Technische Hochschule Ingolstadt

Modulhandbuch

Course Description

Individuelle Wahlpflichtmodule

Elective Modules

Master-Studiengänge */ Master's Programs*

Fakultät Wirtschaftsingenieurwesen

Faculty of Engineering and Management

SS 2025

Stand: 10.02.2025

Inhaltsverzeichnis / Contents

1 Angebot Wahlpflichtmodule / Electives for Master Programs

Stand: 20.01.2025				
Angebot Individuelles Wahlpflichtmodul für Master WI	Dozent*in	SWS	Sprache	Prüfungsform
Angebot aus Fakultät WI im SS				
Digital Procurement & Data Science	Hecht/Huber	4	deutsch	StA
Strategisches Beschaffungs- und Lieferantenmanagement	Hecht	4	deutsch	schrP
Leadership und soziale Verantwortung	Martens	4	deutsch	SA mit Koll
Sustainability & Resilience in SCM	Hartmann (LB), Seiringer (LB), NN	4	englisch	SA
Engineering Processes in Automotive Industry	Meyer/Neumann (LB)	4	englisch	schrP
Strategic Foresight and Trend Analyses	Schwarz	4	englisch	mdlP
Technology Design and Evaluation	Schönmann/Schropp	4	englisch	schrP
Advanced Theories and Methods of Sustainability Management in a Globalized Economy	Schneider, Y.	4	englisch	mdlP
International negotiation training	Eberl	4	englisch	mdlP
Strategy and Growth in Automotive Sector	Rengarajan (LB)	4, Block	englisch	Proj
Corporate Transformation	Kalmbach (LB)	4	englisch	StA
Manufacturing Operations with No-Code/Low-Code	Vernim (LB)	4	englisch	mdlP
Angebot aus Fakultät BS				
Entrepreneuerial Finance & Growth Management	Marques / Süzeroglu	4	englisch	mdlP
Integrated Safety and Assistance Systems	Botsch	4	englisch	schrP
Angebot Individuelles Wahlpflichtmodul für Master EG	Dozent*in	SWS	Sprache	Prüfungsform
Sustainability & Resilience in SCM	Hartmann (LB), Seiringer (LB), NN	4	englisch	SA
Production and Logistic Networks	Jattke	4	englisch	mdlP
Design Culture Theory and Methods	Rothbucher	4	englisch	SA
Design Leadership Methods	Rothbucher	4	englisch	StA
Strategic Foresight and Trend Analyses	Schwarz	4	englisch	mdlP
Technology Design and Evaluation	Schönmann/Schropp	4	englisch	schrP
Advanced Theories and Methods of Sustainability Management in a Globalized Economy	Schneider, Y.	4	englisch	mdlP
International negotiation training	Eberl	4	englisch	mdlP
Strategy and Growth in Automotive Sector	Rengarajan (LB)	4, Block	englisch	Proj
Corporate Transformation	Kalmbach (LB)	4	englisch	StA
Manufacturing Operations with No-Code/Low-Code	Vernim (LB)	4	englisch	mdlP
Design and modelling with CATIA	Basta (LB)	4, Block	englisch	Proj
Angebot aus Fakultät BS				
Technology-Commercialization & IP Management	Bader M./Kleyn	4	englisch	SA
Angebot Individuelles Wahlpflichtmodul für Master DENS	Dozent*in	SWS	Sprache	Prüfungsform
Fallstudie Internet of Things	Großmann	4	deutsch	Proj
Software Engineering	Bock	4	deutsch	SA
Internationales Projekt (im SS25 virtuell ohne Exkursion)	Hecht/Schwandner	4, Block	deutsch/en	Proj
Engineering Processes in Automotive Industry	Meyer/Neumann (LB)	4	englisch	schrP
Business Analytics & Artificial Intelligence	Bock/Ali	4	englisch	schrP
Strategic Foresight and Trend Analyses	Schwarz	4	englisch	mdlP
Technology Design and Evaluation	Schönmann/Schropp	4	englisch	schrP
Advanced Theories and Methods of Sustainability Management in a Globalized Economy	Schneider, Y.	4	englisch	mdlP
Strategy and Growth in Automotive Sector	Rengarajan (LB)	4, Block	englisch	Proj
Corporate Transformation	Kalmbach (LB)	4	englisch	StA
Manufacturing Operations with No-Code/Low-Code	Vernim (LB)	4	englisch	mdlP

Angebot Individuelles Wahlpflichtmodul für Master APE	Dozent*in	SWS	Sprache	Prüfungsform
Sustainability & Resilience in SCM	Hartmann (LB), Seiringer (LB), NN	4	englisch	SA
Advanced Economics	Eisenberg	4	englisch	schrP
Business Analytics & Artificial Intelligence	Bock/Ali	4	englisch	schrP
Software Engineering	Bock/Radtke	4	englisch	StA
Future Business Modelling	Wrobel	4	englisch	schrP
Advanced Theories and Methods of Sustainability Management in a Globalized Economy	Schneider, Y.	4	englisch	mdlP
International negotiation training	Eberl	4	englisch	mdlP
Strategy and Growth in Automotive Sector	Rengarajan (LB)	4, Block	englisch	Proj
Corporate Transformation	Kalmbach (LB)	4	englisch	StA
Manufacturing Operations with No-Code/Low-Code	Vernim (LB)	4	englisch	mdlP
Design and modelling with CATIA	Basta (LB)	4, Block	englisch	Proj
Angebot aus Fakultät BS				
Gründercoaching/Entrepreneuership	Bader	4	deutsch/er	Proj
Angebot aus Fakultät EI				
Integrated Safety and Assistance Systems	Botsch	4	englisch	schrP
Angebot Individuelles Wahlpflichtmodul für Master DL				
Sustainability & Resilience in SCM	Hartmann (LB), Seiringer (LB), NN	4	englisch	SA
Business Analytics & Artificial Intelligence	Bock/Ali	4	englisch	schrP
Entrepreneurship & Innovation Management	Albrecht	4	englisch	Proj
Strategic Foresight and Trend Analyses	Schwarz	4	englisch	mdlP
Future Business Modelling	Wrobel	4	englisch	schrP
Advanced Theories and Methods of Sustainability Management in a Globalized Economy	Schneider, Y.	4	englisch	mdlP
International negotiation training	Eberl	4	englisch	mdlP
Strategy and Growth in Automotive Sector	Rengarajan (LB)	4, Block	englisch	Proj
Corporate Transformation	Kalmbach (LB)	4	englisch	StA
Manufacturing Operations with No-Code/Low-Code	Vernim (LB)	4	englisch	mdlP
Design and modelling with CATIA	Basta (LB)	4, Block	englisch	Proj
Angebot aus Fakultät BS				
Gründercoaching/Entrepreneuership	Bader	4	deutsch/er	Proj
Technology-Commercialization & IP Management	Bader/Kleyn	4	englisch	SA mit Koll
Angebot Individuelles Wahlpflichtmodul für Master FS				
Leadership und soziale Verantwortung	Martens	4	deutsch	SA mit Koll
Sustainability & Resilience in SCM	Hartmann (LB), Seiringer (LB), NN	4	englisch	SA
Engineering Processes in Automotive Industry	Meyer/Neumann (LB)	4	englisch	schrP
Advanced Economics	Eisenberg	4	englisch	schrP
Business Analytics & Artificial Intelligence	Bock/Ali	4	englisch	schrP
Software Engineering	Bock/Radtke	4	englisch	StA
Design Culture Theory and Methods	Rothbucher	4	englisch	SA
Design Leadership Methods	Rothbucher	4	englisch	StA
Advanced Theories and Methods of Sustainability Management in a Globalized Economy	Schneider, Y.	4	englisch	mdlP
International negotiation training	Eberl	4	englisch	mdlP
Strategy and Growth in Automotive Sector	Rengarajan (LB)	4, Block	englisch	Proj
Manufacturing Operations with No-Code/Low-Code	Vernim (LB)	4	englisch	mdlP
Angebot aus Fakultät BS				
Technology-Commercialization & IP Management	Bader/Kleyn	4	englisch	SA mit Koll

2 Modulbeschreibungen / Course Descriptions

Fallstudie Internet of Things			
Modulkürzel:	FallstudieIntThings	**Art des Moduls:**	Wahlpflichtfach
Zuordnung zum Curriculum:	**Studiengang, -abkürzung, SPO-Nr.**		
	M-DENS		

Modulverantwortliche(r):	Großmann, Daniel	
Dozent(in):	Großmann, Daniel; Knollmeyer, Simon	
Sprache:	Deutsch	
Leistungspunkte / SWS:	5 ECTS / 4 SWS	
Arbeitsaufwand:	Kontaktstunden:	47 h
	Selbststudium:	79 h
	Gesamtaufwand:	126 h
Lehrveranstaltungen des Moduls:	12: Fallstudie Internet of Things	
Lehrformen des Moduls:	SU/Ü-Seminaristischer Unterricht/Übung	

Studien- / Prüfungsleistungen:

LN - Projektbericht und mündlicher Präsentation 15 min.

Weitere Erläuterungen:

Keine

Empfohlene Voraussetzungen:

Keine

Angestrebte Lernergebnisse:

Die Studierenden:

- können die besonderen Eigenschaften des Internet of Things (IoT) und von IoT-Systemen erläutern.
- können die gesellschaftliche und wirtschaftliche Bedeutung des IoT einzuschätzen.
- kennen die wichtigsten Standards für die Kommunikation zwischen IoT-Geräten.
- kennen Techniken zur Speicherung und Verarbeitung von Daten in IoT-Systemen.
- kennen Architekturen und Technologien zur Strukturierung von IoT-Systemen und können diese auf eine eigene Fallstudie anwenden.
- kennen die Herausforderungen des Datenschutzes und der Datensicherheit in IoT-Systemen.

