Syllabus
BIS6031E Digital Transformation
Prof. Dr. Weiß, Peter
Winter Semester 2023/24

Level	Master	
Credits	5 ECTS	
Student Contact Hours	45	
Workload	150	
Prerequisites	Basic knowledge in Computer Science and Information Systems	
Time	11:30-13:00 and 13:45-15:15 CET	
Room	**W4.2.02**	
Start Date	Tuesday, 10 October, 2023	
Lecturer(s)	**Name**	Prof. Dr. Weiß
	Office	W2.2.25
	Virtual Office	MS Teams
	Office Hours	Wednesday, 11:30-13:00 (use booking system to book a timeslot)
	Phone	+49 7231 28-6691
	Email	peter.weiss@hs-pforzheim.de

Outline of the Course

The course is organized as a lecture in form of seminar, thus throughout the course special emphasis is met on discussion and interaction with the students. Based upon profound knowledge of theory and its implications during the lecture critical discussions are in focus. This covers discussions concerning current challenges of digital transformation. New paradigms and strategic implications will be discussed. The course introduces approaches, concepts and contributions informing about the challenges and potential ways to arrive at solutions to master digital transformation.

The course follows a research-based teaching approach, which is interactive and requires student's active participation and individual engagement. Student will get assigned a topic (scientific paper) that student will prepare to present in class. Together we will learn and explore about the relevant concepts, about their applicability and usefulness; and how they can be applied in real life settings and business contexts. Based on cases and use cases student will learn about applicability and relevance of presented theoretical concepts to solve some of the problems ahead.

In this course, up to date material provides the foundation to elaborate on solutions, such as scientific papers, case studies published in MIT Sloan Management Review and Harvard Business School Publishing. Some of these papers are only accessible by fees or membership (e.g. AIS conferences and journals). An important part of the learning process is getting feedback. Each group is invited to come to my office during my office hours or based on an individual appointment to get my feedback about the paper and the presentation.

Topics of the course will be carefully selected and will be the base for your scientific work and successful learning process. The case studies and learning material will reflect current state of play, existing vantage points and current as well as future developments in information technology and information systems with the aim to show existing links and influences on digital transformation endeavors and in consequence on strategizing information systems and yielded results of IT strategy management. The list of topics is still tentative, changes can happen. The complete list will be presented at the first class session.

The lecture materials such as term papers, slides, case studies and study texts are accessible for students via the e-learning platform (Moodle).

Main course topics:

- Digitization and digital transformation
- Digital strategies and strategic agility
- Development of a compelling digital strategy (ingredients, elements)
- Foundations and theories to back up and inspire digital strategies
- Digital business models
- Enterprise architecture and enterprise coherence
- Foundations of execution
- Service systems engineering (architecture, interaction, mobilization), S-D logic
- Service-led strategies
- Digitally enabled services, digital service innovations
- Platform-based strategies
- Enterprise capabilities
- New perspectives and new capabilities
- Case studies on digital transformation

Course Intended Learning Outcomes and their Contribution to Program Intended Learning Outcomes / Program Goals

Program Intended Learning Outcomes		Course Intended Learning Outcomes	Assessment Methods	
			Presentation	Term Paper
	After completion of the program the students will be able…	After completion of the course the students will be able…	50%	50%
			Individual	Individual
1	**Responsible Leadership in Organizational Contexts**			
1.1	... to know and explain important leadership principles.	To know and argue how digital strategies can be designed, executed and communicated ("rhetoric") in a real-life organizational context. To explain and reason why besides hard facts as well soft aspects of culture, organizational structures and teams are considered. To know and articulate ways and systematic ways how thought leaders in practice and science will be consulted and engaged in digital transformation. To know systematic ways to implement digital transformation strategies following three major pillars: rhetoric, action and identity.	X	X
1.2	... to apply leadership concepts to an organizational context or a specific case.	To bring in past and gathered experiences and demonstrate required rhetoric to communicate change requirements and innovation strategies (digital transformation) To know, analyze, develop and evaluate solution designs from a socio-technical perspective (conceptual design for use case development, software process orientation).	X	
1.3	… to critically reflect on leadership concepts in a certain organizational context or in a specific case.	To know and explain how to conceptualize and implement digital transformation strategies in real organizational contexts To argue how to foster identity and required action through appropriate leadership and rhetoric.	X	
1.4	... to act responsibly from a scientific self-understanding and to act professionally.	To argue and analyse independently requirements using and arguing appropriate methods and techniques thereby adhering to IT professional standards (e.g. IT professionalism) To know and reflect on appropriate scientific approaches and standards for Information Systems research and respective technical action such as Design Science Research.	X	
2	**Creative Problem Solving Skills in a Complex Business Environment**			
2.1	... to identify & classify problems.	To apply and demonstrate methods and techniques of a techno-social analysis of given organizational context according to IT professional standards. To argue how state-of-the art tools, techniques, methods and concepts can be used in business. To conceptualize and argue solution designs and propose high-level artefacts based on elicited requirements according to standardized procedures of information systems development (e.g. through applying basic modelling techniques, socio-technical analysis) reflecting realities and needs of information systems development processes in real-life organizational context and specific application domains.	X	X
2.2	... to analyze problems.	To explain implications of new management paradigms such as service orientation (mainly S-D logic) and related strategic imperatives to design creative solutions and synthesize concepts to appropriate strategies to (re)position the company in the context of digitalization and digital transformation.	X	X

