HS PF

**MODULE HANDBOOK**

**MASTER**

**DIGITAL BUSINESS MANAGEMENT**

M. Sc.

Status: June 2024

# TABLE OF CONTENTS

## Abbreviation Key Bachelor and Master

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| CR | Credits according to the ECTS system |
| PLH | Examination based on term paper |
| PLK | Examination based on written exam |
| PLL | Examination based on laboratory work |
| PLM | Examination based on oral exam |
| PLP | Examination based on project work |
| PLR | Examination based on presentation |
| PLS | Examination based on student research project |
| PLT | Examination based on written thesis |
| PVL | Prerequisite examination |
| PVL-BVP | Prerequisite examination for bachelor`s pre-examination |
| PVL-BP | Prerequisite examination for final bachelor`s examination |
| PVL-MP | Prerequisite examination for final master`s examination |
| PVL-PLT | Prerequisite examination for registration for bachelor`s thesis |
| PVL-MA | Prerequisite examination for oral final examination |
| STA1 | first study section / introductory study period |
| STA2 | second study section / advanced study period |
| SWS | Semester periods per week |
| UPL | Non-graded examination (pass / fail only) |
| WPF | Compulsory elective |

## Information on the extent of examinations

A Bachelor thesis (PLT) typically consists of 45 to 60 pages, a Master thesis (PLT) typically amounts to about 50 to 80 pages.
Examinations based on project work (PLP) typically range from 20 to 25 pages or slides.
Other kinds of submissions can be defined in advance as expected project results.
Term papers (PLH) typically amount to 10 to 12 pages.
Presentations (PLR) are typically about 15 to 20 minutes long.
Examinations based on laboratory work (PLL) typically consist of a 10 to 15 page report of regularly performed laboratory work.

**MODULES**

**DBM5100: DIGITAL MANAGEMENT**

| DBM5100 – Digital Management | |
|---|---|
| ID | DBM5100 |
| Study semester | 1 |
| Credits | 9 |
| Contact hours per week | 6 |
| Frequency | Each Winter Term |
| Courses | - DBM5101 IT Management (2 h per week, 3 Credits)<br>- DBM5102 Digital Management (2 h per week, 3 Credits)<br>- DBM5103 Digital Platforms (2 h per week, 3 Credits) |
| Requirements for participation | - |
| Kind of Examination / Duration of Examination | PLK (60 minutes) + PLP + PLR |
| Granting of credits | Pass of the written examination and academic assessment |
| Significance for final grade | Weighted by number of credits |
| Class Size | Max. 25 Students |
| Language | English |
| Duration of the module | 1 Semester |
| Responsible person | Theobald, Elke |
| Lecturer | Theobald, Elke |
| Department | Computer Science, Business Administration |
| Attendance for other programs | - |
| Pedagogical Approach | Lecture with exercises, case studies and project work |
| Objectives | The module conveys the basic knowledge in the context of digital management.<br><br>The students know the relevant IT systems in digital management and their areas of application. They know the basics of IT architecture and IT service management.<br>Students will be familiar with the special aspects and challenges of digital management. In particular, they are able to carry out requirements analyses in projects.<br>They are familiar with the special features of platform economy, the business models and the mechanisms on platform markets and can apply this knowledge to new scenarios. Students will be able to apply digital management methods to given scenarios and assess the success factors and risks of the application scenarios. They can evaluate the scenarios by different perspectives and explain and communicate their solutions.<br><br>Based on the competencies acquired in the prior bachelor, the module serves to broaden, but primarily intensify, comprehend, |

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| | and critically reflect knowledge. Students will demonstrate the use and transfer of the knowledge obtained. They will also acquire communicative and collaborative competences in an intercultural setting. |
| Content | **DBM5101 IT Management**<br><br>• IT-Systems and Information Technology<br>• IT Management and Governance / Compliance<br>• Modern IT-Architecture, Cloud Computing, Data Lakes<br>• IT-Services und IT Service Management<br>• IT-Infrastructure Library (ITIL), ITIL Service Transition<br>• IT Security<br>• Contributions of the IT-Department to company strategy<br><br>**DBM5102 Digital Management**<br><br>• Digital Economics<br>• Digital Transformation in- and outside companies<br>• IT-based Business Process Optimization<br>• Requirement Management in Digital Management<br>• Challenges for Design, Implementation and Management of holistic IT-System-Infrastructures in a global and changing environment.<br><br>**DBM5103 Digital Plattforms**<br><br>• Digital business models / platform economy<br>• Mechanisms of digital ecosystems<br>• Direct and Indirect Network Effects<br>• Competition on digital platforms<br>• Strategic alignment of digital platforms |
| Connection with other modules | This module forms the basis for all other modules in the program. |
| Literature | **DBM5101 IT Management**<br><br>• Galliers, R.D.; Leidner, D.E. (Eds.): Strategic Information Management: Challenges and Strategies in Managing Information Systems. Fourth Edition. Routledge, New York, 2009.<br>• Andal-Ancion, A.; Cartwright, P. A.; Yip, G.S. (2003): The Digital Transformation of Traditional Business. In: MIT Sloan Management Review. Summer, Vol. 44 No. 4, pp. 34-42.<br>• Kane, G.C.; Palmer, D.; Philipps, A.N.: Strategy, not Technology, Drives Digital Transformation: Becoming a Digitally Mature Enterprise. In: MIT Sloan Management Review, Research Report, Deloitte University Press, Summer 2015.<br>• Ross, J.W., P. Weill, D.C. Robertson, Enterprise Architecture as Strategy, Harvard Business Review Press, Boston, Massachusetts, 2006.<br>• M.A. Akaka, S.L. Vargo, "Technology as an operant resource in service (eco)systems", Information Systems and e-Business Management, 12 (3), 2014, pp 367–384.<br>• Laudon, K.C. and Laudon, J.P.: Management Information Systems. Managing the Digital Firm.<br>• AXELOS: „Introduction to the ITIL Service Lifecycle", TSO, |

Norwich (UK)
- Applegate, L.M.; Austin, R.D.; McFarlan, F.W. (2007): Corporate Information Strategy and Management. Seventh Edition, McGraw-Hill, New York, 2007

DBM5102 Digital Management

- Christensen, C.M.; (2021) The Innovator's Dilemma When New Technologies Cause Great Firms to Fail Management of Innovation and Change. Paperback Generic.
- Ventakraman, N. (1994): IT-Enabled Business Transformation: From Automation to Business Scope Redefinition. In: MIT Sloan Management Review. Vol. 35 (2), Winter 1994.
- Rogers, D.L. (2016): The Digital Transformation Playbook, Columbia Univers. Press.
- Kagermann, H.; Oesterle, H.; Jordan, J.M.: IT-Driven Business Models: Global Case Studies in Transformation. John Wiley and Sons, Hoboken, New Jersey, 2011.
- Schwab, K.; Pyka, P.: (2019): Die Zukunft der Vieten Industrielen Revolution: Wie wir den digitalen Wandel gemeinsam gestalten.