Inhalt:

- Grundlagen des Internet of Things
- Anwendungsbereiche
- Gesellschaftliche und wirtschaftliche Bedeutung
- Kommunikationsstandards und -technologien
- Datenspeicherung und -verarbeitung
- Design und Entwicklung

Literatur:

Wird zu Beginn bekannt gegeben.

Weitere Anmerkungen/Sonstiges:
Keine Anmerkungen.

Software Engineering

Modulkürzel:	SW_Eng	**Art des Moduls:**	Wahlpflichtfach
Zuordnung zum Curriculum:	**Studiengang, -abkürzung, SPO-Nr.**		
	M-DENS		

Modulverantwortliche(r):	Bock, Jürgen	
Dozent(in):	Bock, Jürgen; Radtke, Maximilian-Peter	
Sprache:	Deutsch	
Leistungspunkte / SWS:	5 ECTS / 4 SWS	
Arbeitsaufwand:	Kontaktstunden:	47 h
	Selbststudium:	78 h
	Gesamtaufwand:	125 h
Lehrveranstaltungen des Moduls:	12: Software Engineering	
Lehrformen des Moduls:	SU/Ü-Seminaristischer Unterricht/Übung	

Studien- / Prüfungsleistungen:

LN - Seminararbeit mit Präsentation vor PZ

Weitere Erläuterungen:

Die Prüfung besteht aus einer Seminararbeit einschließlich mündlicher Präsentation. Der schriftliche Teil der Arbeit ist ein PDF-Dokument im Umfang von 8-10 Seiten, welcher in digitaler Form über die Moodle Plattform eingereicht wird. Die Einreichungsfrist liegt im Prüfungszeitraum des jeweiligen Semesters und wird zu Beginn der Lehrveranstaltung durch den Dozenten und über Moodle bekannt gegeben. Die mündliche Präsentation umfasst einen Vortrag im Umfang von 10-15 Minuten. Dieser findet vor dem Prüfungszeitraum statt. Die Vortragsfolien sind ebenfalls über die Moodle Plattform bis zum Vortragstermin einzureichen.

Der Inhalt der Seminararbeit ist der persönliche Beitrag jedes Studierenden zu einem Softwareentwicklungsteam. Dabei übernimmt jeder Teilnehmer eine spezifische Rolle im Team. Details dazu werden zu Beginn der Lehrveranstaltung bekannt gegeben. Die Teamzusammenstellung findet über die Moodle Plattform statt. Durch Beitritt zu einem Team akzeptiert der Student die Aufgabenstellung und damit das Thema der Seminararbeit.

Empfohlene Voraussetzungen:

Keine

Angestrebte Lernergebnisse:

Nach Teilnahme an dem Modul sind die Studierenden in der Lage,

- die Grundlagen des Softwareengineerings zu erläutern.
- Softwareanforderungen zu ermitteln und zu strukturieren.
- Softwarekomponenten und Schnittstellen formal zu beschreiben.
- einfache Softwarekomponenten anhand von Modellen in einer höheren Programmiersprache zu entwickeln, zu testen, zu integrieren, zu deployen und zu dokumentieren.
- Entwicklungswerkzeuge (Softwareengineering Tool-Chain) effektiv anzuwenden.
- problemorientiert in Teams bei der Erstellung von Softwareanwendungen unter Verwendung agiler Projektmanagementmethoden zusammenzuarbeiten.

Inhalt:
• Grundlagen des Software Engineering • Systematische Analyse von Softwareanforderungen • Modellierung von Anforderungen und Komponenten eines Softwareprodukts • Spezifikation und Dokumentation von Schnittstellen zwischen Softwarekomponenten • Entwicklung von Softwaremodulen in Teams einschließlich Testing, Integration, Deployment und Dokumentation • Durchgängige Anwendung von Software Engineering Tools (IDE, Source Code Management, etc.) • Durchgängige Anwendung agiler Projektmanagementmethoden im Kontext eines Softwareprojekts
Literatur:
• THOMAS, David und Andrew HUNT, 2020. *The pragmatic programmer: your journey to mastery*. 20. Auflage. Boston: Addison-Wesley. ISBN 978-0-13-595705-9, 0-13-595705-2 • MILES, Russ und Kim HAMILTON, 2006. *Learning UML 2.0: [a pragmatic introduction to UML]*. Sebastopol, CA: O'Reilly & Associates. ISBN 0-596-00982-8 • GAMMA, Erich und andere, 1994. *Design Patterns - Elements of Reusable Object-Oriented Software*. ISBN 0-201-63361-2 • PREIßEL, René und Bjørn STACHMANN, 2019. *Git: dezentrale Versionsverwaltung im Team: Grundlagen und Workflows*. Heidelberg: dpunkt.verlag. ISBN 978-3-86490-649-7, 3-86490-649-0
Weitere Anmerkungen/Sonstiges:
Keine Anmerkungen.

Internationales Projekt			
Modulkürzel:	InternProj	**Art des Moduls:**	Wahlpflichtfach
Zuordnung zum Curriculum:	**Studiengang, -abkürzung, SPO-Nr.**		
	M-DENS		

Modulverantwortliche(r):	Schwandner, Gerd	
Dozent(in):	Schwandner, Gerd	
Sprache:	Deutsch/Englisch	
Leistungspunkte / SWS:	5 ECTS / 4 SWS	
Arbeitsaufwand:	Kontaktstunden:	47 h
	Selbststudium:	79 h
	Gesamtaufwand:	126 h
Lehrveranstaltungen des Moduls:	12: Internationales Projekt	
Lehrformen des Moduls:	SU/Ü-Seminaristischer Unterricht/Übung	

Studien- / Prüfungsleistungen:

Proj - Projektarbeit mit mdl. Präsentation (15 min) und schriftlicher Ausarbeitung (5 - 25 Seiten)

Weitere Erläuterungen:

Keine

Empfohlene Voraussetzungen:

Keine

Angestrebte Lernergebnisse:

Die Studierenden können selbstständig ein abgegrenztes Thema aus dem internationalen Kontext nach wissenschaftlichen Anforderungen bearbeiten und Lösungsvorschläge präsentieren.

Students can independently work on a delimited topic from the international context according to scientific requirements and present proposed solutions.

Inhalt:

Die Inhalte werden jeweils an das entsprechende Land adaptiert und mit aktuellen Aspekten der Internationalität bzw. Globalisierung abgerundet.

The contents are adapted to the respective country and rounded off with current aspects of internationality or globalization.

Literatur:

Die Literatur wird jeweils zu Beginn des Semesters bekannt gegeben.

- The literature will be announced at the beginning of each semester.

Weitere Anmerkungen/Sonstiges:

Blockseminar / Compact seminar.

Eine Woche vor Ort (Südafrika) / One week on site (South Africa).

Im Sommersemester 2025 virtuell (ohne Exkursion). / In summer semester 2025 virtually (no excursion).

Digital Procurement & Data Science			
Modulkürzel:	DiPro&DaSc	**Art des Moduls:**	Wahlpflichtfach
Zuordnung zum Curriculum:	**Studiengang, -abkürzung, SPO-Nr.**		
	M-WI		

Modulverantwortliche(r):	Hecht, Dirk	
Dozent(in):	Hecht, Dirk; Huber, Sina	
Sprache:	Deutsch	
Leistungspunkte / SWS:	5 ECTS / 4 SWS	
Arbeitsaufwand:	Kontaktstunden:	47 h
	Selbststudium:	79 h
	Gesamtaufwand:	126 h
Lehrveranstaltungen des Moduls:	7: Digital Procurement & Data Science	
Lehrformen des Moduls:	SU/Ü-Seminaristischer Unterricht/Übung	

Studien- / Prüfungsleistungen:

StA - Studienarbeit, schriftliche Ausarbeitung 8 - 15 Seiten, Präsentation 15 - 20 Seiten

Weitere Erläuterungen:

Keine

Empfohlene Voraussetzungen:

Keine

Angestrebte Lernergebnisse:

Die Studierenden:

- können unterschiedliche IT-Tools entlang eines PEP komplexer Produkte bewerten.
- vertiefen die IT-Methoden der modernen Beschaffung und können moderne Projekt-Datenmanagement-software (PDM) anwenden.
- analysieren relevante globale Beschaffungsdaten (Lieferantenmarkt, Technologien, Kosten).
- sind nach der Veranstaltung in der Lage, digitale Beschaffungsprozesse zu modellieren.
- entwickeln eine Blockchain Anwendung im Rahmen des globalen SCM.
- setzen die Programmiersprache Python dazu ein, ein einfaches neuronales Netz zur Anwendung im modernen Beschaffungsmanagement zu erzeugen.

Inhalt:

- Software entlang des PEP aus Beschaffungssicht
- Zugrundeliegende Theorien und praktische Anwendung der vorgestellten Software
- Python Programmierung
- Neuronale Netze
- Blockchain und Digital Twin
- IT-Methoden, moderne Projekt-Datenmanagementsoftware (PDM)
- Digitale Beschaffungsprozesse
- Grundzüge des Data Science

Literatur:
• APPELFELLER, Wieland, FELDMANN, Carsten, 2023. *Die digitale Transformation des Unternehmens: Systematischer Leitfaden mit zehn Elementen zur Strukturierung und Reifegradmessung* [online]. Berlin, Heidelberg: Springer Berlin Heidelberg PDF e-Book. ISBN 978-3-662-65413-2. Verfügbar unter: https://doi.org/10.1007/978-3-662-65413-2. • NIEBLER, Paul, LINDNER, Dominic, 2022. *Datenbasiert entscheiden: Data Analytics in der Unternehmenspraxis* [online]. Wiesbaden: Springer Fachmedien Wiesbaden PDF e-Book. ISBN 978-3-658-39460-8. Verfügbar unter: https://doi.org/10.1007/978-3-658-39460-8. • SCHUPP, Florian, WÖHNER, Heiko, 2018. *Digitalisierung im Einkauf* [online]. Wiesbaden: Springer Fachmedien Wiesbaden PDF e-Book. ISBN 978-3-658-16909-1. Verfügbar unter: https://doi.org/10.1007/978-3-658-16909-1. • HECHT, Dirk, 2022. *Modernes Beschaffungsmanagement in Lehre und Praxis*. Stuttgart: Verlag W. Kohlhammer. ISBN 978-3-17-039953-2, 3-17-039953-5
Weitere Anmerkungen/Sonstiges:
Keine Anmerkungen.

