
 - 2.2 Market Entry Strategy
 - 2.3 Market Exit Strategy
3. International Market Research
 - 3.1 Qualitative and Quantitative Primary Research
 - 3.2 International Survey and Observations
4. International Marketing for Specific Sectors
 - 4.1 Industrial Goods Sector
 - 4.2 Consumer Goods Sector
 - 4.3 Wholesale and Retail Sector
 - 4.4 Service Sector
5. International Products
 - 5.1 Product Policy
 - 5.2 Product Mix and Degree of Standardization
 - 5.3 Brand Policy
6. International Pricing and Terms and Sales Policies
 - 6.1 Pricing on International Markets
 - 6.2 Types of Price Discrimination
 - 6.3 Credit and Discount Policy
7. International Promotion
 - 7.1 International Promotion
 - 7.2 International Promotion Mix
 - 7.3 Optimal Standardization
8. International Distribution
 - 8.1 Distribution Channels, Intermediaries, and Distribution Schemes
 - 8.2 Organizational Forms for International Market Development
 - 8.3 Potential for Standardization
9. International Marketing Mix
 - 9.1 Home Country Orientation
 - 9.2 Global Orientation
 - 9.3 Multinational Orientation

Literature**Compulsory Reading****Further Reading**

- Bradley, F. (2004). International marketing strategy (5th ed.). Toronto: Pearson Education.

Study Format Distance Learning

Study Format Distance Learning	Course Type Online Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input checked="" type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

Study Format myStudies

Study Format myStudies	Course Type Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input checked="" type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

DLMMARE01

Product Development

Module Code: DLMBPDDT1

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
1. Semester	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Dorian Mora (Product Development)

Contributing Courses to Module

- Product Development (DLMBPDDT01)

Module Exam Type

Module Exam

Study Format: myStudies
Exam, 90 Minutes

Study Format: Distance Learning
Exam, 90 Minutes

Split Exam

Weight of Module

see curriculum

Module Contents

- Production planning techniques
- Design tasks
- Product development approaches
- Digital product development and organizational aspects

Learning Outcomes**Product Development**

On successful completion, students will be able to

- know the basic definitions and principles of (new) product development.
- understand the key skills in product development.
- discuss, differentiate, and select appropriate product development approaches with respect to a given scenario.
- work with digital product development tools and techniques like CAD, PDM and PLM at a basic level.
- develop own solutions and approaches to academic and practical questions.
- discuss, evaluate, and adapt different digital product development techniques and tools.

Links to other Modules within the Study Program

This module is similar to other modules in the field of Design

Links to other Study Programs of the University

All Master Programs in the Design, Architecture & Construction field

Product Development

Course Code: DLMBPDDT01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		5	none

Course Description

This course aims to provide basic work and problem-solving methods for the successful development of products. It introduces the definition of key design tasks and various alternative product development approaches such as flow-based, lean product development, and design thinking. Finally, the students will become familiar with the use of computer-aided design (CAD) tools and how they integrate into modern product development approaches.

Course Outcomes

On successful completion, students will be able to

- know the basic definitions and principles of (new) product development.
- understand the key skills in product development.
- discuss, differentiate, and select appropriate product development approaches with respect to a given scenario.
- work with digital product development tools and techniques like CAD, PDM and PLM at a basic level.
- develop own solutions and approaches to academic and practical questions.
- discuss, evaluate, and adapt different digital product development techniques and tools.

Contents

1. Introduction
 - 1.1 Basic Definitions
 - 1.2 The Product Development Process
 - 1.3 Indicators and Metrics
 - 1.4 Product Development Models
 - 1.5 Current Trends in Product Development
2. The Product Development Process
 - 2.1 Planning
 - 2.2 Concept Development
 - 2.3 Design
 - 2.4 Testing and Refinement
 - 2.5 Production and Ramp-up