DBM5103 Digital Plattforms

- Galloway, S. (2017): The four: the hidden DNA of Amazon, Apple, Facebook, and Google. New York: Portfolio / Penguien.
- Harvard Business School (2018): Brewing a Successful Future at Nespresso? Digital Innovation and Transformation. https://digital.hbs.edu/platform-digit/submission/brewing-a-successful-future-at-nespresso/
- Hess, S. et. Al: (2016): Engineering roles for constructing ecosystems. . In Proccedingsofthe10th European Conference on Software Architecture Workshops. Copenhagen. Denmark, ACM Press
- Naab, M.; Keil, U. (2018): Caruso: Ökosystem und Plattform, 34.
- Pflaum, A.; Klätzer, C. (2019): Geschäftsmodelle in der digitalen Welt. Wiesbaden Springer.
- Van Alstyne, M.W. et.al (2016): Plattform statt Pipeline. In: Harvard Business Managger. Heft 6/2016.

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| Workload | 270 hours, thereof:<br>Contact time 90 hours (6 hours per week x 15)<br>self-study 180 hours (for preparation of course, project and exam) |
| Keywords | Digital Platforms, Digital Economics, IT Management, Digital Transformation |
| Last edited | April 2024 |

## DBM5200: MODERN SUSTAINABLE LEADERSHIP

| DBM5200 – Modern Sustainable Leadership | |
|---|---|
| ID | DBM5200 |
| Study semester | 1 |
| Credits | 8 |
| Contact hours per week | 6 |
| Frequency | Each winter term |
| Courses | - DBM5201 Change Management and Leadership (2 h per week, 3 Credits)<br>- DBM5202 Sustainability and Interdisciplinarity in a Digital World (2 h per week, 3 Credits)<br>- DBM5211 Training: Intercultural Management (2 h per week, 2 Credits) |
| Requirements for participation | - |
| Kind of Examination / Duration of Examination | DBM5201 and DBM5202: PLR + PLK (60 minutes)<br>DBM5211: Intercultural Management - UPL |
| Granting of credits | Passing of the written examination and academic assessment |
| Significance for final grade | Weighted by number of credits |
| Class Size | Max. 24 students |
| Language | English |
| Duration of the module | 1 Semester |
| Responsible person | Schmitz, Anja |
| Lecturer | Schmitz, Anja; Viere, Tobias |
| Department | Business Administration |
| Attendance for other programs | - |
| Pedagogical Approach | Lectures with exercises and case studies |
| Objectives | Students have an overview of the fundamentals, current concepts, methods and instruments of change management, organizational development, and transformation design. In this context, students increase their awareness for global, gender and diversity issues and intercultural challenges of sustainable development, helps their understanding of the interdisciplinary character and requirements of achieving sustainability, and provides knowledge on managerial responses and approaches to achieve corporate sustainability.<br><br>They can analyse business scenarios, to identify and understand the dependences and create general solutions for complex challenges.<br><br>Based on the competencies acquired in the prior bachelor, the module serves to broaden, but primarily to intensify and comprehend knowledge. Students can critically reflect on the knowledge they have acquired, apply it to practical and scientific issues and |

| | develop it further. They will also acquire oral communicative competencies; the module also contributes to professionalism. |
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| Content | **DBM5201 Change Management and Leadership**<br><br>• Change Management, Organizational Development, Organizational Transformation<br>• Phases and architecture of change processes<br>• Social-psychological dynamics and intervention tools<br>• Importance of management and leadership in the digital transformation<br>• Various leadership models<br>• Leadership, gender, and diversity<br>• Leadership of virtual / international teams<br><br>**DBM5202 Sustainability in a Digital World**<br><br>• Foundations of sustainable development<br>• Global challenges of sustainable development, including biodiversity, climate change, and ecosystem pollution<br>• Implications of sustainable development for business and management<br>• Inter- and transdisciplinary approaches for achieving sustainability.<br>• Business strategies, concepts, and instruments to achieve corporate sustainability.<br><br>**DBM5211 Intercultural Management**<br><br>• Reflection of the challenges in intercultural and diversity management<br>• Case Studies and Team Simulations in intercultural and divers teams |
| Connection with other modules | This module forms the basis for all the advanced modules in the 2nd semester, especially the Business Project. |
| Literature | **DBM5201 Change Management and Leadership**<br><br>• Hayes, J. (2018). The theory and practice of change management (5. ed.). Palgrave Macmillan.<br>• Hodges, J. (2016). Managing and leading people through organizational change: The theory and practice of sustaining change through people. Kogan Page Limited.<br>• Northouse, P. G. (2021). Introduction to leadership: Concepts and practice (Fifth edition). SAGE Publications, Inc.<br>• Larson, L., & DeChurch, L. (2020). Leading Teams in the Digital Age: Four Perspectives on Technology and What They Mean for Leading Teams. Leadership Quarterly, 31(1), Artikel 101377.<br>• Harvard Business Review (2020). Hbr's 10 Must Reads on Leadership, Vol. 2. HBR's 10 Must Reads. Harvard Business Review Press.<br><br><br><br><br>**DBM5202 Sustainability and Interdisciplinarity in a Digital World** |

|  | • Hahn, R. (2022): Sustainability Management – Global Perspectives on Concepts, Instruments, and Stakeholders<br>• Murray, A. et al. (2017): The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context. J Bus Ethics 140, 369–380.<br>• Sanders, N. R., & Wood, J. D. (2019). Foundations of sustainable business: Theory, function, and strategy. John Wiley & Sons |
|---|---|
| Workload | 240 hours, thereof<br>Contact time 90 hours (6 hours per week x 15)<br>self-study 150 hours (for preparation of course and exam) |
| Keywords | Change Management, Leadership, Organizational change, Sustainable Management |
| Last edited | April 2024 |