Leadership & Soziale Verantwortung			
Modulkürzel:	LeaShip&SoVerant	**Art des Moduls:**	Wahlpflichtfach
Zuordnung zum Curriculum:	**Studiengang, -abkürzung, SPO-Nr.**		
	M-WI, M-GFTM		

Modulverantwortliche(r):	Martens, Bernd	
Dozent(in):	Martens, Bernd	
Sprache:	Deutsch	
Leistungspunkte / SWS:	5 ECTS / 4 SWS	
Arbeitsaufwand:	Kontaktstunden:	47 h
	Selbststudium:	79 h
	Gesamtaufwand:	126 h
Lehrveranstaltungen des Moduls:	7: Leadership & Soziale Verantwortung	
Lehrformen des Moduls:	SU/Ü-Seminaristischer Unterricht/Übung	

Studien- / Prüfungsleistungen:

LN - Seminararbeit mit mündlicher Prüfung, Ausarbeitung 8 - 15 Seiten, Präsentation 15 - 20 Seiten

Weitere Erläuterungen:

Keine

Empfohlene Voraussetzungen:

Keine

Angestrebte Lernergebnisse:

Die Studierenden

- verstehen und vertiefen das Kompetenzspektrum zur Bewältigung von Leadership-Aufgaben.
- besitzen grundlegende führungsbezogene und unternehmerische Kompetenzen, um in ihrer aktuellen bzw. zukünftigen Führungsposition professionell agieren zu können.
- fokussieren auf ein zielgerichtetes, wertorientiertes und reflektierendes Führungsverhalten.
- verstehen die soziale Verantwortung eines Unternehmens und insbesondere der Einkaufsorganisation im Sinne des Corporate Social Responsibility (CSR).
- lernen relevante Orientierungsrahmen zu branchenübergreifenden Normen kennen und sind in der Lage, Standards und Leitlinien von CSR zielgerichtet einzusetzen.

Inhalt:

- Konzept des Leaderships incl. „Personal Leadership", „Lateral Leadership" und „Task-Oriented Leadership"
- Theorien und Hintergründe zum Thema „Mitarbeiterzentrierte Leadership“
- Leadership im Einkaufskontext
- Leistungsorientierung, Messbarkeit und Work Life Balance
- Talentmanagement im Einkauf und Karriereentwicklung
- Wichtige Führungsinstrumente im täglichen Umgang mit Mitarbeitern
- Das CSR-Verständnis der Europäischen Kommission

- Verantwortung von Unternehmen für ihre Auswirkungen auf die Gesellschaft
- CSR in der Transport- und Logistikbranche Im Rahmen der globalen Herausforderungen
- Lieferkettengesetz, Umsetzung und die Auswirkungen für Großkonzerne und KMU

Literatur:

- BAUS, Lars, 2015. *Selbstmanagement: Die Arbeit ist ein ewiger Fluss: Gelassener arbeiten und besser leben* [online]. Wiesbaden: Springer Fachmedien Wiesbaden PDF e-Book. ISBN 978-3-658-09593-2, 978-3-658-09592-5. Verfügbar unter: https://doi.org/10.1007/978-3-658-09593-2
- ECKERT, Marcus und Torsten TARNOWSKI, 2017. *Stress- und Emotionsregulation: Trainingsmanual zum Programm Stark im Stress: mit E-Book inside und Arbeitsmaterial*. Weinheim: Beltz. ISBN 978-3-621-28451-6
- FURTNER, Marco, BALDEGGER, Urs, 2016. *Self-Leadership und Führung: Theorien, Modelle und praktische Umsetzung* [online]. Wiesbaden: Springer Fachmedien Wiesbaden PDF e-Book. ISBN 978-3-658-13045-9, 978-3-658-13044-2. Verfügbar unter: https://doi.org/10.1007/978-3-658-13045-9.
- DECKERT, Carsten, 2021. *CSR und Logistik: Spannungsfelder Green Logistics und City-Logistik* [online]. Berlin: Springer Gabler PDF e-Book. ISBN 978-3-662-63570-4. Verfügbar unter: https://doi.org/10.1007/978-3-662-63570-4.
- HEIDBRINK, Ludger und Brigitte BIERMANN, 2015. *Corporate Social Responsibility in der Logistikbranche: Anforderungen an eine nachhaltige Unternehmensführung*. Berlin: Schmidt, Erich. ISBN 978-3-503-14488-4, 3-503-14488-9
- FIFKA, Matthias S., 2021. *CSR- und Nachhaltigkeitsmanagement* [online]. Baden-Baden: Nomos PDF e-Book. ISBN 978-3-7489-0834-0. Verfügbar unter: https://doi.org/10.5771/9783748908340.
- ROHDE, Thomas. *CSR und Nachhaltigkeitsmanagement. Definitionen, Ansätze und organisatorische Umsetzung im Unternehmen* [online]. Berlin: Institute for Sustainability [Zugriff am:]. Verfügbar unter: http://www.4sustainability.de/fileadmin/redakteur/bilder/Publikationen/Loew_Rohde_2013_CSR-und-Nachhaltigkeitsmanagement.pdf
- SCHNEIDER, Andreas, SCHMIDPETER, René, 2015. *Corporate Social Responsibility: Verantwortungsvolle Unternehmensführung in Theorie und Praxis* [online]. Berlin, Heidelberg: Springer Berlin Heidelberg PDF e-Book. ISBN 978-3-662-43483-3, 978-3-662-43482-6. Verfügbar unter: https://doi.org/10.1007/978-3-662-43483-3.
- KERKHOFF, Gerd und Stephan PENNING, 2010. *Der strategische Faktor Personal im Einkauf: warum manche Einkaufsorganisationen erfolgreich sind - andere aber nicht*. Weinheim: Wiley-VCH-Verl. ISBN 978-3-527-50478-7

Weitere Anmerkungen/Sonstiges:

Keine Anmerkungen.

Strategisches Beschaffungs- & Lieferantenmanagement			
Modulkürzel:	StratB&LiefManag	**Art des Moduls:**	Wahlpflichtfach
Zuordnung zum Curriculum:	**Studiengang, -abkürzung, SPO-Nr.**		
	M-WI		

Modulverantwortliche(r):	Hecht, Dirk	
Dozent(in):	Hecht, Dirk	
Sprache:	Deutsch	
Leistungspunkte / SWS:	5 ECTS / 4 SWS	
Arbeitsaufwand:	Kontaktstunden:	47 h
	Selbststudium:	79 h
	Gesamtaufwand:	126 h
Lehrveranstaltungen des Moduls:	7: Strategisches Beschaffungs- & Lieferantenmanagement	
Lehrformen des Moduls:	SU/Ü-Seminaristischer Unterricht/Übung	

Studien- / Prüfungsleistungen:

schrP90 - schriftliche Prüfung, 90 Minuten

Weitere Erläuterungen:

Keine

Empfohlene Voraussetzungen:

Keine

Angestrebte Lernergebnisse:

Die Studierenden:

- verstehen die Aufgaben der Einkaufsorganisation im Kontext des Produktlebenszyklus und analysieren die Rolle des Einkaufs in den verschiedenen Phasen im Produktlebenszyklus.
- sind nach der Veranstaltung in der Lage, Prozesse in der Beschaffung und im Lieferantenmanagement zu optimieren.
- können innovative Ansätze durch systematisches Value-Management entwickeln und Produkt- und Prozesskosten optimieren.
- verstehen die Rolle des Cost Engineerings bei der Kostenkalkulation und -kontrolle entlang der Wertschöpfungskette.
- können Methoden wie Target Costing, Should Costing und Design-to-Cost aktiv anwenden.
- entwickeln Sourcing-Strategien und erkennen die Bedeutung strategischer Entwicklungspartner.

Inhalt:

- Aufgaben entlang des Produkt Life Cycles (Value- und Innovationsmanagement, Gewicht, Nachhaltigkeit, Kosten, Versorgungssicherheit, Lieferantenmanagement, Ersatzteilgeschäft)
- Cost Engineering, Konzeptwertanalysen bis zu Produktkalkulation Zero Base, Best Practice, Optimierung
- Wettbewerbsstruktur, Technologieführerschaft, Hedgingpotential
- Low-cost country Bewertungen
- Aufbau einer Sourcing-Strategie, strategische Partnerschaften, Entwicklungspartner, Built to print

- Vor- und Nachteile lokaler Beschaffung versus Zentralisierung auf weltweiten Sourcing Märkten
- Make or Buy Analysen (Business Case, Entscheidermatrix), Landed Cost Analysen, Lokalisierungen, Werkeversorgung (zentral oder lokal)

Literatur:

- LEMME, Markus, 2009. *Erfolgsfaktor Einkauf: durch gezielte Einkaufspolitik Kosten senken und Erträge steigern*. Berlin: Cornelsen Scriptor. ISBN 978-3-589-23657-2
- BÜSCH, Mario, 2013. *Praxishandbuch strategischer Einkauf: Methoden, Verfahren, Arbeitsblätter für professionelles Beschaffungsmanagement* [online]. Wiesbaden: Springer Gabler PDF e-Book. ISBN 978-3-8349-4566-2, 978-3-8349-4567-9. Verfügbar unter: https://doi.org/10.1007/978-3-8349-4567-9.
- GABATH, Christoph Walter, 2008. *Gewinngarant Einkauf: nachhaltige Kostensenkung ohne Personalabbau* [online]. Wiesbaden: Gabler PDF e-Book. ISBN 978-3-8349-0590-1, 3-8349-0590-9. Verfügbar unter: https://doi.org/10.1007/978-3-8349-9576-6.
- HOFBAUER, Günter, 2013. *Technisches Beschaffungsmanagement: [der Beschaffungsprozess]*. Berlin: Uni-Ed. ISBN 978-3-942171-94-6
- HECHT, Dirk, 2022. *Modernes Beschaffungsmanagement in Lehre und Praxis*. Stuttgart: Verlag W. Kohlhammer. ISBN 978-3-17-039953-2, 3-17-039953-5
- HOFBAUER, Günter, MASHHOUR, Tarek, FISCHER, Michael, 2016. *Lieferantenmanagement: die wertorientierte Gestaltung der Lieferbeziehung* [online]. Berlin: De Gruyter Oldenbourg PDF e-Book. ISBN 978-3-11-044336-3, 978-3-11-044263-2. Verfügbar unter: https://doi.org/10.1515/9783110443363.
- HOFBAUER, G., 2006. Integriertes Beschaffungsmarketing - Der systematische Ansatz im Wertschöpfungsprozess. In: *Baustoff-Jahrbuch: Daten-Fakten-Hintergründe*. 2005/2006, S.67-69.
- HOFBAUER, Günter, BAUER, Christian, 2005. Mehr Wert durch Beschaffungsmarketing: gezieltes Zusammenwirken von Absatz und Einkauf. In: *Beschaffung Aktuell - Materialwirtschaft, Einkauf, Logistik*. **2005**(6), S.24-25.
- KERKHOFF, Gerd, 2008. *Milliardengrab Einkauf: Einkauf, die Top-Verantwortung des Unternehmers nicht nur in schwierigen Zeiten*. Weinheim: Wiley-VCH-Verl. ISBN 978-3-527-50336-0, 3-527-50336-6

Weitere Anmerkungen/Sonstiges:

Keine Anmerkungen.

Engineering Processes in Automotive Industry			
Module abbreviation:	EngineeProcAuto	**SPO-Nr.:**	7
Curriculum:	**Programme**	**Module type**	**Semester**
	M-WI, M-DENS, M-GFTM	Elective subject	1
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	Englisch	1 Semester	nur Sommersemester

Responsible for module:	Meyer, Roland
Lecturers:	Neumann, Alexander; Triveni, Prashant
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 79 h Total hours: 126 h
Subjects of the module:	7: Engineering Processes in Automotive Industry
Lecture types:	SU/Ü-Seminaristischer Unterricht/Übung
Examinations:	schrP90 - schriftliche Prüfung, 90 Minuten

Prerequisites according examination regulation:

Keine

Recommended prerequisites:

Keine

Objectives:

The students

- get to know the strongly networked and parallel processes in the product development of automobiles ("product process" and "product development process").
- can recognise, assess and include in their work interactions between production and product.
- know the significance and working methods of Simultaneous Engineering (SE) including the involvement of suppliers in product design and product and process quality to meet the requirements of production.
- can handle tools of project and process management (e.g. master product processes with structured levels of action in terms of decisions and themes, milestone definitions and synchronisation, levels of product maturity, EHPV, 3Ps „Production Preparation Process" etc.) and know the working methods and processes, for example, for networking, decision-making, escalation, theme contributions etc. in large automotive and supplier companies.
- know the significance of prototype, pilot production and release processes, their tools (e.g. Meisterbock processes, audit scores, process capability evidence, VFF, PVS, etc.) as well as their involvement in the product and engineering process.
- know about the significance of Lean Development.

Content:

- Product development and quality management (during the product development process) in the automotive industry
- Project and process management in the product development process
- Prototype, pilot production and release processes

- Lean Development, generic principles and application

Literature:

- STAMATIS, Diomidis H., 2001. *Advanced quality planning: a commonsense guide to AQP and APQP*. New York, NY: Productivity Press. ISBN 1-56327-258-X
- COOPER, Robert G., 2017. *Winning at new products: creating value through innovation*. New York, NY: Basic Books. ISBN 0-465-09332-9, 978-0-465-09332-8
- WOMACK, James P., Daniel T. JONES und Daniel ROOS, 2007. *The machine that changed the world: [how lean production revolutionized the global car wars]*. London [u.a.]: Simon & Schuster. ISBN 978-1-84737-055-6, 1-8473-7055-1
- WOMACK, James P. und Daniel T. JONES, 2003. *Lean thinking: banish waste and create wealth in your corporation*. London [u.a.]: Simon & Schuster. ISBN 978-0-7432-3164-0
- ROTHER, Mike und John SHOOK, 2009. *Learning to see: value-stream mapping to create value and eliminate muda*. Version 1. Auflage. Cambridge, Mass.: Lean Enterprise Inst. ISBN 978-0-9667843-0-5, 0-9667843-0-8
- MORGAN, James M. und Jeffrey K. LIKER, 2006. *The Toyota product development system: integrating people, process, and technology*. New York, NY: Productivity Press. ISBN 1-56327-282-2, 978-1-563-27282-0
- REINERTSEN, Donald G., 2009. *The principles of product development flow: second generation lean product development*. Redondo Beach, Calif: Celeritas. ISBN 978-1-935401-00-1, 1-935401-00-9
- CHANG, Kuang-Hua, 2013. *Product manufacturing and cost estimating using CAD/CAE*. Amsterdam [u.a.]: Elsevier. ISBN 978-0-12-401745-0
- MITAL, Anil, 2014. *Product development: a structured approach to consumer product development, design, and manufacture*. Amsterdam [u.a.]: Elsevier. ISBN 978-0-12-799945-6

Additional remarks:

Bonus system:

In the course, tasks can be set that lead to bonus points for the examination performance for each qualitatively completed task. The maximum crediting of bonus points takes place according to the APO.

Sustainability & Resilience in Supply Chain Management			
Module abbreviation:	SustResilSCM	**SPO-Nr.:**	7
Curriculum:	**Programme**	**Module type**	**Semester**
	M-WI, M-EGM, M-GFTM, M-APE, M-DL	Elective subject	1
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 Semester	nur Sommersemester

Responsible for module:	Birk, Martina
Lecturers:	Birk, Martina; Hartmann, Matthias; Warmbier, Piotr
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 79 h Total hours: 126 h
Subjects of the module:	7: Sustainability & Resilience in Supply Chain Management
Lecture types:	SU/Ü-Lecture with integrated exercises
Examinations:	LN - Studienarbeit ohne mündliche Prüfung, 8 - 15 Seiten Ausarbeitung, 15 - 20 Seiten Präsentation

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

The students:

- analyse and evaluate the demand of the sustainable development goals for different supply chain designs.
- define adequate KPI´s to evaluate and optimize sustainable Supply Chains.
- understand the meaning and analyse the consequences of sustainable regulations and acts.
- differenciate between the meaning of risk management and resilience in Supply Chains.
- identify adequate methods and tools to optimize the resilience of Supply Chains.

Content:

- Sustainable Development Goals (SDG´s)
- KPI´s in Sustainablity
- Sustainability regulations and acts
- Risk management versus resilience
- Improvement of resilience in Supply Chain (actions, methods, evaluation etc.)
- Agile Supply Chain Management (design, methods, examples etc.)
- Case studies and practical examples, benchmarks

Literature:
• STADTLER, Hartmut und Christop KILGER, 2005. *Supply Chain Management and Advanced Plannung*. Berlin: Springer. ISBN 3-540-22065-8 • LEON, Steven M., 2013. *Sustainability in Supply Chain Management Casebook*. ISBN 978-0-13-336719-5 • HEß, Gerhard und Ann-Christin KLEINLEIN, 2021. Resilienz im Einkauf: Konzept und Praxisleitfaden zum Management unerwarteter Risiken in der Lieferkette. Wiesbaden: Springer Gabler. ISBN 978-3-658-34461-0, 3-658-34461-X • WELLBROCK, Wanja und Daniela LUDIN, 2019. *Nachhaltiges Beschaffungsmanagement: Strategien - Praxisbeispiele - Digitalisierung*. Wiesbaden: Springer Gabler. ISBN 978-3-658-25187-1
Additional remarks:
The courses will be held in a hybrid format: in presence and online (via MS Teams).

Design Culture Theory and Methods

Module abbreviation:	DCT	**SPO-Nr.:**	11
Curriculum:	**Programme**	**Module type**	**Semester**
	M-EGM, M-GFTM	Elective subject	2
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	only summer term

Responsible for module:	Rothbucher, Bernhard
Lecturers:	Rothbucher, Bernhard
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 78 h Total hours: 125 h
Subjects of the module:	11: Design Culture Theory and Methods
Lecture types:	SU/Ü-Lecture with integrated exercises
Examinations:	LN - seminar paper

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

After attending the course, the students

- can work on complex tasks in cross-functional and international teams, solve conflicts in the team and take over team leadership.
- can organise themselves and manage their time as well as work in a goal-oriented and independent manner.
- know the performance and limits of the methods learned and can name them.
- apply frameworks for responsible innovation to ensure the ethical development and application of new technologies.
- define and explain the concepts of business ethics and technology ethics.
- can apply scientific standards to their work assignment.
- can communicate the results of their research to an expert audience.

Content:

- Cultural Probing
- Intercultural Communication
- Design Culture Excursion
- Business Ethics
- Sustainability and Social Responsiveness

Literature:
• MEYER, Erin, 2015. The culture map: decoding how people think, lead, and get things done across cultures. New York, NY: PublicAffairs. ISBN 978-1-61039-276-1 • BOEIJEN, Annemiek van, Jaap DAALHUIZEN und Jelle ZIJLSTRA, 2020. *Delft design guide: perspectives, models, approaches, methods*. Amsterdam, The Netherlands: BIS Publishers. ISBN 978-90-6369-540-8, 90-6369-540-3 • BOEIJEN, Annemiek van und Yvo ZIJLSTRA, 2020. *Culture sensitive design: a guide to culture in practice*. Amsterdam: BIS Publishers. ISBN 978-90-6369-561-3 • SAGMEISTER, Simon und Joe Paul KROLL, 2018. *Business culture design: develop your corporate culture with the culture map*. 1. Auflage. Frankfurt, New York: Campus Verlag. ISBN 978-3-593-50840-5, 3-593-50840-0
Additional remarks:
No remarks.