3. Product Development Approaches
 - 3.1 Lean Product Development
 - 3.2 Design Thinking
 - 3.3 Human-Centered Design
 - 3.4 User Experience Strategy
 - 3.5 Open Innovation
4. Digital Tools
 - 4.1 Computer-Aided Design
 - 4.2 Computer-Aided Quality
 - 4.3 Product Data Management
 - 4.4 Product Lifecycle Management
5. Organizational Perspective
 - 5.1 Incremental, Platform, and Breakthrough Development
 - 5.2 Building Teams
 - 5.3 Political Issues in Organizations
 - 5.4 Distributed New Product Development

Literature

Compulsory Reading

Further Reading

- Kahn, K. B., Kay, S. E., Slotegraaf, R. J., & Uban, S. (Eds.). (2012). *The PDMA handbook of new product development* (3rd ed.). Hoboken, NJ: John Wiley & Sons. (Database: ProQuest).
- Ottosson, S. (2018). *Developing and managing innovation in a fast changing and complex world: Benefiting from dynamic principles*. Cham: Springer. (Database: ProQuest).
- Ulrich, K. T., & Eppinger, S. D. (2016). *Product design and development* (6th ed.). New York, NY: McGraw Hill.

Study Format myStudies

Study Format myStudies	Course Type Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input checked="" type="checkbox"/> Vodcast <input type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

Study Format Distance Learning

Study Format Distance Learning	Course Type Online Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input checked="" type="checkbox"/> Vodcast <input type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

2. Semester

Performance Management

Module Code: DLMBPM

Module Type see curriculum	Admission Requirements None	Study Level MBA	CP 5	Student Workload 150 h
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Semester / Term 2. Semester	Duration Minimum 1 semester	Regularly offered in WiSe/SoSe	Language of Instruction and Examination English
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Module Coordinator

Dr. Tobias Broweleit (Performance Management)

Contributing Courses to Module

- Performance Management (DLMBPM01)

Module Exam Type

Module Exam

Study Format: Distance Learning
Exam, 90 Minutes

Study Format: myStudies
Exam, 90 Minutes

Split Exam

Weight of Module

see curriculum

Module Contents

- Performance measurement concepts
- Measuring financial performance
- Drivers of financial and operational performance

Learning Outcomes

Performance Management

On successful completion, students will be able to

- Describe the history of performance measurement theory and its influence of present-day understanding of performance measurement.
- Report on a business's financial performance using accounting calculations (such as return on equity, return on assets, return on investment, earnings per share, gross profit margin, etc.) and market-based calculations (such as price-to-earnings ratio, net present value, internal rate of return, etc.).
- Explain the economic value added (EVA) model and calculate this metric using data from the company.
- Identify, define, and track drivers of operational performance, specifically quality, dependability, speed, cost, and flexibility.
- Derive performance metrics, such as customer satisfaction or sales forecast-to-plan performance, and link these with overall performance targets to create a performance measurement system.
- Conduct a customer profitability analysis using activity-based costing and calculate customer lifetime value using company data.
- Summarize strategies for benchmarking and measuring intellectual capital.
- Measuring organizational performance using the following tools: Balanced Scorecard, the EFQM Excellence Model, the Performance Prism and the SMART Pyramid approach.
- Evaluate the strengths and weaknesses of different performance measurement metrics and frameworks.

Links to other Modules within the Study Program

This module is similar to other modules in the field of Business Administration & Management.

Links to other Study Programs of the University

All Master Programmes in the Business & Management field.

Performance Management

Course Code: DLMBPM01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MBA	English		5	None

Course Description

After specifying a company's strategic goals, managers face the challenge to implement these strategies. Performance measurement and performance management support the implementation of strategy by using performance measures to address financial and non-financial/operational aspects. Consequently, students get to know the function of performance measurement and performance management as part of the overall management functions. Furthermore, they will acquire an understanding of various performance aspects (e.g. financial drivers measured by the economic value added, customer drivers measured and managed by customer lifetime value, process drivers measured and managed in the context of continuous improvement programs). Understanding financial performance measurement concepts is especially crucial before students go on to identify operational drivers.