## DBM5300: ETHICS AND LAW IN DIGITAL BUSINESS

| DBM5300 – Ethics and Law in Digital Business | |
|---|---|
| ID | DBM5300 |
| Study semester | 2 |
| Credits | 6 |
| Contact hours per week | 4 |
| Frequency | Each summer term |
| Courses | - DBM5301 Ethics in Digital Business (2 h per week, 3 Credits)<br>- DBM5302 Law in Digital Business (2 h per week, 3 Credits) |
| Requirements for participation | - |
| Kind of Examination / Duration of Examination | PLR + PLH |
| Granting of credits | Passing of respective assignment |
| Significance for final grade | Weighted by number of credits |
| Class Size | Max. 24 students |
| Language | English |
| Duration of the module | 1 Semester |
| Responsible person | Leroch, Martin; Kroschwald, Steffen |
| Lecturer | Leroch, Martin; Kroschwald, Steffen |
| Department | Economics, Law |
| Attendance for other programs | - |
| Pedagogical Approach | Lecture with seminaristic units |
| Objectives | In this module, students learn about the essential ethical, social, and legal environment of the digital economy. They also learn to apply the corresponding methods and models to various cases and discuss societal consequences and impact of as well as on legal regulation. Students will access the state of literature and will deepen their knowledge independently. They reflect values and standards in business context, and they base their actions on ethical standards. They will reflect their learning in the context of practical application – such as in organisations and in interaction with legal experts from companies - and further research.<br><br>Based on the competencies acquired in the prior bachelor's program, the module serves to expand, but primarily to intensify and comprehend knowledge. Students will demonstrate the use and transfer of the knowledge obtained. They can critically reflect on the knowledge they have acquired, apply it to practical and scientific issues and develop it further. They will also acquire communicative competences; it also strongly contributes to academic integrity and professionalism. |

| Content | DBM5301 Ethics in Digital Business |
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| | <ul><li>Overview: What is ethics?</li><li>Classification: Individual and Business Ethics</li><li>Overview of relevant, selected ethical theories.</li><li>The role of incentive structures</li><li>Business Ethics in the Digital Economy</li><li>Structure and structural peculiarities of the digital economy.</li><li>Ethic: Gender and Diversity</li><li>Ethical consequences and consequences for ethics</li></ul><br>DBM5302 Law in Digital Business<br><ul><li>Introduction to the law of digitalisation</li><li>Basics of the law of the exchange of (digital) performance, digital products, and digital contracts</li><li>Insight into functions of the IP-Law in digital societies</li><li>Selected Questions of regulation of (Information-) access and the law on competition in digital markets</li><li>Developments of platform law and regulation of social networks</li><li>Overview over data protection law</li></ul> |
| Connection with other modules | This module deals with the ethical, legal, and societal impact of technology in the future as part of sustainable business development and therefore links also to module 1, 2 und 4 |
| Literature | DBM5301 Ethics in Digital Business<br><ul><li>Christoph Bartneck, Christoph Lütge, Alan Wagner and Sean Welsh (2020), An Introduction to Ethics in Robotics and AI, Dordrecht: Springer 2020</li><li>Christoph Lütge and Matthias Uhl (2021), Business Ethics: An Economically Informed Perspective, Oxford: Oxford University Press</li></ul><br>DBM5302 Law in Digital Business (each in current edt.)<br><ul><li>Legal and law-tetxs IT- und Computerrecht, dtv. Beck-Texte</li><li>Specht-Riemenschneider / Werry / Werry (Hrsg.) Datenrecht in der Digitalisierung, ESV</li><li>Specht-Riemenschneider/Riemenschneider/Schmeider, Internetrecht, Springer</li><li>Spindler/Schuster, Recht der elektronischen Medien, Kommentar, Beck</li><li>Taeger / Gabel, DSGVO, TTDSG, R&W</li><li>Current journal literature on beck-online.de, juris etc.</li><li>Andrej Savin, EU Internet Law, Elgar European Law series, Cheltenham/Northampton/Copenhagen 2020</li><li>Alessandro Mantelero, Beyond Data - Human Rights, Ethical and Social Impact Assessment in AI, Wiesbaden 2022</li><li>Felix Bieker, The Right to Data Protection, Individual and Structural Dimensions of Data Protection in EU Law, Wiesbaden 2022</li></ul> |
| Workload | 180 hours, thereof<br>Contact time 60 hours (4 hours per week x 15)<br>self-study 120 hours (for preparation of course and exam) |

| Keywords | Law of Digitalisation, Data Law, Platform Law, IP-Law, Digital Products and Legal Tech, Business Ethics, Incentive Structures, Digital Economy |
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| Last edited | April 2024 |