		To understand and argue the needs of socio-technical analysis and abstractions (e.g. use case analysis, modelling) in the context of information systems development and operation.		
2.3	... to creatively solve problems.	To know, select and argue digital technologies and argue embedded concepts, methods, techniques. To demonstrate to make conceptual designs based on analysis of key concepts applied by digital technologies and related tools as well as linking to associated body of knowledge / technology. To demonstrate the competence to initiate, plan, design, develop and communicate conceptual design and creative solutions effectively to an expert audience.	X	X
2.4	… to explain problems and their solutions in a comprehensive manner.	Demonstrate and argue new thinking and concepts which can be used and applied to develop solutions and how they leverage the use of digital technologies to solve concrete business problems in a real-life industrial context.	X	X
3	**Applied research skills**			
3.1	... to know the research and analysis methods important in his/her field of study.	To discuss methods applied and yielded results and outcomes of research papers To argue and articulate convincingly how knowledge and innovative results are produced and/or published based on scientific methods. To discuss of research methods and name related bodies of knowledge which can be applied to synthesize appropriate solutions following an eclectic research approach and related paradigm. To get acquainted with research methods and approaches as well as to summarize them based on a research-based teaching approach. To explain and argue the objectives and advantages of a Design Science Research approach and related methods.	X	
3.2	… to appropriately apply the research and analysis methods.	To develop in self-directed way, use cases (conceptual designs) and transfer of new concepts to new domains and application contexts following an information systems development approach (requirements analysis and socio-technical analysis method). To demonstrate analysis methods and conceptual design approaches oriented towards needs of IS design and development.	X	X
3.3	… to obtain innovative results using relevant research methods.	To argue and explain advantages and challenges of approaches such as Action Research, Design Science Research and Information Systems Developments and Requirements Analysis (social technical analysis oriented towards needs of IS design and development as well as software process models) methods are of interest and will be introduced.		X
4	**Innovation management and management of digital transformation**			
4.1	… to have fundamental knowledge of operational innovation processes and of processes of digital transformation.	To analyse requirements and to arrive at practical solutions, students learn new concepts and will be acquainted with conceptualizations of solutions designs, to understand that a systems perspective ("purposed systems") are fundamental for research and practice, respectively.	X	
4.2	... to assess a company´s innovation potential and its needs/opportunities with respect to digital transformation.	To make decisions on how to conceptualize solution designs and propose high-level artefacts which address and solve identified problems based on scientific methods and approaches in identified application domain and context.	X	X
4.3	... to develop complex technological strategies and strategies for managing digital transformation.	To know concepts and demonstrate to apply appropriate technical terminology, vocabulary to propose high-level artefacts as ingredients of technological strategies		X

		To analyse and synthesize solution designs and conceptualize high-level designs for artefacts to address and solve identified problems To know and argue adequate scientific methods and approaches (Design Science Research and Action Research). name appropriate approaches and related methods to implement strategies and synthesize an approach to implement technological strategies		

5	**Management of the challenges of global sustainability and awareness for social and corporate responsibilities**			
5.1	… to have a sound basic knowledge of sustainability issues.	To argue and discuss how S-D logic and digital technologies support sustainability objectives and strategies.	X	X

Teaching and Learning Approach

An important part of the learning process is presenting, discussing, and getting feedback. Student's competence to conceptualize solutions and to research independently for concepts and solution designs will be strengthened. Often solution designs are derived from eclectic research approaches. An interesting research field is design science research and in particular design action research (Böhmann et al., 2014).