Course Outcomes

On successful completion, students will be able to

- Describe the history of performance measurement theory and its influence of present-day understanding of performance measurement.
- Report on a business's financial performance using accounting calculations (such as return on equity, return on assets, return on investment, earnings per share, gross profit margin, etc.) and market-based calculations (such as price-to-earnings ratio, net present value, internal rate of return, etc.).
- Explain the economic value added (EVA) model and calculate this metric using data from the company.
- Identify, define, and track drivers of operational performance, specifically quality, dependability, speed, cost, and flexibility.
- Derive performance metrics, such as customer satisfaction or sales forecast-to-plan performance, and link these with overall performance targets to create a performance measurement system.
- Conduct a customer profitability analysis using activity-based costing and calculate customer lifetime value using company data.
- Summarize strategies for benchmarking and measuring intellectual capital.
- Measuring organizational performance using the following tools: Balanced Scorecard, the EFQM Excellence Model, the Performance Prism and the SMART Pyramid approach.
- Evaluate the strengths and weaknesses of different performance measurement metrics and frameworks.

Contents

1. Performance Measurement as Part of the Overall Management Framework
 - 1.1 Theories Before 1950
 - 1.2 Theories After 1950
2. Measuring Financial Performance
 - 2.1 Reviewing Traditional Models of Financial Performance Measurement
 - 2.2 The Economic Value Added (EVA) Metric
3. Drivers of Operational Performance
 - 3.1 The Five Operations Performance Objectives
 - 3.2 Analysis of Performance Drivers
4. Customer Profitability Analysis, Lifetime Value, and Benchmarking
 - 4.1 Profitability Analysis
 - 4.2 Customer Lifetime Value
 - 4.3 Benchmarking
5. Intellectual Capital Measurement and Management
 - 5.1 Importance and Challenges of Intellectual Capital Measurement
 - 5.2 Approaches of Managing and Measuring Intellectual Capital
6. Performance Measurement Concepts
 - 6.1 Objectives of Performance Measurement Systems
 - 6.2 The Balanced Scorecard
 - 6.3 Performance Prism and SMART Pyramid
 - 6.4 European Foundation for Quality Management (EFQM)
7. Common Characteristics of Different Concepts
 - 7.1 Common Characteristics of Different Concepts
 - 7.2 Pitfalls in Performance Measurement and Management

Literature**Compulsory Reading****Further Reading**

- Neely, A. (2007). Business performance measurement: Theory and practice (2nd ed.). Cambridge: Cambridge University Press.
- Simons, R. (2000). Performance measurement and control systems for implementing strategy: Text and cases (International ed.). Upper Saddle River, NJ: Prentice Hall.

Study Format Distance Learning

Study Format Distance Learning	Course Type Online Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input checked="" type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

Study Format myStudies

Study Format myStudies	Course Type Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input checked="" type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

DLMBPM01

Quality Management and Sustainability

Module Code: DLMEMQMS

Module Type see curriculum	Admission Requirements none	Study Level MA	CP 5	Student Workload 150 h
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Semester / Term 2. Semester	Duration Minimum 1 semester	Regularly offered in WiSe/SoSe	Language of Instruction and Examination English
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Module Coordinator

Prof. Dr. René Schmidpeter (Quality Management and Sustainability)

Contributing Courses to Module

- Quality Management and Sustainability (DLMEMQMS01)

Module Exam Type

Module Exam

Study Format: Distance Learning
Exam, 90 Minutes

Study Format: myStudies
Exam, 90 Minutes

Split Exam

Weight of Module

see curriculum

Module Contents

- Introduction to quality management
- Processes and problem solving
- Quality techniques
- Standards, auditing, and certification
- Total Quality Management (TQM)
- Introduction to sustainability in engineering
- Sustainability in the business context
- Incorporating sustainability in project management

Learning Outcomes**Quality Management and Sustainability**

On successful completion, students will be able to

- analyze the purpose and objectives of operational quality management (QM).
- demonstrate the core task of management and recognize the effectiveness and efficiency of QM systems in the execution of business processes.
- choose and apply the basic concepts of quality and process management.
- model the structure of the QM system and its components.
- appraise the structure of standardization series of standards including the process of requirements for auditing and certification of QM systems.
- relate sustainability to other success factors in engineering and justify its practice.
- distinguish the peculiarities of sustainability in engineering management by interpreting relevant positives and challenges.
- assess the triple bottom line and/or other frameworks for sustainability to design innovative business models.
- combine sustainability norms and practices into engineering project management generating added value for all stakeholders.