## DBM5400: DEVELOPMENT OF DIGITAL BUSINESS MODELS & PRODUCTS

| DBM5400 – Development of Digital Business Models & Products | |
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| ID | DBM5400 |
| Study semester | 2 Semester |
| Credits | 7 |
| Contact hours per week | 4 |
| Frequency | Each summer term |
| Courses | - DBM5401 Applied Data Science and Artificial Intelligence (2 hrs. per week, 4 Credits)<br>- DBM5402 Digital Business Models and Digital Products (2 hrs. per week, 3 Credits) |
| Requirements for participation | - |
| Kind of Examination / Duration of Examination | PLP + PLK (60 minutes) |
| Granting of credits | Passing of the written examination and academic assessment |
| Significance for final grade | Weighted by number of credits |
| Class Size | Max. 24 Students |
| Language | English |
| Duration of the module | 2 Semester |
| Responsible person | Handrich, Matthias |
| Lecturer | Handrich, Matthias |
| Department | Business Administration |
| Attendance for other programs | - |
| Pedagogical Approach | Lecture with exercise or seminar-based teaching |
| Objectives | In the module, students learn how to use AI to identify trends in specific industries. Students will develop the algorithms for a technology trend radar using a Data Science Program (KNIME) and then also create an initial MVP of the tool using a dashboard program. Students learn how to develop digital business models and digital products and reflect the impact of the MVP for the business strategy. With the help of design thinking, they develop an initial idea, which is then tested by means of digital prototyping (wireframes, etc.).<br><br>The goal is to deliver an MVP (Minimal Viable Product), including elaboration of further steps such as: necessary implementation steps, required budget, data and IT infrastructure requirement, privacy requirement, business case, marketing measures etc. The MVP will be evaluated as a case study in the lecture. After feedback, critical reflection, and improvement the MVP will be handed in together with the other contents as a group homework after the end of the lecture.<br><br>The module serves to intensify and comprehend knowledge. Students will demonstrate the use and transfer of the knowledge |

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| | obtained. They will be able to critically reflect on the related issues and contribute to academic innovation. They will also acquire communicative and collaborative competences by explaining, critical reflecting and defending the MVP. |
| Content | **DBM5401: Business Development and Digital Products**<br><br>• Introduction to business models (especially digital business models)<br>• Introduction to digital products<br>• Design Thinking Basics<br>• Methods of (digital) prototyping<br>• Creation of the MVP<br>• Presentation of the MVP<br>• Digital Product Development Basics<br>• Creating budget, data and IT infrastructure requirements, data protection requirements, business case, marketing measures<br>• Consulting for Business Development<br><br>**DBM5402: Applied Data Science and AI**<br><br>• Introduction to AI and Data Science<br>• Data Science process (data collection, data preparation, data exploration, feature engineering, model selection, model training, model evaluation and adaptation)<br>• Identification of trends using AI<br>• Introduction to KNIME<br>• Building the dashboard for the tool in KNIME |
| Connection with other modules | This module is based on Modul 1, 2, 5 and 6. |
| Literature | **DBM5401: Data Science and AI**<br><br>• KNIME Quickstart Guide: https://docs.knime.com/2019-06/analytics_platform_quickstart_guide/analytics_platform_quickstart_guide.pdf<br>• Melcher and Silipo (2020) Codeless Deep Learning with KNIME: Build, train, and deploy various deep neural network architectures using KNIME Analytics Platform<br><br>**DBM5402: Digital Business Models and Digital Products**<br><br>• Kotorov (2020) Data-Driven Business Models for the Digital Economy<br>• Osterwalder and Pigneur (2010) Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers<br>• Wirtz (2021) Digital Business and Electronic Commerce: Strategy, Business Models and Technology<br>• Weill, P., & Woerner, S. (2018). What's your digital business model?: six questions to help you build the next-generation enterprise. Harvard Business Press. |
| Workload | 210 hours, thereof<br>Contact time 60 hours (4 hours per week x 15)<br>self-study 150 hours (for preparation of course, project and exam) |

| Keywords | Digital Business Models, Digital Products, Minimal Viable Product, AI, Business Development |
|----------|---------------------------------------------------------------------------------------------|
| Last edited | April 2024 |

## DBM5500: AGILE PROJECT AND PROCESS MANAGEMENT

| DBM5500– Agile Project and Process Management | |
|---|---|
| ID | DBM5500 |
| Study semester | 2 |
| Credits | 7 |
| Contact hours per week | 4 |
| Frequency | Each Summer Term |
| Courses | - DBM5501 Agile Project Management (2h per week, 3 Credits)<br>- DBM5502 Process Management (2h per week, 3 Credits)<br>- Trainings (1h per week / 1 Credit of one of the following):<br>   - DBM5511 Training: Tools and Methods for Project Management<br>   - DBM5512 Training Design with Dashboard Tool<br>   - DBM5513 Webanalytics (1h per week) |
| Requirements for participation | - |
| Kind of Examination / Duration of Examination | - DBM5501 Agile Project Management: PLP<br>- DBM5502 Process Management: PLK (60 minutes)<br>- DBM5511/12/13: Training UPL |
| Granting of credits | In each case: Passing of the respective examination |
| Significance for final grade | The module is weighted in the final master's grade. |
| Class Size | Max. 24 students |
| Language | English |
| Duration of the module | 1 Semester |
| Responsible person | Theobald, Elke |
| Lecturer | Handrich, Matthias; Schätter, Frank; N.N. |
| Department | Business Management |
| Attendance for other programs | - |
| Pedagogical Approach | Lecture with exercise or seminar-based teaching |
| Objectives | In the module, students get familiarity and broaden their knowledge with application-oriented methods of project management and digital tools to support them in digital projects. They comprehend their knowledge and reflect critically on the related issues.<br><br>They can use and transfer it to include modeling and conceptual competence for process modeling, dashboard design or google analytics. They can apply the methods and instruments to new, unknown matters and to critically and dynamically reflect the right choice of methods. |
| Content | DBM5501: Agile Project Management<br><br>• Principles of project management waterfall |

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|---|---|
| | • Introduction to Agile Project Management and SCRUM<br>• Waterfall vs. agile<br>• Practicing the SCRUM Flow<br>• Dealing with disruptions<br>• Moving forward with Agile Project Management and SCRUM<br><br>DBM5502: Process Management<br><br>• Basic concepts and principles of business process management<br>• Digital transformation of companies: challenges and strategies<br>• Methods and tools to define, implement, and improve end-to-end processes of companies.<br>• Selected process modelling languages.<br>• Basics of big data and data mining for business process management<br>• Mapping and improvement of business processes via process mining<br><br>DBM5511 / 12 / 13: Trainings<br><br>• Introduction in Tools and Methods (e.g. Jira)<br>• Self-Learning Certificates (e.g. Google Academy)<br>• Trainings e.g. Jira, Google Data Studio, Google Analytics, PowerBI, Qlik, Tableau, MS Project, Trello etc. |
| Connection with other modules | The module builds on modules 1 and 2 by providing concrete project management skills for digital business, and process optimization. It forms the basis for modules 7, 8 and 9. |
| Literature | DBM5501: Agile Project Management<br><br>• Schwaber, Ken, Agile Project Management with Scrum. Microsoft Press 2004.<br>• Cohn Mike, User Stories Applied. Addison-Wesley 2005.<br>• Cohn Mike, Agile Estimating and Planning. Pearson 2005<br>• Derby Esther, Larse, Diana, Agile Retrospectives: Making Good Teams Great. O'Reilly 2006<br><br>DBM5502: Process Management<br><br>• Jeston, J., Nelis, J., 2008: Business Process Management: Practical Guidelines to Successful Implementations. 2dn edition, Butterworth-Heinemann.<br>• Reinkemeyer, Lars, 2020: Process Mining in Action. Principles, Use Cases and Outlook, Springer-Verlag Berlin Heidelberg.<br>• van der Aalst, W., 2018: Process Mining, Data Science in Action, Springer-Verlag Berlin Heidelberg.<br>• Weske, M., 2012: Business Process Management: Concepts, Languages, Architectures, Springer-Verlag Berlin Heidelberg.<br><br>DBM5511 / 12 / 13: Tools and Methods<br><br>Literature depends on the tools taught - will be announced in the lectures. |