To demonstrate these competences and capabilities, students will write a short term paper concerning an assigned topic which will summarize student's presentation in class. In the term paper students will make a statement and will find arguments how companies are overcome the challenges of digital transformation.

Student will work in groups, interact with the lecturer and student's fellow colleagues. Each group is invited to come to my office during my office hours or based on an individual appointment to get my feedback concerning assigned tasks and produced results, e.g. term papers and presentation slides.

In support of this course, an e-learning platform (Moodle) will be used which offers several advantages. Firstly, teaching material will be made available via this platform. Secondly, questions that might arise can be discussed among the students through the use of this platform. Finally, general questions can be answered transparently by the lecturer, i.e. all students will be able to see the answers. For specific questions, you may always contact the lecturer in person or via email.

For preparing the paper the students have to follow the "Guidelines of the Business School for Academic Writing".

Literature and Course Materials
- Norman, R.: Reframing Business: When the Map Changes the Landscape. John & Wiley, New York, 2001.
- Vargo, S. L. & Lusch, R. F. (2018). The sage handbook of service-dominant logic, 55 City Road, London: SAGE Publications Ltd
- Galliers, R.D., Leidner, D.E. (Eds): Strategic Information Management: Challenges and Strategies in Managing Information Systems. Fourth Edition. Routledge, New York, 2009.
- Parker, G.P.; Alstyne, Van, M.W; Choudary, S.P. (2016): Platform Revolution. Norton & Company, New York London.
- Evans, E.: Domain-Driven Design: Tackling Complexity in the Heart of Software. Addison-Wesley, Boston, 2004
- Vial, Gregory (2019): Understanding digital transformation: A review and a research agenda. In: The Journal of Strategic Information Systems 28 (2), S. 118–144.

- Ross, Jeanne W.; Beath, Cynthia Mathis; Mocker, Martin (2019): Designed for digital. How to architect your business for sustained success. Cambridge Massachusetts, London England: The MIT Press.
- Weiß, P.; Zolnowski, A.; Warg, M.; Schuster. T. (2018): Service Dominant Architecture: Conceptualizing the Foundation for Execution of Digital Strategies based on S-D logic. In: Proceedings HICSS 2018, 03-06 January 2018, Hawaii.
- Weiß, P.; Warg, M.; Zolnowski, A.: Mastering Digital Transformation with Service Dominant Architecture, Chapter, IntechOpen, March 2022, https://www.researchgate.net/publication/359464869_Mastering_Digital_Transformation_with_Service_Dominant_Architecture
- Weiß, P., Kronibus, A., Riedel, F., Rittweger, R. (2021). Digital Service Innovation and Actor Engagement: A Multilevel Design Perspective - Impacts from a Case Study of an Insurtech. In: Leitner, C., Ganz, W., Satterfield, D., Bassano, C. (eds) Advances in the Human Side of Service Engineering. AHFE 2021. Lecture Notes in Networks and Systems, vol 266. Springer, Cham. https://doi.org/10.1007/978-3-030-80840-2_32; https://www.researchgate.net/publication/352958547_Digital_Service_Innovation_and_Actor_Engagement_A_Multilevel_Design_Perspective_-_Impacts_from_a_Case_Study_of_an_Insurtech

Complementary/ Additional Reading/ Case Material (tentative to be completed / updated):

- Chesbrough (2011): Open Service Innovation: Rethinking Your Business to Grow and Compete in a New Era. Jossey-Bass.
- Kagermann, H.; Oesterle, H.; Jordan, J. (2011): IT-Driven Business Models: Global Case Studies in Transformation. John Wiley & Sons.
- Ross, J.W.; Weill, P.; Robertson, D.C. (2006): Enterprise architecture as strategy. Creating a foundation for business execution. Harvard Business School Press, Boston, Massachusetts.
- Lusch, R.F.; Vargo, S.L.: Service-Dominant Logic: Premises, Perspectives, Possibilities. Cambridge University Press, 2014.
- Luftman, J.N. (Ed.): Competing in the Information Age: Align in the Sand. 2nd Edition. Oxford University Press, Oxford, 2003.