Links to other Modules within the Study Program

This module is similar to other modules in the field of Quality and Sustainability Management

Links to other Study Programs of the University

All Master Programs in the Transport & Logistics field

Quality Management and Sustainability

Course Code: DLMEMQMS01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		5	none

Course Description

The lecture starts with basic concepts of quality, quality management (QM), quality management system, and customer satisfaction. Afterwards the course deals with the most important operational processes and the quality characteristics of products and services. Quality techniques are the subject of the third section. Requirements for a QM system according to standardization procedures are explained and the procedure for certification and auditing is explained. Other QM models, e.g., the EFQ or TQM, are discussed. The second part of the lecture is dedicated to sustainability for primarily engineering companies followed by noteworthy examples from the domain. A further focus exists on the triple bottom line approach, its obligations, and opportunities. Finally, a detailed analysis of how to incorporate sustainability in engineering project management considering its impact and challenges while factoring in project management practices and standards.

Course Outcomes

On successful completion, students will be able to

- analyze the purpose and objectives of operational quality management (QM).
- demonstrate the core task of management and recognize the effectiveness and efficiency of QM systems in the execution of business processes.
- choose and apply the basic concepts of quality and process management.
- model the structure of the QM system and its components.
- appraise the structure of standardization series of standards including the process of requirements for auditing and certification of QM systems.
- relate sustainability to other success factors in engineering and justify its practice.
- distinguish the peculiarities of sustainability in engineering management by interpreting relevant positives and challenges.
- assess the triple bottom line and/or other frameworks for sustainability to design innovative business models.
- combine sustainability norms and practices into engineering project management generating added value for all stakeholders.

Contents

1. Introduction to quality management
 - 1.1 Classification and meaning
 - 1.2 Managing quality
 - 1.3 Definition and characteristics of quality
 - 1.4 Requirements
 - 1.5 Customer satisfaction
2. Processes and problem solving
 - 2.1 Processes and process management
 - 2.2 Process measurement
 - 2.3 Problem-solving techniques
3. Quality techniques
 - 3.1 Elementary quality tools (error collection list, flow chart, histogram, Pareto chart, correlation analysis, cause-and-effect diagram, quality control chart)
 - 3.2 Management tools (affinity diagram, relations diagram, tree diagram, matrix diagram, portfolio diagram, problem decision plan)
 - 3.3 Other quality techniques (FMEA, QFD, and House of Quality, Design of Experiments, Poka Yoke)
4. Standards, auditing, and certification
 - 4.1 Standardized quality management systems
 - 4.2 Auditing and certification
5. Total Quality Management (TQM)
 - 5.1 TQM as a management approach
 - 5.2 Principles of TQM
 - 5.3 TQM in engineering
6. Introduction to sustainability in engineering
 - 6.1 Defining sustainability in engineering
 - 6.2 Examples of sustainability in engineering
7. Sustainability in the business context
 - 7.1 The triple bottom line
 - 7.2 Obligations and opportunities

8. Incorporating sustainability in project management
 - 8.1 The impact of sustainability in project management
 - 8.2 The challenges
 - 8.3 The practices and standards of project management

Literature

Compulsory Reading

Further Reading

- Brzozowska, A., Pabian, A., & Pabian, B. (2021). Sustainability in project management: A functional approach. CRC Press.
- Foster, S. T. (2017). Managing quality: Integrating the supply chain (Global ed.). Pearson Education Limited.
- Luthra, S., Garg, D., Aggarwal, A., & Mangla, S. K. (2021). Total quality management (TQM): Principles, methods, and applications. CRC Press.