| Workload | 210 hours, thereof<br>Contact time 75 hours (5 hours per week x 15)<br>self-study 135 hours (for preparation of course and exam) |
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| Keywords | agile, scrum, project management, process management, digital tools |
| Last edited | April 2024 |

## DBM5600: RESEARCH METHODS, ALGORITHMS AND DATA STRUCTURES

| DBM5600 – Research Methods, Algorithms and Data Structures | |
|---|---|
| ID | DBM5600 |
| Study semester | 1 |
| Credits | 7 |
| Contact hours per week | 4 |
| Frequency | Winter term (each course once a year) |
| Courses | - DBM5601: Research Methods (2 h per week, 3 Credits)<br>- DBM5602: Algorithms and Data Structures (2 h per week, 4 Credits) |
| Requirements for participation | - |
| Kind of Examination / Duration of Examination | PLP + PLK (90 minutes) |
| Granting of credits | In each case: Passing of the respective examinations |
| Significance for final grade | The module is weighted in the final master's grade. |
| Class Size | Max. 24 Students |
| Language | English |
| Duration of the module | 1 |
| Responsible person | Kuhlenkasper, Torben |
| Lecturer | Kuhlenkasper, Torben |
| Department | Quantitative methods |
| Attendance for other programs | - |
| Pedagogical Approach | Lecture with trainings and project work |
| Objectives | The students should understand different scientific research designs and methods and learn how to set up a research study. The participants will deepen their knowledge in research design and be able to conduct qualitative research and critically reflect on their research method. They can analyse a research setting, to select an adequate research method and to apply the research method to new research questions.<br><br>The participants learn how to think analytically and introduce them into data structure and algorithms. This is extended by current approaches in artificial intelligence and machine learning. The participants will deepen their analytical competences and get a comprehensive knowledge of the subjects. They will transfer their knowledge by project work.<br><br>The module serves to broaden, intensify, and comprehend knowledge. Students will demonstrate the use and transfer of the knowledge obtained. They will also acquire communicative and collaborative competences. The module also contributes to academic integrity and professionalism. |

| Content | DBM5601 Research Methods |
|---|---|
| | • Overview Research Methods<br>• Principles of good research<br>• How to design Research Instruments<br>• Designing an online questionnaire<br>• How to do qualitative Research<br>• Project qualitative Research<br><br>DBM5602 Algorithms and Data Structures<br><br>• Defining and describing a data structure<br>• Arrays and Linked Lists<br>• Stacks, Queues, and sorted sequences<br>• Search Algorithms<br>• Sort Algorithms<br>• Recursion<br>• Generic Approaches to Optimization |
| Connection with other modules | This module forms the basis for modules 8 and 10 as well as certain in-depth electives (predictive analytics) from module 9. Likewise, it provides analysis skills for the scope with data structures from module 4. |
| Literature | DBM5601 Research Methods<br><br>• Breuer, F., & Schreier, M. (2007). Issues in Learning About and Teaching Qualitative Research Methods and Methodology in the Social Sciences. Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 8(1). https://doi.org/10.17169/fqs-8.1.216<br>• Bougie, Roger, and Uma Sekaran. Research methods for business: A skill building approach. John Wiley & Sons, 2019.<br>• Busetto, L., Wick, W. & Gumbinger, C. How to use and assess qualitative research methods. Neurol. Res. Pract. 2, 14 (2020). https://doi.org/10.1186/s42466-020-00059-z<br>• Liamputtong, P. (2020). Qualitative Research Methods (5th ed.). Docklands, Vic.: Oxford University Press. Retrieved from https://west-sydney-primo.hosted.exlibris-group.com/permalink/f/1vt0uuc/UWS-ALMA21273137440001571<br><br>DBM5602 Algorithms and Data Structures:<br><br>• Sanders et.al (2019): Sequential and parallel Algorithms and Data Structure. Springer Berlin.<br>• La Rocca (2021): Advanced Algorithms and Data Structures. Manning Shelter Islands<br>• Cormen, Leiserson, Rivest, Stein (2022): Introduction to Algorithms, 4. Ed., MIT Press<br>• R. Sedgewick und K. Wayne, Algorithms, 4th revised edition. Upper Saddle River, NJ: Addison Wesley, 2011. |
| Workload | 210 hours, thereof<br>Contact time 60 hours (4 hours per week x 15)<br>self-study 150 hours (for preparation of course, project and exam). |

| Keywords | Research Methods, Qualitative Research, Regression, Time Series, Multivariate Statistics, Duration Analysis, ANOVA, Cluster Analysis, Factor Analysis, R |
|---|---|
| Last edited | April 2024 |