Design Leadership Methods

Module abbreviation:	DLM	**SPO-Nr.:**	11
Curriculum:	**Programme**	**Module type**	**Semester**
	M-EGM, M-GFTM	Elective subject	2
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	only summer term

Responsible for module:	Rothbucher, Bernhard
Lecturers:	Rothbucher, Bernhard
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 78 h Total hours: 125 h
Subjects of the module:	11: Design Leadership Methods
Lecture types:	SU/Ü-Lecture with integrated exercises
Examinations:	Student research project with presentation

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

After attending the course, the students can

- define and explain the concept, principles, and process of design leadership methods.
- compare different methods of design leadership methods and evaluate their suitability for different purposes.
- apply methods of design leadership on projects in product and service design.
- relate themselves to the principles of design leadership methods.
- can analyse an existing team structure and can develop a strategy to transform it into a preferred one.
- use case studies from the research literature and relate it to their real-world business situation.

Content:

- Foundations of Design Leadership
- Integration Tools
- Innovation Project Simulation
- Sociography
- Visual Communication

Literature:

- PICCHI, Andrea, 2022. *Design Management: Create, Develop, and Lead Effective Design Teams* [online]. Berkeley, CA: Apress PDF E-Books. ISBN 978-1-4842-6954-1. Verfügbar unter: https://doi.org/10.1007/978-1-4842-6954-1.

- COOPER, Rachel, 2017. *The handbook of design management*. London: Bloomsbury. ISBN 978-1-3500-0001-8, 978-1-8478-8488-6
- ELKINGTON, Rob und andere, 2018. *Exceptional leadership by design: how design in great organizations produces great leadership*. Bingley, UK: Emerald Publishing. ISBN 978-1-78743-901-6
- CALABRETTA, Giulia, Gerda GEMSER und Ingo KARPEN, 2016. *Strategic design: eight essential practices every strategic designer must master*. Amsterdam: BIS publishers. ISBN 90-6369-445-8, 978-90-6369-445-6
- QUAYLE, Moura, 2017. *Designed leadership* [online]. New York; Chichester, West Sussex: Columbia University Press PDF e-Book. ISBN 978-0-231-54468-9. Verfügbar unter: https://doi.org/10.7312/quay17312.

Additional remarks:

No remarks.

Production and Logistics Networks

Module abbreviation:	ProdLogis	**SPO-Nr.:**	11
Curriculum:	**Programme**	**Module type**	**Semester**
	M-EGM	Elective subject	1
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	only summer term

Responsible for module:	Jattke, Andreas
Lecturers:	Jattke, Andreas
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 78 h Total hours: 125 h
Subjects of the module:	11: Production and Logistics Networks
Lecture types:	SU/Ü-Lecture with integrated exercises
Examinations:	LN - oral exam, 15 minutes

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

The students

- Get to know the significance, elements, basic structure, design and execution of production and logistic networks in the automotive industry.
- Can capture and assess interactions between production network, location factors, suppliers, logistics network, own/external skills, own manufacturing penetration, product design/technologies, production design/technologies etc.
- Get to know possible production strategies, their effects on the production and logistics network including suppliers' environment and can systematically assess and develop different production strategies.
- Can design skills strategies in conjunction with the production strategy and hence derive and establish skills development including supplier development.
- Get to know procurement, intra/production and distribution logistics systems used in the automotive industry (e.g. JIT, milk run, supermarket, kanban concept, single/multi-level, combined logistics systems etc.).
- Can assess and fundamentally calculate the effects of different logistics concepts.
- can optimize supply chains (specific design, KPI, transport- and warehousing strategies, make or buy decisions, etc.).

Content:

- Production networks and skills strategies
- Logistics systems and networks
- Logistics concepts in manufacture (intralogistics)

- Supply Chain management design methodologies
- Supply Chain KPIs
- TOPSIM LOGISITCS simulation tool
- Supply chain management in line with industry 4.0 (digitalisation)

Literature:

- ERRASTI, Ander und Tim BAINES, 2013. *Global production networks: operations design and management*. Boca Raton, Fla. [u.a.]: CRC Press. ISBN 978-1-4665-6292-9
- ZHENG, Li, POSSEL-DÖLKEN, Frank, 2002. *Strategic Production Networks* [online]. Berlin, Heidelberg: Springer Berlin Heidelberg PDF e-Book. ISBN 978-3-540-24812-5. Verfügbar unter: https://doi.org/10.1007/978-3-540-24812-5.
- ABELE, Eberhard, 2008. *Global production: a handbook for strategy and implementation* [online]. Berlin [u.a.]: Springer PDF e-Book. ISBN 978-3-540-71653-2. Verfügbar unter: https://doi.org/10.1007/978-3-540-71653-2.
- STADTLER, Hartmut, KILGER, Christoph, MEYR, Herbert, 2015. *Supply chain management and advanced planning: concepts, models, software, and case studies* [online]. Berlin, Heidelberg: Springer Berlin Heidelberg PDF e-Book. ISBN 978-3-642-55309-7. Verfügbar unter: https://doi.org/10.1007/978-3-642-55309-7.

Additional remarks:

Bonussystem:

In lecture there may be tasks, which will lead to bonus points to the exams in case of good execution. At maximum 5 bonus points may be given.

Strategic Foresight and Trend Analysis

Module abbreviation:	StratFor	**SPO-Nr.:**	11
Curriculum:	**Programme**	**Module type**	**Semester**
	M-WI, M-DENS, M-EGM, M-DL	Elective subject	1
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	only summer term

Responsible for module:	Schwarz, Jan	
Lecturers:	Schwarz, Jan	
Credit points / SWS:	5 ECTS / 4 SWS	
Workload:	Contact hours:	47 h
	Self-study hours:	78 h
	Total hours:	125 h
Subjects of the module:	11: Strategic Foresight and Trend Analysis	
Lecture types:	SU/Ü-Lecture with integrated exercises	
Examinations:	mdlP - oral exam, 15 minutes	

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

The students:

- understand the most important foresight methods and can distinguish and explain them.
- can apply the methods learned in case studies.
- can methodically analyse trends and derive future developments.
- are aware of challenges in future thinking and can address these.

Content:

- Customer-, technology-, and competitor-foresight
- Trend analysis and strategic early identification
- Visioning
- Strategic simulation methods
- Prognostic crowdsourcing
- Delphi method
- Scenario technique
- Trend receiver method
- Analysis of Science Fiction

Literature:

- ELLER, E., HOFMANN, R., SCHWARZ, J.O., 2020. The Customer Foresight Territory. In: *Marketing Review St Gallen*. (3), S.888–895.
- HEIJDEN, Kees van der, 2009. *Scenarios: the art of strategic conversation*. Chichester [u.a.]: Wiley. ISBN 0-470-02368-6, 978-0-470-02368-6
- KRUPP, Steven, Paul J. SCHOEMAKER und David J. TEECE, 2014. *Winning the long game: how strategic leaders shape the future*. New York: Public Affairs. ISBN 1-61039-447-X, 978-1-61039-447-5
- LIEBL, Franz, SCHWARZ, Jan Oliver, 2010. Normality of the Future: Trend Diagnosis for Strategic Foresight. In: *Futures*. (42 (4)), S.313-327.
- ORIESEK, Daniel F., SCHWARZ, Jan Oliver, 2021. *Winning the uncertainty game: turning strategic intent into results with wargaming* [online]. London; New York: Routledge PDF E-Book. ISBN 9781000289855, 9780367853594. Verfügbar unter: https://doi.org/10.4324/9780367853594.
- ROHRBECK, René, MENES ETINGUE, Kum, 2018. Corporate Foresight and Its Impact on Firm Performance: A Longitudinal Analysis. In: *Technological Forecasting and Social Change.* Volume 129(April), S.105-116. ISSN https://doi.org/10.1016/j.techfore.2017.12.013
- ROHRBECK, René, BATTISTELLA, Cinzia , HUIZINGH, Eelko , 2015. Corporate Foresight: An Emerging Field with a Rich Tradition. In: *Technological Forecasting & Social Change.* Volume 101(December), S.1-9. ISSN https://doi.org/10.1016/j.techfore.2015.11.002
- ROHRBECK, René, SCHWARZ, Jan Oliver, 2013. The Value Contribution of Strategic Foresight: Insights from an Empirical Study of Large European Companies. In: *Technological Forecasting and Social Change*. Volume 80(8), S.1593–1606. ISSN https://doi.org/http://dx.doi.org/10.1016/j.techfore.2013.01.004
- SCHOEMAKER, Paul J. und Robert E. GUNTHER, May 2013. *Profiting from uncertainty: strategies for succeeding no matter what the future brings*. New York: Atria Books. ISBN 978-1-5011-6175-9
- SCHWARZ, Jan Oliver, 2015. The 'Narrative Turn' in Developing Foresight: Assessing How Cultural Products Can Assist Organisations in Detecting Trends. In: *Technological Forecasting and Social Change*. (90 (Part B)), S.510–513. ISSN https://doi.org/http://dx.doi.org/10.1016/j.techfore.2014.02.024
- SCHWARZ, Jan Oliver, ROHRBECK, René, WACH, Bernhard, 2019. Corporate Foresight as a Microfoundation of Dynamic Capabilities. In: *FUTURES & FORESIGHT SCIENCE*. (e28) ISSN https://doi.org/10.1002/ffo2.28

Additional remarks:

No additional remarks.