Study Format Distance Learning

Study Format Distance Learning	Course Type Online Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

Study Format myStudies

Study Format myStudies	Course Type Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

DLMEMQMS01

Strategic Management

Module Code: DLMBSME

Module Type see curriculum	Admission Requirements None	Study Level MBA	CP 5	Student Workload 150 h
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Semester / Term 2. Semester	Duration Minimum 1 semester	Regularly offered in WiSe/SoSe	Language of Instruction and Examination English
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Module Coordinator

Prof. Dr. Josephine Zhou-Brock (Strategic Management)

Contributing Courses to Module

- Strategic Management (DLMBSME01)

Module Exam Type

Module Exam

Study Format: myStudies
Exam, 90 Minutes

Study Format: Distance Learning
Exam, 90 Minutes

Split Exam

Weight of Module

see curriculum

Module Contents

- Foundations and concepts of strategic management
- Strategic planning process
- International challenges of strategic management

Learning Outcomes**Strategic Management**

On successful completion, students will be able to

- understand the entire process of strategic planning from the organizational planning, the implementation to the evaluation and controlling.
- apply appropriate analysis tools in order to methodically address specific business decisions in the international business environment, taking intercultural aspects into account.
- analyze the capabilities of various organizations, that operate in different fields, from a functional and resource perspective by evaluating its strengths and weaknesses.
- develop a better understanding of the wider business environment by analyzing the opportunities and threats facing their organization.
- evaluate strategies by employing appropriate controlling tools.

Links to other Modules within the Study Program

This module is similar to other modules in the field of Business Administration & Management.

Links to other Study Programs of the University

All Master Programmes in the Business & Management field.

Strategic Management

Course Code: DLMBSME01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MBA	English		5	None

Course Description

Various methods of strategic market analysis are presented in this course so as to allow students to evaluate risks and opportunities in global markets, highlighting intercultural aspects, by looking at organizations operating in different countries. Students learn to analyze and understand strengths and weaknesses of organizations from various disciplines (products, services, NGOs etc.) that face specific market situations. Supported by new developments in the field of market research, the process for identifying and analyzing core competencies and competitive advantages in national and international environments is discussed at length. Students are supported to plan strategic alternatives and to implement and control these by taking on fictitious roles within various different organizations. Exercises and international case studies help students to identify with the role of management and participate in the strategic planning process as well as in operational management. This helps students understand the problems companies regularly face and comprehend how methods of modern management can be used in order to solve these.

Course Outcomes

On successful completion, students will be able to

- understand the entire process of strategic planning from the organizational planning, the implementation to the evaluation and controlling.
- apply appropriate analysis tools in order to methodically address specific business decisions in the international business environment, taking intercultural aspects into account.
- analyze the capabilities of various organizations, that operate in different fields, from a functional and resource perspective by evaluating its strengths and weaknesses.
- develop a better understanding of the wider business environment by analyzing the opportunities and threats facing their organization.
- evaluate strategies by employing appropriate controlling tools.

Contents

1. What is Strategy?
 - 1.1 What is a Corporate Strategy?
 - 1.2 What Has to be Taken into Consideration when Making Strategic Decisions?
 - 1.3 Who Takes Part in Developing a Strategy?
 - 1.4 What is Included in a Solid Strategic Plan?

2. The Strategic Environment
 - 2.1 Where Are We in the Market Place? The Macro Environment
 - 2.2 Where Are We in the Market Place? The Micro Environment
 - 2.3 Analysis, Strategic Capabilities, and the Five Forces Model
3. The Position in the Market
 - 3.1 Why Do We Exist?
 - 3.2 What is Our Position in the Market?
 - 3.3 What Information Does the Company Need?
 - 3.4 What Capabilities Does the Company Have?
 - 3.5 What Capabilities Do Others Have?
4. What Strategic Options Are Available to the Strategic Business Unit (SBU)?
 - 4.1 What Strategic Options Does the SBU Have?
 - 4.2 Interactive Strategies
 - 4.3 Product Life Cycle
5. What Strategic Options Are Available to the Corporation?
 - 5.1 Areas to Consider When Formulating a Strategy
 - 5.2 Strategic Options
 - 5.3 Outsourcing
 - 5.4 Product Portfolio Analysis Using the BCG Matrix
 - 5.5 Product Portfolio Analysis Using the GE-McKinsey Matrix
6. What International Strategies Are Available?
 - 6.1 Why Do Companies Go International?
 - 6.2 What Factors Contribute to the Decision About Which Country to Invest In?
 - 6.3 How Can a Company Invest Internationally?
7. Do-It-Yourself, Buy, or Ally?
 - 7.1 Do-It-Yourself
 - 7.2 Mergers and Acquisitions (M&As)
 - 7.3 Strategic Alliances
 - 7.4 How to Decide Whether to Buy, Alley, or Do-It-Yourself?
8. How to Evaluate Strategies?
 - 8.1 How to Evaluate Strategy?
 - 8.2 Implementing Strategy