## DBM5650: DATA ANALYTICS WITH R

| DBM5650 – Data Analytics with R | |
|---|---|
| ID | DBM5650 |
| Study semester | 1 |
| Credits | 6 |
| Contact hours per week | 4 |
| Frequency | Winter term (each course once a year) |
| Courses | - |
| Requirements for participation | - |
| Kind of Examination / Duration of Examination | PLP+PLK (60 Min.) |
| Granting of credits | In each case: Passing of the respective examinations |
| Significance for final grade | The module is weighted in the final master's grade. |
| Class Size | Max. 24 Students |
| Language | English |
| Duration of the module | 1 |
| Responsible person | Kuhlenkasper, Torben |
| Lecturer | Kuhlenkasper, Torben |
| Department | Quantitative methods |
| Attendance for other programs | - |
| Pedagogical Approach | Lecture with trainings and project work |
| Objectives | Based on the competencies acquired in the prior bachelor, students will deepen their analytical competences and get a comprehensive knowledge of the subjects. Students will demonstrate the use and transfer of the knowledge obtained. They can apply their knowledge to new scenarios and data sets. <br><br> They can reflect the use of methods and can interpret the results and derive correct conclusions. They will also acquire communicative and collaborative competences. The module also enables students to engage in academic innovation. |
| Content | • Introduction to multivariate statistics <br> • Introduction to the software R <br> • Fundamental confirmative statistics <br> • Multiple Linear Regression Models <br> • Binary Choice Models <br> • Analysis of Variance <br> • Analysis of Contingency <br> • Cluster Analysis <br> • Explorative Factor Analysis |

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| Connection with other modules | This module forms the basis for modules 8 and 10 as well as certain in-depth electives (predictive analytics) from module 9. |
| Literature | • Handl, A. / Kuhlenkasper, T.: Multivariate Analysemethoden. 3rd ed., Springer.<br>• Fahrmeier, L. et al.: Regression – Models, Methods and Applications, Springer. |
| Workload | 180 hours, thereof<br>Contact time 60 hours (4 hours per week x 15)<br>self-study 120 hours (for preparation of course and project). |
| Keywords | Research Methods, Qualitative Research, Regression, Time Series, Multivariate Statistics, Duration Analysis, ANOVA, Cluster Analysis, Factor Analysis, R |
| Last edited | March 2023 |

## DBM5700: BUSINESS PROJECT IN DIGITAL BUSINESS MANAGEMENT

| DBM5700 – Business Project in Digital Business Management | |
|---|---|
| ID | DBM5700 |
| Study semester | 2 |
| Credits | 10 |
| Contact hours per week | 2 |
| Frequency | Each Summer Term |
| Courses | - |
| Requirements for participation | - |
| Prüfungsart /-dauer | PLP |
| Granting of credits | Passing the exam |
| Significance for final grade | The module is weighted with its credits in the master's final grade |
| Class Size | Maximum 7 students per team |
| Language | English |
| Duration of the module | 1 Semester |
| Responsible person | Handrich, Matthias |
| Lecturer | Handrich, Matthias |
| Department | Business Administration |
| Attendance for other programs | - |
| Pedagogical Approach | Application-oriented research/practice project |
| Objectives | Students apply research methods and knowledge in the field of digital business to specific practical issues. They define and realize a project (research project or application-oriented project with a partner from practice, e.g. company or institute) with practical relevance in compliance with the principles of good scientific practice.<br><br>The module thus serves knowledge intensification and comprehension. It primarily serves the use and transfer of knowledge and academic innovation. They identify and define challenges in digital projects and break down complex problems into individual aspects. They evaluate alternative courses of action, considering economic framework conditions. They select possible courses of action and implement them. It also contributes to communication and collaborative competencies by presenting the results in front of practice partners. |

| Content | • Development and operationalization of a research question and design of an adequate research design<br>• Conception, implementation and evaluation of data or process analysis or design of algorithms<br>• Planning of required resources<br>• Data or process analysis, e.g. with SPSS, R, Python<br>• Interpretation of results, derivation of recommendations for action, presentation and report writing<br>• Simple explanation of complex issues / storytelling |
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| Connection with other modules | The module builds on all lectures from 1 Semester and prepares for module 9. |
| Literature | Depending on the topic, the syllabus will be communicated in a project-specific manner. |
| Workload | In addition to the 2 x 15 = 30 h attendance time, students are expected to spend another 270 h for preparation and follow-up, independent literature study, processing of the practical or research project, presentations, and the research report. |
| Sonstiges | The examination is generally conducted in the form of teamwork and project presentation / documentation in groups of up to 7 students. |
| Keywords | Research Project, Applied Project, Reporting, Digital Business Project |
| Last edited | April 2024 |

## DBM6100: ELECTIVES

| DBM6100 – Electives | |
|---|---|
| ID | DBM6100 |
| Study semester | 3 |
| Credits | 9 |
| Contact hours per week | 6 |
| Frequency | Each Winter Term |
| Courses | Electives (choose three courses, each with 2 contact hours per week and 3 credits):<br>• DBM6101 Data Science with Python<br>• DBM6102 Big Data Analytics<br>• DBM6103 Application in Supply Chain Simulations<br>• DBM6104 Customer Experience Management<br>• DBM6105 New digital Work<br>• DBM6106 Dive in Technologies<br>• DBM6107 Predictive Analytics<br>• IDS5010 Interdisciplinary Studies |
| Requirements for participation | - |
| Kind of Examination / Duration of Examination | • DBM6101: PLP/PLK (45 minutes)<br>• DBM6102: PLP<br>• DBM6103: PLP<br>• DBM6104: PLR<br>• DBM6105 PLR<br>• DBM6106: PLH<br>• DBM6107: PLK (60 minutes)<br>• IDS5010: Depending on course offered |
| Granting of credits | Credits are granted for the individual component courses based on the respective exams. |
| Significance for final grade | Weighted by number of credits |
| Class Size | Max. 40 Studierende |
| Language | English |
| Duration of the module | 1 Semester |
| Responsible person | Theobald, Elke |
| Lecturer | Merz, Yasmin |
| Department | Business Administration |
| Pedagogical Approach | Depending on elective: lecture with trainings, seminar format, project work |
| Applicability in other study programs | Individual courses can also be taken in and through other degree programs. |
| Objectives | The module serves to intensify and comprehend knowledge. Students will demonstrate the use and transfer of the knowledge obtained. Students will also acquire communicative |