Technology Design and Evaluation			
Module abbreviation:	TechDesEva	**SPO-Nr.:**	11
Curriculum:	**Programme**	**Module type**	**Semester**
	M-WI, M-DENS, M-EGM	Elective subject	1
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	winter and summer term

Responsible for module:	Schönmann, Alexander
Lecturers:	Schönmann, Alexander
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 78 h Total hours: 125 h
Subjects of the module:	11: Technology Design and Evaluation
Lecture types:	SU/Ü-Seminar with integrated excercises.
Examinations:	schrP90 - written exam, 90 minutes

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

After attending the course, the students will have the following knowledge:

- know and apply important methods of technology management and can explain them.
- can propose appropriate technology development process models based on use case and company size.
- evaluate technological solutions in a team and represent advantages and disadvantages for this.
- design the implementation of workshops for eliciting requirements for development process models.
- know the tasks of technology development and know how to manage R&D processes.

Content:

- Modern technologies and technology trends
- Organisation and role of Technology Management
- Technology Dynamics (Lifecycle models)
- Technology Intelligence (Technology scanning, Technology monitoring, Technology scouting, Technology identification, search field description)
- Technology information sources (formal, informal sources)
- Technology evaluation (maturity, potential, economic efficiency, Technology portfolio analysis)
- Technology planning (Roadmaps)
- R&D Management
- Technology development (Technology Stage Gate)

- Application-specific selection of adequate technologies
- Linking Technology development and Product development processes
- New Product development: Development strategies and degree of newness; “Valley of death”
- Product Development processes: e.g. V-Model, Spiral model, Lean Start-up, Trends in process design
- Quality Function Deployment
- Product Architecture: functional and physical elements (differential design vs. integral design), Types of modularity
- Role of design in the development process (e.g. DFX)
- Digital Technologies, Digital Ecosystems
- Biomimetics (learning from nature)
- Technology exploitation strategies
- Technology protection
- Case studies and Industry examples on latest trends and technologies

Literature:

- TROTT, Paul, 2021. *Innovation management and new product development*. Harlow, England: Pearson. ISBN 978-1-292-25152-3
- SCHUH, Günther, 2011. *Technologiemanagement* [online]. Berlin [u.a.]: Springer PDF e-Book. ISBN 978-3-642-12529-4, 978-3-642-12530-0. Verfügbar unter: https://doi.org/10.1007/978-3-642-12530-0.
- KARAOMERLIOGLU, Dilek Cetindamar, Robert PHAAL und David PROBERT, 2016. *Technology management: activities and tools*. New York, NY: Palgrave Macmillan. ISBN 978-1-137-43185-1
- SAVIOZ, Pascal, 2004. *Technology Intelligence: Concept Design and Implementation in Technology Based SMEs*. Softcover reprint of the original 1. Auflage. London: Palgrave Macmillan UK. ISBN 978-1-349-51002-3, 1-349-51002-5
- ULRICH, Karl T., Steven D. EPPINGER und Maria C. YANG, 2020. *Product design and development*. New York, NY: McGraw-Hill. ISBN 978-1-260-56643-7, 1-260-56643-9
- MARITAN, Davide, 2015. *Practical Manual of Quality Function Deployment* [online]. Cham [u.a.]: Springer International Publishing PDF e-Book. ISBN 978-3-319-08521-0, 978-3-319-08520-3. Verfügbar unter: https://doi.org/10.1007/978-3-319-08521-0.
- EVERS, Natasha, James S. CUNNINGHAM und Thomas HOHOLM, 2021. *Technology entrepreneurship: bringing innovation to the marketplace*. London: Red Globe Press. ISBN 978-1-352-01117-3

Additional remarks:

A voluntary bonus system is offered: In the course, topics on methods of technology management are offered for individual processing and presentation, which lead to bonus points for the examination performance for each qualitatively processed task. The creditability as well as maximum crediting of bonus points takes place according to the APO.

Lectures contain digital learning elements for self-study, such as learning videos or meetings via web conferences.

The examination can be held in digital form on a PC at the university campus.

Advanced Economics

Module abbreviation:	Adv_Econ	**SPO-Nr.:**	7
Curriculum:	**Programme**	**Module type**	**Semester**
	M-GFTM, M-APE	Elective subject	2
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	summer semester

Responsible for module:	Eisenberg, Andrea
Lecturers:	Eisenberg, Andrea
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 78 h Total hours: 125 h
Subjects of the module:	7: Advanced Economics
Lecture types:	SU/Ü-Lecture with integrated exercises
Examinations:	schrP90 - written examination, 90 Minuten

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

The students get to:

- understand the importance of global economic system and problems for strategic business decisions in globally active companies.
- be able to evaluate challenges resulting from globalization and growing international business transactions.
- understand global economic problems, international economic relations and economic policy.
- understand how the international monetary system works.
- achieve an in-depth understanding of micro- and macroeconomic interrelationships.

Content:

- Advanced Microeconomic theory: supply and demand, economic actors
- Advanced Macroeconomics: inflation, unemployment, economic growth
- Institutional economics and international economic organizations
- International trade and globalization
- Interest rates, international monetary policy and currency systems

Literature:

- MANKIW, Nicholas Gregory und Mark P. TAYLOR, 2023. *Economics*. Andover, Hampshire: Cengage. ISBN 978-1-4737-8698-1

- MCDOWELL, Moore, 2012. *Principles of economics*. London [u.a.]: McGraw-Hill Education. ISBN 0-07-713273-4, 978-0-07-713273-6
- TAYLOR, Timothy, 2022. *Principles of Economics. PDF* [online]. PDF e-Book.

Additional remarks:

No additional remarks.

Business Analytics & Artificial Intelligence

Module abbreviation:	BusAn_AI	**SPO-Nr.:**	7
Curriculum:	**Programme**	**Module type**	**Semester**
	M-DENS, M-GFTM, M-APE, M-DL	Elective subject	2
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	summer semester

Responsible for module:	Bock, Jürgen	
Lecturers:	Ali, Faizan; Bock, Jürgen	
Credit points / SWS:	5 ECTS / 4 SWS	
Workload:	Contact hours:	47 h
	Self-study hours:	78 h
	Total hours:	125 h
Subjects of the module:	7: Business Analytics & Artificial Intelligence	
Lecture types:	SU/Ü - Lecture with integrated exercises	
Examinations:	schrP90 - written examination, 90 Minuten	

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

The students are able to

- explain the various conflict of objectives of supervised learning
- apply different models of supervised learning
- assess the quality of different models of supervised learning
- apply different clustering methods
- practically implement various machine learning methods using common software libraries
- distinguish between different areas of artificial intelligence and select suitable technologies for specific fields of application
- explain the basic principles and special concepts of formal knowledge representation
- transfer concrete domain knowledge into a formal knowledge model and provide added value through automatic reasoning.

Content:

- Linear regression
- Various classification algorithms
- Various clustering techniques
- Artificial Neural Networks
- Implementation of Machine Learning algorithms using suitable software tools and libraries
- Definition of Artificial Intelligence and overview over subdisciplines

- Formal knowledge representation and automatic reasoning

Literature:

- JAMES, Gareth und andere, 2021. *An introduction to statistical learning: with applications in R*. New York, NY: Springer. ISBN 978-1-0716-1417-4, 1-0716-1417-7
- BISHOP, Christopher M., 2016. Pattern recognition and machine learning. softcover reprint of the original 1st edition 2006. New York, NY: Springer. ISBN 978-1-4939-3843-8
- POINTER, Ian, 2019. *Programming PyTorch for deep learning: creating and deploying deep learning applications*. Bejing, Boston, Farnham, Sebastopol, Tokyo: O'Reilly Media, Inc. ISBN 9781492045328
- HITZLER, Pascal, Sebastian RUDOLPH und Markus KRÖTZSCH, 2010. *Foundations of Semantic Web technologies*. Boca Raton [u.a.]: Chapman & Hall/CRC Press. ISBN 978-1-4200-9050-5

Additional remarks:

No additional remarks.

Software Engineering

Module abbreviation:	SW_Eng	**SPO-Nr.:**	7
Curriculum:	**Programme**	**Module type**	**Semester**
	M-GFTM, M-APE	Elective subject	2
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	Englisch	1 semester	summer semester

Responsible for module:	Bock, Jürgen
Lecturers:	Bock, Jürgen; Radtke, Maximilian-Peter
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 78 h Total hours: 125 h
Subjects of the module:	7: Software Engineering
Lecture types:	SU/Ü - Lecture with integrated exercises
Examinations:	StA – seminar paper 8-15 pages

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

ter participating in this module students can:

- explain the foundations of software engineering.
- analyse and structure software requirements.
- formally describe software components and interfaces.
- develop, test, integrate, deploy and document simple software components using a high-level programming language.
- use development tools (software engineering toolchain) effectively.
- cooperate in teams during the development of software applications using agile project management methods.

Content:

- Foundations of software engineering
- Systematic analysis of software requirements
- Modelling of requirements and components of a software product
- Specification and documentation of software component interfaces
- Development of software modules in teams including test, integration, deployment and documentation
- Consistent use of software engineering tools (IDE, source code management, etc.)
- Consistent use of agile project management methods in the context of a software project

Literature:
• THOMAS, David und Andrew HUNT, 2020. *The pragmatic programmer: your journey to mastery*. 20. Auflage. Boston: Addison-Wesley. ISBN 978-0-13-595705-9, 0-13-595705-2 • MILES, Russ und Kim HAMILTON, 2006. *Learning UML 2.0: [a pragmatic introduction to UML]*. Sebastopol, CA: O'Reilly & Associates. ISBN 0-596-00982-8 • GAMMA, Erich und andere, 1994. *Design Patterns - Elements of Reusable Object-Oriented Software*. ISBN 0-201-63361-2
Additional remarks:
No additional remarks.