Literature**Compulsory Reading****Further Reading**

- Hooley, G. J., Piercy, N., Nicoulaud, B., & Rudd, J. M. (2017). *Marketing strategy and competitive positioning* (6th ed.). Harlow: Pearson Education.
- Johnson, G., Whittington, R., Scholes, K., Angwin, D., & Regnér, P. (2017). *Exploring strategy: Text and cases* (10th ed.). Harlow: Pearson Education.
- Kotler, P. T., & Keller, K. L. (2015). *Marketing management* (15th ed.). Harlow: Pearson.
- Porter, M. (2004). *Competitive strategy: Techniques for analyzing industries and competitors*. New York, NY: Free Press.
- Porter, M. (2008). *On competition* (2nd ed.). Boston: Harvard Business Review Press.

Study Format myStudies

Study Format myStudies	Course Type Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input checked="" type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

Study Format Distance Learning

Study Format Distance Learning	Course Type Online Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes Course Evaluation: no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input checked="" type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

DLMBSME01

Master Thesis

Module Code: DLMMTHES

Module Type see curriculum	Admission Requirements See current study and exam regulations (SPO)	Study Level MA	CP 15	Student Workload 450 h
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Semester / Term 2. Semester	Duration Minimum 1 semester	Regularly offered in WiSe/SoSe	Language of Instruction and Examination English
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Module Coordinator

Degree Program Advisor (SGL) (Master Thesis) / Degree Program Advisor (SGL) (Colloquium)

Contributing Courses to Module

- Master Thesis (DLMMTHES01)
- Colloquium (DLMMTHES02)

Module Exam Type

Module Exam

Split Exam

Master Thesis

- Study Format "Distance Learning": Written Assessment: Master Thesis (90)
- Study Format "myStudies": Written Assessment: Master Thesis (90)

Colloquium

- Study Format "myStudies": Presentation: Colloquium (10)
- Study Format "Distance Learning": Presentation: Colloquium (10)

Weight of Module

see curriculum

<p>Module Contents</p> <p>Master Thesis</p> <ul style="list-style-type: none"> ▪ Written Master Thesis <p>Colloquium</p> <ul style="list-style-type: none"> ▪ Thesis Defense 	
<p>Learning Outcomes</p> <p>Master Thesis</p> <p>On successful completion, students will be able to</p> <ul style="list-style-type: none"> ▪ work on a problem from their major field of study by applying the specialist and methodological skills they have acquired during their studies. ▪ analyse selected tasks with scientific methods, critically evaluate them and develop appropriate solutions under the guidance of an academic supervisor. ▪ record and analyse existing (research) literature appropriate to the topic of the Master's thesis. ▪ prepare a detailed written elaboration in compliance with scientific methods. <p>Colloquium</p> <p>On successful completion, students will be able to</p> <ul style="list-style-type: none"> ▪ present a problem from their field of study under consideration of academic presentation and communication techniques. ▪ reflect on the scientific and methodological approach chosen in the Master's thesis. ▪ actively answer subject-related questions from subject experts (experts of the Master's thesis). 	
<p>Links to other Modules within the Study Program</p> <p>All modules in the master program</p>	<p>Links to other Study Programs of the University</p> <p>All Master Programmes</p>

Master Thesis

Course Code: DLMMTHES01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		13.5	See current study and exam regulations (SPO)

Course Description

The aim and purpose of the Master's thesis is to successfully apply the subject-specific and methodological competencies acquired during the course of study in the form of an academic dissertation with a thematic reference to the major field of study. The content of the Master's thesis can be a practical-empirical or theoretical-scientific problem. Students should prove that they can independently analyse a selected problem with scientific methods, critically evaluate it and work out proposed solutions under the subject-methodological guidance of an academic supervisor. The topic to be chosen by the student from the respective field of study should not only prove the acquired scientific competences, but should also deepen and round off the academic knowledge of the student in order to optimally align his professional abilities and skills with the needs of the future field of activity.