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| | competencies. The module allows for focusing on individual interests. |
| Content | **DBM6101 Data Science with Python**<br><br>This course offers a hands-on approach to artificial intelligence (AI). Students will learn how to process (retrieve, clean and pipeline) data to detect patterns and to forecast future behaviors. The application of machine learning methods like Random Forests, Gradient Boosting and neural networks on real world datasets is a key aspect of this course. This includes preprocessing of data, model selection, model calibration and evaluation.<br><ul><li>Part 1: Data Processing<ul><li>Introduction to Python</li><li>Discussion of important libraries in Python (Numpy, Pandas, Matplotlib, Plotly,..)</li><li>Discussion and application of data literacy & data structures in Python<ul><li>Loading & retrieving bulk data</li><li>Preprocessing and cleansing loaded data.</li><li>Methods for data visualization</li></ul></li></ul></li><li>Part 2: Machine Learning<ul><li>Algorithms (classification, regression in variants, decision trees and random forests, clustering, neural networks, deep learning)</li><li>Introduction and application of important machine learning frameworks (scikit-learn, keras, and TensorFlow), including model training, model evalution and hyperparameter tuning content.</li></ul></li></ul><br>**DBM6102 Big Data Analytics**<br><ul><li>machine learning (ML)</li><li>Implementing a machine learning pipeline using Cloud Services</li><li>Using managed Cloud services for forecasting, computer vision, and natural language processing</li></ul><br>**DBM6103 Application in Supply Chain Simulations**<br><ul><li>Supply chain management and business process management.</li><li>Management levels and decision problems</li><li>Logistics structures and network planning</li><li>Supply chain simulation and optimization based on operations research and management science.</li><li>Application of selected decision problems based on IT tools (e.g., warehouse location problems) Supply chain simulation and optimization use case.</li></ul><br>**DBM6104 Customer Experience Management (CEM)**<br><ul><li>Basics, terms, and models of CEM, customer loyalty, customer value</li><li>Measurement and metrics, CEM in times of large data volumes</li><li>Management of customer loyalty, customer experience and customer value</li><li>Application of the basics to case studies</li></ul><br>**DBM6105 New Digital Work** |

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| | • New challenges to individuals, teams, and organizations with regards to digital work and the digital workplace<br>• Current trends in digital work and organizational design<br>• Effects of digital work on individuals, teams, and organizations<br>• Effects of the Digital Transformation on HR Management, employee experience (e.g. on how organizations recruit, retain, and support and people), individual and organizational learning as well as organizational culture.<br>• Explanatory concepts from behavioral sciences as the foundation of sustainable work and careers in the digital work environment<br><br>DBM6106 Content Dive in Technologies<br><br>• Methods in and Instruments for Technologies Evaluation, e.g. TAM<br>• Introduction to different current technologies and their application in companies, e.g. Blockchain, Digital Twins, IoT, RPA<br>• Assessments for the different current technologies<br><br>DBM6107: Predictive Analytics<br><br>• Time Series Analyses<br>• Duration Modelling<br>• Classification Trees |
| Connection with other modules | The module builds on modules 1, 2, 3 and 4. It prepares certain thesis topics in module 9. |
| Literature | DBM6101 Data Science with Python<br><br>• P. Norvig und S. Russell, Artificial Intelligence: A Modern Approach, Global Edition, 4th edition. Harlow: Pearson, 2021.<br>• A. Géron, Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems, 2. Aufl. Beijing China ; Sebastopol, CA: O'Reilly Media, 2019.<br>• W. McKinney, Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython, 2nd edition. Sebastopol, California: O'Reilly UK Ltd., 2017.<br>• J. VanderPlas, Python Data Science Handbook: Essential Tools for working with Data. Sebastopol, CA: O'Reilly UK Ltd., 2016.<br>• S. Shalev-Shwartz, Understanding Machine Learning: From Theory to Algorithms, 1. Aufl. New York, NY, USA: Cambridge University Press, 2014.<br>• B. Slatkin, Effective Python: 90 Specific Ways to Write Better Python, 2. Aufl. Erscheinungsort nicht ermittelbar: Addison Wesley, 2019.<br>• L. Ramalho, Fluent Python: Clear, Concise, and Effective Programming. Sebastopol, CA: O'Reilly UK Ltd., 2015.<br><br>DBM6102 Big Data Analytics |

- C. Fregly und A. Barth, Data Science on AWS: Implementing End-to-End, Continuous AI and Machine Learning Pipelines. Beijing Boston Farnham Sebastopol Tokyo: O'Reilly UK Ltd., 2021.
- A. Thamm, M. Gramlich, D. A. Borek, und R. van Loon, The Ultimate Data and AI Guide: 150 FAQs About Artificial Intelligence, Machine Learning and Data. München: Data AI Press, 2020.

DBM6103 Application in Supply Chain Simulations

- Chopra, S., Meindl, P., 2013: Supply chain management: Strategy, planning & operation, Prentice Hall.
- Gleissner, H., Femerling, J.C., 2013: Logistics: Basics – Exercises – Case Studies, Springer International Publishing.
- Ivanov, D., Tsipoulanidis, A., Schönberger, J., 2017: Global Supply Chain and Operations Management: A Decision Oriented Introduction to the Creation of Value, Springer International Publishing.
- Stadtler, H., Kilger, C., Meyer, H., 2015: Supply Chain Management and Advanced Planning, Concepts, Models, Software, and Case Studies, Springer Heidelberg New Yor Dordrecht London.