- J.W. Ross, I.M. Sebastian, C.M. Beath, "How to Develop a Great Digital Strategy", In: MIT Sloan Management Review, Vol. 58, No. 2, Winter 2017 Issue, pp. 6-10.
- Arthur, W.B., The Nature of Technology: What it is and how it evolves. Free Press, New York, 2009.
- Böhmann, T., Leimeister, J.M., Möslein, K.: Service Systems Engineering. Business & Information Systems Engineering 6, 73-79 (2014)
- Moore, G.: Systems of engagement and the future of enterprise IT: A sea change in enterprise IT. AIIM (2011)
- Akaka, M.A., Vargo, S.L.: Technology as an operant resource in service (eco)systems. Information Systems and e-Business Management 12, 367-384 (2014)
- D.K. Rigby, "Digital-Physical Mashups". In: Harvard Business Review, September 2014.
- 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.
- M. Warg, P. Weiß, A. Zolnowski, R. Engel, "Service Dominant Architecture based on S-D logic for Mastering Digital Transformation: The Case of an Insurance Company", RESER Conference Proceedings, Naples, Italy, 2016.
- Kane, G.C., Palmer, D., Phillips, A.N., Kiron, D., Buckley, N.: Coming of Age Digitally. MIT Sloan Management Review and Deloitte Insights June, (2018)
- Ross, J.W., Sebastian, I., Beath, C., Mocker, M., Moloney, K., Fonstad, N.: Designing and Executing Digital Strategies. Thirty Seventh Int. Conf. on IS, Dublin (2016)

- G.C. Kane, D. Palmer, A.N. Philips, D. Kiron, N. Buckley, "Strategy, not Technology Drives Digital Transformation", MIT Sloan Management Review. Deloitte University Press. Summer, 2015, pp.3-24.
- Johnson, M. W.: Reinvent Your Business Model. Harvard Business Review Press Boston, 2018.

Assessment

The students will prepare and realize a presentation (term projects and use cases on digital transformation). The results will be discussed in class. Details are outlined during the first sessions in the class room, as well as the applied assessment criteria. Important criteria are presented and will be clarified during the first lectures.

The grading approach will be further clarified and discussed during the first lecture.

To get credits for the course it is necessary that the student has completed all assignments (completed term paper (conceptual research paper and case study research) including the presentation (PPT), and discussions in class) (see Table 1).

Table 1: Delivered outcomes and assessment: overview expected contribution and respective weighting for final grade.

Term paper on Digital Transformation (based on case study and / or technology case)	50%
Presentation, discussion and summary of case study or conceptual paper	50%
Total	**100%**

The students will realize two deliverables / outcomes, which will document and demonstrate the mastery of the course requirements (see learning outcomes):

(1) theoretical case, conceptual paper

(2) case study / technology case (use case identification and development)

Further details are outlined during the first sessions in the classroom, please check as well the assessment criteria.

Important criteria are presented and are clarified by the assessment forms (check beforehand at the initial start of your work, clarify issues during the first lectures).

See as well the evaluation criteria available / uploaded to the course's e-learning platform (see Table 2):

Table 2: Applied Grading System

Total	Grade	1,0	1,3	1,7	2.0	2,3	2,7	3,0	3,3	3,7	4,0	4,7	5,0
	Points >=	A	A	B	B	B	C	C	C	D	D	E	E
36		34,5	32,5	30,5	29,0	27,5	25,0	23,5	22,0	19,5	18,0	16,5	0
48		46,0	43,5	40,5	38,5	36,5	33,5	31,5	29,0	26,0	24,0	22,0	0

The following grading system is applied:

- 'Very good' (A grade) signifies that the performance is above and beyond expectations.
- 'Good' (B grade) means that the performance is good and above average.
- 'Satisfactory' (C grade) means that it is an average performance containing insufficiencies but principally appropriate to the expectations.
- 'Adequate' (D grade) describes a below-average performance with obvious deficiencies.
- 'Inadequate' (E grade) is an unacceptable performance that is not sufficient to any expectations.

By the end of the course, the participants shall…

- explain and define change drivers in the environment of companies that influence digital transformation
- define digital transformation and give concrete examples
- define, repeat and illustrate what digital strategies are based on concrete examples and use cases
- explain and discuss the key messages and research domains of service systems engineering and how it contributes to synthesize and evaluate solution designs
- recall and describe a systematic way how companies can transform their value creation processes
- summarize and argue the role of enterprise architecture to overcome challenges of digital transformation
- define and discuss new capabilities that companies need to execute digital strategies
- recall, name and define pivotal concepts and their impact on digital transformation
- classify digital business models based on introduced frameworks and dimensions
- analyze and discuss digital business models based on real life examples and referring to case studies of the course