Course Outcomes

On successful completion, students will be able to

- work on a problem from their major field of study by applying the specialist and methodological skills they have acquired during their studies.
- analyse selected tasks with scientific methods, critically evaluate them and develop appropriate solutions under the guidance of an academic supervisor.
- record and analyse existing (research) literature appropriate to the topic of the Master's thesis.
- prepare a detailed written elaboration in compliance with scientific methods.

Contents

- Within the framework of the Master's thesis, the problem as well as the scientific research goal must be clearly emphasized. The work must reflect the current state of knowledge of the topic to be examined by means of an appropriate literature analysis. The student must prove his ability to use the acquired knowledge theoretically and/or empirically in the form of an independent and problem-solution-oriented application.

Literature**Compulsory Reading****Further Reading**

- Bui, Y. N. (2013). *How to Write a Master's Thesis* (2nd ed.). SAGE Publications, Incorporated.
- Turabian, K. L. (2013). *A Manual for Writers of Research Papers, theses, and dissertations* (8th ed.). University of Chicago Press.
- Further subject specific literature

Study Format Distance Learning

Study Format Distance Learning	Course Type Thesis
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Information about the examination	
Examination Admission Requirements	BOLK: no Course Evaluation: no
Type of Exam	Written Assessment: Master Thesis

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
405 h	0 h	0 h	0 h	0 h	405 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input type="checkbox"/> Shortcast <input type="checkbox"/> Audio <input type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input checked="" type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input checked="" type="checkbox"/> Slides

Study Format myStudies

Study Format myStudies	Course Type Thesis
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Information about the examination	
Examination Admission Requirements	BOLK: no Course Evaluation: no
Type of Exam	Written Assessment: Master Thesis

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
405 h	0 h	0 h	0 h	0 h	405 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input type="checkbox"/> Shortcast <input type="checkbox"/> Audio <input type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input checked="" type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input checked="" type="checkbox"/> Slides

Colloquium

Course Code: DLMMTHES02

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		1.5	See current study and exam regulations (SPO)

Course Description

The colloquium will take place after submission of the Master's thesis. This is done at the invitation of the experts. During the colloquium, the students must prove that they have fully independently produced the content and results of the written work. The content of the colloquium is a presentation of the most important work contents and research results by the student, and the answering of questions by the experts.

Course Outcomes

On successful completion, students will be able to

- present a problem from their field of study under consideration of academic presentation and communication techniques.
- reflect on the scientific and methodological approach chosen in the Master's thesis.
- actively answer subject-related questions from subject experts (experts of the Master's thesis).

Contents

- The colloquium includes a presentation of the most important results of the Master's thesis, followed by the student answering the reviewers' technical questions.

Literature

Compulsory Reading

Further Reading

- Renz, K.-C. (2016): The 1 x 1 of the presentation. For school, study and work. 2nd edition, Springer Gabler, Wiesbaden.

Study Format myStudies

Study Format myStudies	Course Type Thesis Defense
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Information about the examination	
Examination Admission Requirements	BOLK: no Course Evaluation: no
Type of Exam	Presentation: Colloquium

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
45 h	0 h	0 h	0 h	0 h	45 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input type="checkbox"/> Shortcast <input type="checkbox"/> Audio <input type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input checked="" type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input checked="" type="checkbox"/> Slides

Study Format Distance Learning

Study Format Distance Learning	Course Type Thesis Defense
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Information about the examination	
Examination Admission Requirements	BOLK: no Course Evaluation: no
Type of Exam	Presentation: Colloquium

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
45 h	0 h	0 h	0 h	0 h	45 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input type="checkbox"/> Shortcast <input type="checkbox"/> Audio <input type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input checked="" type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input checked="" type="checkbox"/> Slides