DBM6104 Customer Experience Management

- Baetzgen, A.: Brand Experience. Schäffer Poeschel
- Bruhn, M./Homburg, C.: Handbuch Kundenbindungsmanagement. Springer Gabler
- Doyle, P.: Value-based marketing. Wiley
- Glattes, K.: Der Konkurrenz ein Kundenerlebnis voraus. Customer Experience Management. Springer Gabler
- Peppers, D./Rogers, M.: Managing Customer Experience and Relationships: A Strategic Framework. Wiley

DBM6105 New Digital Work

- Biederman, R., Petitti, P., & Maglathlin, P. (2018). Reimagining work: Strategies to disrupt talent, lead change, and win with a flexible workforce. John Wiley & Sons, Inc.
- Bordi, L., Okkonen, J., Mäkiniemi, J.-P., & Heikkilä-Tammi, K. (2018). Communication in the digital work environment: implications for wellbeing at work. Nordic Journal of Working Life Studies, 8(S3), 29–48.
- Colbert, A., Yee, N., & George, G. (2016). The Digital Workforce and the Workplace of the Future. Academy of Management Journal, 59(3), 731–739.
- Decius, J., Kortsch, T., Paulsen, H., & Schmitz, A. (2022). Learning What you Really, Really Want: Towards a Conceptual Framework of New Learning in the Digital Work Environment. Proceedings of the 55th Annual Hawaii International Conference on System Sciences, 5231–5240. https://scholarspace.manoa.hawaii.edu/handle/10125/79975

|  | • Harney, B., & Collings, D. G. (2021). Navigating the shifting landscapes of HRM. Human Resource Management Review, 31(4), 100824. https://doi.org/10.1016/j.hrmr.2021.100824<br>• Ifenthaler, D. (2018). Digital Workplace Learning: Bridging Formal and Informal Learning with Digital Technologies. SpringerLink Bücher. Springer. https://doi.org/10.1007/978-3-319-46215-8<br>• Williams, S. P., & Schubert, P. (2018). Designs for the Digital Workplace. Procedia Computer Science, 138, 478–485. https://doi.org/10.1016/j.procs.2018.10.066<br><br>DBM6106 Dive in Technologies<br><br>• Banta, D. (2009). What is technology assessment? International Journal of Technology Assessment in Health Care, 25(S1), 7-9. doi:10.1017/S0266462309090333<br>• Grundwald, A.: Technology Assessment in Practice and Theorie. Rourledge 2019.<br>• Thien A. Tran, Tugrul Daim, A taxonomic review of methods and tools applied in technology assessment, Technological Forecasting and Social Change, Volume 75, Issue 9, 2008, Pages 1396-1405, ISSN 0040-1625, https://doi.org/10.1016/j.techfore.2008.04.004.<br>• Further literature will be announced in the course depending on the technologies covered.<br><br>DBM6107: Predictive Analytics<br><br>• Handl, A. / Kuhlenkasper, T.: Multivariate Analysemethoden. Springer, 3rd. ed.<br>• Shumway, R.H. / Stoffer, D.S.: Time Series Analysis and Its Applications – With R Examples, 3rd. ed., Springer.<br>• Mills, M.: Introducing Survival and Event History Analysis, Sage Publications<br>• Moore, D.F.: Applied Survival Analysis Using R, Springer. |
| Workload | The total workload of the module is 270 h with 90h per elective. The workload of the individual electives is specified in the syllabus of the respective course. |
| Sonstiges | At least three courses are offered. The courses listed are not exhaustive but may be augmented or changed over time.<br><br>The university may offer additional / alternative courses.<br>An individual course (IDS5010) can also be taken in a master's degree program of a different school of the university (engineering, design). |
| Keywords |  |
| Last edited | April 2024 |

## THE6120: THESIS

| THE6120 – Thesis | |
|---|---|
| ID | THE6120 |
| Study semester | 3 |
| Credits | 21 |
| Contact hours per week | 0 |
| Frequency | Each semester |
| Courses | THE6120 Master Thesis |
| Requirements for participation | - |
| Kind of Examination / Duration of Examination | PLT |
| Granting of credits | Academic assessment of the thesis |
| Significance for final grade | Weighted by number of credits |
| Class Size | none |
| Language | English |
| Duration of the module | 4 months |
| Responsible person | Boßlau, Mario (Program Director) |
| Lecturer | all professors at the Business School can act as supervisors |
| Department | Digital Management |
| Pedagogical Approach | Thesis Writing |
| Verwendbarkeit in anderen Studiengängen | - |
| Objectives | Students work on a topic of their own choice from a research field of the program's focus. They learn to identify current challenges in science and / or practice, to formulate relevant questions and to work on them independently. They structure their work independently in different contexts (practice, science, or research).

By the end of the thesis, the participants shall be capable of:
• independently solving a complex scientific research question based upon competent use and application of suitable research methods contributing to academic innovation.
• review scientific literature or other resources.
• write comprehensive research paper.
• and demonstrate their professionalism in their field of studies and their academic integrity.

The module fosters the comprehension of knowledge. It primarily serves to develop competencies in the use and transfer of knowledge and academic innovation. It also contributes to professionalism and written communication skills. |

| Content | <ul><li>Scientific qualification</li><li>Management and problem-solving techniques in a real-life environment</li><li>Managerial decision making</li><li>Cooperation with a company, a business-related institution or in a research area of a full-time faculty member</li></ul><br>Formally, the thesis will be written in paper-based format. An empirical oriented or a data analytic oriented or a practice-oriented topic in cooperation with a company are strongly recommended. The length should be 30,000 words. The language must be English. The majority (80 %) of the literature should be scientific papers. |
|---|---|
| Connection with other modules | none |
| Literature | <ul><li>Bänsch, A./Alewell, D. (2013): Wissenschaftliches Arbeiten, 11. Auflage, Oldenbourg, München.</li><li>Cooper, H. M. (1982). Scientific guidelines for conducting integrative research reviews. Review of Educational Research, 52(2), 291-302. http://dx.doi.org/10.2307/1170314</li><li>Noblit, G. W., & Hare, R. D. (1988). Qualitative Research Methods: Meta-ethnography. Thousand Oaks, CA: SAGE Publications, Inc. DOI: 10.4135/9781412985000</li><li>Ogawa, R. T., & Malen, B. (1991). Towards Rigor in Review of Multivocal Literatures. Applying the Exploratory Case Study Method. Review of Educational Research, 61, 265-286. http://dx.doi.org/10.3102/00346543061003265</li><li>Patriotta, G. (2017). Crafting Papers for Publication: Novelty and Convention in Academic Writing. Journal of Management Studies, 54, 747-759. DOI:10.1111/joms.12280</li><li>Randolph, J. (2009). A Guide to Writing the Dissertation Literature Review. Practical Assessment, Research and Evaluation, 14(13), 1-13.</li></ul> |
| Workload | 630 hours of self-study |
| Keywords | Master Thesis, scientific research, research design, practice-oriented |
| Last edited | April 2024 |