Business Mathematics

Module Code: BWMA_E

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

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

Module Coordinator

Prof. Dr. Andreas Herrmann (Business Mathematics)

Contributing Courses to Module

- Business Mathematics (BWMA01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Basics of Analysis
- Functions
- Differential Calculus
- Multivariate Functions
- Sequences and Series
- Integral Calculus

Learning Outcomes

Business Mathematics

On successful completion, students will be able to

- identify basic economic mathematical tools and methods, recall them if necessary and apply them to other economic problems.
- understand mathematical derivations in later modules.
- access their own analytical conclusions.
- recognize quantitative relationships independently.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Methods	All Bachelor Programmes in the Business & Management fields

Business Mathematics

Course Code: BWMA01_E

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

Course Description

Mathematics is one of the foundational courses in the field of Business Studies and provides access to quantitative methods across disciplines. These basics are required in a variety of other courses and modules, for example in the field of investment and finance theory, micro- and macroeconomics, logistics or marketing, to name some examples. Consequently, mastery in Business Mathematics is a prerequisite for business economists and political economists alike to gain access to more advanced content. Following this approach, this course in Business Mathematics focuses on the economic application of mathematical methods.

Course Outcomes

On successful completion, students will be able to

- identify basic economic mathematical tools and methods, recall them if necessary and apply them to other economic problems.
- understand mathematical derivations in later modules.
- access their own analytical conclusions.
- recognize quantitative relationships independently.

Contents

1. Basics of Analysis
   - 1.1 Arithmetic and Algebraic Basics
   - 1.2 Sums and Products
   - 1.3 Equations
   - 1.4 Inequalities
2. Functions
   - 2.1 Introduction
   - 2.2 Forms of Data Depiction
   - 2.3 Features of Functions
   - 2.4 Basic Function Types
   - 2.5 Selected Economic Applications

3. Differential Calculus I
   - 3.1 Difference and Differential Quotient
   - 3.2 Derivative Methods
   - 3.3 Higher Derivations
   - 3.4 Meaning of First and Second Derivation

4. Differential Calculus II: Applications
   - 4.1 Marginal Analysis
   - 4.2 Curve Sketching
   - 4.3 Cournot Point

5. Multivariate functions
   - 5.1 Linear and Non-Linear Multivariate Functions
   - 5.2 Partial Derivatives
   - 5.3 Determination of Extreme Values
   - 5.4 Determination of Extreme Values Subject to Constraint

6. Sequences and Series
   - 6.1 Arithmetic and Geometric Sequences
   - 6.2 Arithmetic and Geometric Sequences
   - 6.3 Financial Mathematical Applications

7. Integral Calculus
   - 7.1 Indefinite Integrals
   - 7.2 Definite Integrals

Literature

Compulsory Reading

Further Reading

- Neill, H., & Johnson, T. (2013). Teach yourself mathematics: A complete introduction. Teach Yourself.
- Sydsæter, K., Hammond, P., Strom, A., & Carvajal, A. (2016). Essential mathematics for economic analysis (5th ed.). Pearson.
- Taylor, R., & Hawkins, S. (2008). Mathematics for economics and business. McGraw-Hill.

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Online Lecture

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	
☐ Learning Sprints®	☑ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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	
☐ Learning Sprints®	☑ Review Book
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