Strategy and Growth in Automotive Sector			
Module abbreviation:	WMod_StrGroAutSc	**SPO-Nr.:**	8
Curriculum:	**Programme**	**Module type**	**Semester**
	all Master programs	Elective subject	
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	summer semester

Responsible for module:	Rengarajan, Srinath	
Lecturers:	Rengarajan, Srinath	
Credit points / SWS:	5 ECTS / 4 SWS	
Workload:	Contact hours:	47 h
	Self-study hours:	78 h
	Total hours:	125 h
Subjects of the module:	8: Strategy and Growth in Automotive Sector	
Lecture types:	SU/Ü - Lecture with integrated exercises	
Examinations:	LN – project work	

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

After attending the course, the students will be able to

- understand trends of strategy management and application of strategy tools and frameworks in the automotive sector based on multiple real-world case examples.
- gain an overview of megatrends and technological developments in the global automotive sector, including new business models incorporating ecosystem and platform approaches.
- develop an international perspective on the activities and strategies of established automotive companies, including the intricacies in market entry and growth strategies.
- analyze the product and mobility solutions portfolios and corporate strategies of global automakers from a positioning and competition perspective.

Content:

- Strategy management: Introduction, Corporate & Competitive Strategy, Strategy Tripod, M&A and Alliances, Strategy Tools/Frameworks and their applications
- Automotive trends: Megatrends, Connected, Autonomous, Electric, Shared
- International management: Global growth, Market entry, CSA/FSA, Reshoring. business strategies for emerging markets
- Dealing with uncertainty: decision intelligence framework
- Business ecosystems, marketplaces and platforms, as-a-Service models

Literature:

- MINTZBERG, Henry, Bruce W. AHLSTRAND und Joseph LAMPEL, 2005. *Strategy safari: a guided tour through the wilds of strategic management*. New York: Free Press. ISBN 978-0-7432-7057-1, 0-7432-7057-6
- NIEUWENHUIS, Paul und Peter WELLS, 2015. *The global automotive industry*. Chichester, UK: Wiley. ISBN 978-1-118-80239-7
- TRAUB-MERZ, Rudolf, 2017. *The Automotive Sector in Emerging Economies: Industrial Policies, Market Dynamics and Trade Unions. Trends & Perspectives in Brazil, China, India, Mexico and Russia*. Berlin: Friedrich-Ebert-Stiftung. ISBN 978-3-95861-597-7
- ACEA, *The Automobile Industry Pocket Guide 2024/2025* [online]. 2024. Verfügbar unter: https://www.acea.auto/publication/the-automobile-industry-pocket-guide-2024-2025/

Additional remarks:

The lecture takes place in block on following dates in summer semester 2025:

March 22

April 5, 26

May 3, 10

June 14, 28

Technology Commercialization & Intellectual Property Management			
Module abbreviation:	EDB_TC&IPM	**SPO-Nr.:**	7
Curriculum:	**Programme**	**Module type**	**Semester**
	M-GFTM, M-DL	Elective subject	1
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 Semester	summer term

Responsible for module:	Bader, Martin
Lecturers:	Bader, Martin; Freytag, Rudolf; Kleyn, Madelein
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 79 h Total hours: 126 h
Subjects of the module:	7: Technology Commercialization & Intellectual Property Management
Lecture types:	SU/Ü- Lecture with integrated exercises
Examinations:	SA+Koll. – written elaboration 8-15 pages; presentation 15-20 slides, oral examination 15 minutes

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

On completing the module part Technology-Commercialization, the students will have achieved the following learning outcomes:

- Understand the Concept of Technology Transfer and commercialization
- Consider the processes and different options for commercializing IP
- Understand how to de-risk technology and get it ready for market
- Understand how SMEs can successfully transfer technology and use intellectual property strategically
- Know how to negotiate and how to (successfully) close deals

On completing the module part Intellectual Property Management, the students will have achieved the following learning outcomes based on scientific methods.

Students are able to:

- Understand the relevance of intellectual property (IP) and intellectual property rights (IPRs) in the context of business innovation and its role for the innovation economy, particularly for small and medium enterprises (SMEs) and startups.
- Understand what role and impact have IPRs and patents in digital businesses.
- Understand how digital business models can be protected.
- Understand and analyse contents and structures of complex practical challenges in the current innovation ecosystem.
- Filter, structure and process relevant information from experiences and opinions.

- Evaluate and reflect the IP/IPRs needs of startups and SMEs in applying IP in business; based on the scientific state of the art in innovation and intellectual property management research, practical relevance and interdisciplinary demands of the different stakeholders.
- Briefly retrieve these intellectual property rights, e.g., how to derive a patent publication of a company from the public patent databases, e.g., Espacenet

Content:

The module part Technology-Commercialization will follow the outline:

- Defining Technology Transfer and commercialization
- Options of technology commercialization: The Technology Transfer Process (Starting a business or obtaining a license)
- Stakeholders' engagement
- Some considerations for technology commercialization for different industries
- IP Strategy: defining it, developing it, implementing it
- Derisking: Do I have a business and what about it?
- Derisking: Freedom to operate considerations
- Derisking: Funding considerations
- Technology licensing: Basics, negotiation tactics, different forms of licensing
- Dealmaking game

In contrast to large companies, Startups as well as Small and Medium Enterprises (SMEs) across industries often have no differentiated processes, fewer research activities, and often no software tools to manage their intellectual property (IP). These often focus on clear cost/benefit aspects of a patent. Therefore, startup need to apply more stringent criteria. They usually have a widely networked but very lean internal structure. Frequently, all IP management-related activities, e.g., the patent filing process, including file management and search activities, therefore usually involve a high degree of outsourcing to external patent law firms and consultants. In addition, the problem of IP enforceability may arise regarding available resources and high costs. E.g., in contrast to large companies, startups are often disadvantaged and therefore generally prefer to keep an invention confidential or save costs on IP management instead of building a case investing in IP as a value drive, especially regarding their envisioned growth or exit strategy, respectively.

The module part Intellectual Property Management will follow the outline:

- Fundamentals of intellectual property rights
- Patent protection strategies
- Evaluating and valuing patents
- Successful practices in commercializing patents
- Organizing patent management
- Patent management by Industry
- Patent management in new technology environments
- Generally useful information for startups when dealing with patents

Literature:

- GASSMANN, Oliver, Martin A. BADER und Mark THOMPSON, 2021. *Patent Management: Protecting Intellectual Property and Innovation*. Cham, Switzerland: Springer. ISBN 978-3-030-59008-6
- BADER, Martin A., SÜZEROGLU-MELCHIORS, Sevim, 2023. *Intellectual Property Management for Start-ups: Enhancing Value and Leveraging the Potential* [online]. Cham: Springer PDF e-Book. ISBN 978-3-031-16993-9. Verfügbar unter: https://doi.org/10.1007/978-3-031-16993-9.
- Ohne Autor. [online]. Verfügbar unter: https://www.wipo.int/edocs/pubdocs/en/wipo_case-study_ip_comm_za.pdf
- LAX, David A., SEBENIUS, James K. *Deal Making 2.0: A Guide to Complex Negotiations* [online]. Harvard Business Reviev: Harvard Business Publishing (HBP), Nov 2012 [Zugriff am: 28.12.2023]. Verfügbar unter: https://hbr.org/2012/11/deal-making-20-a-guide-to-complex-negotiations

- BADER, Martin A., 2006. *Intellectual property management in R&D collaborations: The case of the service industry sector*. Heidelberg: Physica. ISBN 3-7908-1702-3, 978-3-7908-1702-7
- BONAKDAR, Amir, FRANKENBERGER, Karolin, BADER, Martin A., GASSMAN, Oliver, 2017. *Capturing value from business models: The role of formal and informal protection strategies* [online]. International Journal of Technology Management, 2017 Vol.73 No.4, pp.151 - 175: International Journal of Technology Management, 20.03.2017. Verfügbar unter: 10.1504/IJTM.2017.083073
- *How to revolutionize your industry* [online]. Verfügbar unter: https://www.youtube.com/watch?v=B4ZSGQW0UMI
- FECHTELPETER, C. und andere, 2020. Integrated technology transfer concept for fostering innovation in SMEs. In: *26th International Association for Management of Technology Conference, IAMOT 2017*, S. 1028-1048.
- Hau, Yong. (2016). An empirical analysis of the influence of external knowledge network on SMEs' new technology development and technology commercialization capabilities in the perspective of open innovation. Journal of Digital Convergence. 14. 149-156. 10.14400/JDC.2016.14.5.149.
- Jo, D.H. & Park, J.W. (2017). The Determinants of Technology Commercialization Performance of Technology-based SMEs. KSII Transactions on Internet and Information Systems. 11. 4146-4161. 10.3837/tiis.2017.08.023.
- Park, T., Ryu, D. 2015 Drivers of technology commercialization and performance in SMEs: the moderating effect of environmental dynamisms Management Decision, 53 (2), pp. 338-353.
- TECHNOLOGY TRANSFER INNOVATION, Tom Hockaday, Publisher: Johns Hopkins University Press, Publication Date: April 2020: http://www.technologytransferinnovation.com/book.html
- Van Hemert, P., Nijkamp, P., Masurel, E. 2013 From innovation to commercialization through networks and agglomerations: analysis of sources of innovation, innovation capabilities and performance of Dutch SMEs Annals of Regional Science, 50 (2), pp. 425-452.
- Walker, Andy & Ellis, Harry. (2011). TECHNOLOGY TRANSFER: STRATEGY, MANAGEMENT, PROCESS AND INHIBITING FACTORS. A STUDY RELATING TO THE TECHNOLOGY TRANSFER OF INTELLIGENT SYSTEMS. International Journal of Innovation Management. 04. 10.1142/S1363919600000068.
- Alpaydin, Utku & Fitjar, Rune. (2020). Proximity across the Distant Worlds of University-Industry Collaborations. Papers in Regional Science. 100. 10.1111pirs.12586.
- Etzkowitz, Henry. (2003). Innovation in Innovation: The Triple Helix of University-Industry-Government Relations. Social Science Information Sur Les Sciences Sociales - SOC SCI INFORM. 42. 293-337. 10.1177/05390184030423002.
- Jin, C.-H., Lee, J.-Y. 2020 The impact of entrepreneurship on managerial innovation capacity: The moderating effects of policy finance and management support South African Journal of Business Management, 51 (1), art. no. a246.
- Thompson, N.A., Herrmann, A.M., Hekkert, M.P. 2018 SME Knowledge Commercialization Through Public Sector Partnerships International Journal of Innovation and Technology Management, 15 (3), art. no. 1850021.
- Festel, G. 2015 Technology transfer models based in academic spin-offs within the industrial biotechnology sector International Journal of Innovation Management, 19 (4), art. no. 1550031.
- Kim, S.-S. 2020 Research on the effect factors of technical performance on SMEs by industrial sectors Entrepreneurship and Sustainability Issues, 8 (2), pp. 1120-1141.
- Meijer, L.L.J., Huijben, J.C.C.M., van Boxstael, A., Romme, A.G.L. 2019 Barriers and drivers for technology commercialization by SMEs in the Dutch sustainable energy sector Renewable and Sustainable Energy Reviews, 112, pp. 114-126.
- Glover, Garrett and Rader, Randall R., Why Every Company Should Have a Written Ip Licensing Policy (October 20, 2021). les Nouvelles - Journal of the Licensing Executives Society, Volume LVI No. 4, December 2021, Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3946573.
- John Cronin and Paul DiGiammarino, Understanding and unifying diverse IP strategy perspectives, 2009, www.iam-media.com.

- Kim, M.-S., Lee, C.-H., Choi, J.-H., Jang, Y.-J., Lee, J.-H., Lee, J., Sung, T.-E. 2021 A study on intelligent technology valuation system: Introduction of kibo patent appraisal system II Sustainability (Switzerland), 13 (22), art. No. 12666.
- Patel, Developing an IP Checklist https://assets.fenwick.com/legacy/FenwickDocuments/Patent_Checklist.pdf.
- Gliga, G., Evers, N. 2010 Marketing challenges for high-tech SMEs Innovative Marketing, 6 (3), pp. 104-112.
- Kwon, Y.-I., Son, J.-K. 2018 A case study on the promising product selection indicators for small and medium-sized enterprises (SMEs) Journal of Open Innovation: Technology, Market, and Complexity, 4 (4), art. no. 56.
- Redondo, M., Camarero, C. and van der Sijde, P. (2021), "Exchange of knowledge in protected environments. The case of university business incubators", European Journal of Innovation Management, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/EJIM-08-2020-0341.
- Taekyung Park & Jaehoon Rhee (2013) Network types and performance in SMEs: the mediating effects of technology commercialization, Asian Journal of Technology Innovation, 21:2, 290-304, DOI: 10.1080/19761597.2013.866311.
- Han, Junghee. (2017). Technology Commercialization through Sustainable Knowledge Sharing from University-Industry Collaborations, with a Focus on Patent Propensity. Sustainability. 9. 1808. 10.3390/su9101808.
- Kleyn, Madelein, Freedom to Operate Conundrum (October 20, 2021). les Nouvelles - Journal of the Licensing Executives Society, Volume LVI No. 4, December 2021, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3946602.
- Daniel Gredel, Matthias Kramer, Boris Bend, Patent-based investment funds as innovation intermediaries for SMEs: In-depth analysis of reciprocal interactions, motives and fallacies, Technovation, Volume 32, Issues 9–10, 2012, Pages 536-549, ISSN 0166-4972, https://doi.org/10.1016/j.technovation.2011.09.008.
- Bobrowicz D. 2007. A Checklist for Negotiating License Agreements. In Intellectual Property Management in Health and Agricultural Innovation: A Handbook of Best Practices (eds. A Krattiger, RT Mahoney, L Nelsen, et al.). MIHR: Oxford, U.K., and PIPRA: Davis, U.S.A. Available online at www.ipHandbook.org.
- Vigil, Robert L. and Zhang, Xiao, Apportioning Value in Patent Portfolio License and Sale Agreements (October 19, 2020). les Nouvelles - Journal of the Licensing Executives Society, Volume LV No. 4, December 2020, Available at SSRN: https://ssrn.com/abstract=3714864.
- Asgari, M.J., Zakery, A., Pishvaee, M.S. 2021 Open innovation antecedents and its consequences on commercialization performance in small and medium-sized enterprises 2021 Kybernetes, 10.1108/K-07-2020-0458.
- Erik E. Lehmann, Michele Meoli & Stefano Paleari (2021) Innovation, entrepreneurship and the academic context, Industry and Innovation, 28:3, 235-246, DOI: 10.1080/13662716.2021.1904843.
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- https://sifted.eu/articles/university-spinouts-system-not-broken/
- https://www.computerworld.com/article/3558568/university-spinouts-what-are-the-benefits-of-the-system-and-how-does-it-work.html
- https://www.firma.de/en/company-formation/the-gmbh-the-pros-and-cons-of-the-german-limited-liability-company-llc/
- https://www.gov.uk/government/publications/intellectual-asset-management-for-universities
- https://www.mtu.edu/research/innovation/commercialize-technology/process/
- https://www.ucop.edu/knowledge-transfer-office/innovation/training-and-education/technology-commercialization-process.html
- https://www.utoledo.edu/research/TechTransfer/TTandCommProcess.html
- Lee, Jun & Hong, Jung-Wan & Lee, Seok Kee. (2016). A Study on Business Model Consulting Framework for Technology Commercialization of ICT SMEs. Indian Journal of Science and Technology. 9. 10.17485ijst2016v9i2697315

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Additional remarks:

No remarks.

Entrepreneurship & Innovation Management			
Module abbreviation:	ES_Inno_Mgt	**SPO-Nr.:**	7
Curriculum:	**Programme**	**Module type**	**Semester**
	M-DL	Elective subject	2
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	only summer term

Responsible for module:	Schwandner, Gerd
Lecturers:	Albrecht, Tobias
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 78 h Total hours: 125 h
Subjects of the module:	7: Entrepreneurship & Innovation Management
Lecture types:	SU/Ü-Lecture with integrated exercises
Examinations:	Proj - Project work with oral presentation (15 min) and written elaboration (5 - 25 pages)

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

The students get to:

- understand the challenges and pitfalls of starting-up a company.
- comprehend important aspects of innovations.
- be able to apply innovation management tools.
- know how to implement start-up specific management concepts.
- be able to develop convincing business plans.
- be able to effectively work as a team.
- further improve their presentation skills.
- understand the relevance of innovation and entrepreneurship for society.
- understand the effectiveness of intercultural competencies by developing innovative ideas.

Content:

Theory

- What is entrepreneurship?
- Innovation: types, sources, how to find?
- Innovation management and strategy
- Start-ups: strategy agile product development, marketing, financing
- Business plans

- Other relevant topics: e.g. legal forms, intellectual property right

Start-up project:

- Creating of a business concept along 3 milestones, incl. pitch-presentations
- Formulating a business plan as a team
- Development of a prototype/mock-up ad a pitch-Videos

Literature:

- KAWASAKI, Guy, 2015. *The art of the start 2.0: the time-tested, battle-hardened guide for anyone starting anything*. London: Portfolio Penguin. ISBN 978-0-241-18726-5
- RIES, Eric, 2019. *The lean startup: how constant innovation creates radically successful businesses*. London: Penguin Business. ISBN 978-0-670-92160-7
- TIDD, Joe und John BESSANT, 2018. *Managing Innovation: Integrating Technology, Market and Organizational Change*. Hoboken: Wiley. ISBN 978-1-119-37945-4

Additional remarks:

No additional remarks.

Future Business Modelling

Module abbreviation:	FuBuMo	**SPO-Nr.:**	5
Curriculum:	**Programme**	**Module type**	**Semester**
	M-APE, M-DL	Elective subject	1
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 Semester	winter and summer term

Responsible for module:	Wrobel-Wache, Stefanie
Lecturers:	Wrobel-Wache, Stefanie
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 78 h Total hours: 125 h
Subjects of the module:	5: Future Business Modelling
Lecture types:	SU/Ü-Lecture with integrated exercises
Examinations:	schrP90 - written examination, 90 minutes

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

The students

- can name examples of successful business models and their key factors
- are familiar with digital, sustainable, disruptive and forward-looking business models and can explain the special features of each of them
- know the requirements for risk management and the four phases of risk management and can apply them on an example
- can develop business plans for different business scenarios and calculate the profitability of the scenarios

Content:

Noch zu bestimmen

Literature:

- GEDEON, S., 2010. What is entrepreneurship? In: *Entrepreneurial Practice Review*. 1(3), S.16-35.
- GASSMANN, Oliver, Karolin FRANKENBERGER und Michaela CHOUDURY, 2020. *The business model navigator: the strategies behind the most successful companies*. Harlow, England: Pearson. ISBN 978-1-292-32712-9, 1-292-32712-X
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- DUCHNEK, Stephanie, 2020. Organizational resilience: a capability-based conceptualization. In: *Business Research*. (13), S.215-246.
- AULET, Bill, 2013. *Disciplined entrepreneurship: 24 steps to a successful startup*. Hoboken, NJ: Wiley. ISBN 978-1-118-69228-8, 978-1-118-72088-2
- HUNZIKER, Stefan, 2021. *Enterprise Risk Management: Modern Approaches to Balancing Risk and Reward* [online]. Wiesbaden: Springer Gabler PDF e-Book. ISBN 978-3-658-33523-6. Verfügbar unter: https://doi.org/10.1007/978-3-658-33523-6.
- OSTERWALDER, Alexander und andere, 2014. *Value proposition design: how to create products and services customers want*. Hoboken, NJ: Wiley. ISBN 978-1-118-96805-5, 1-118-96805-0
- SCHIRMER, J., R. EBER und I. BOURDON, 2021. 32 ways to innovate business models through data: Emerging data-driven solution business model patterns from a study of 471 late-stage data-driven startups. (https://scholarspace.manoa.hawaii.edu/handle/10125/71226). In: *Proceedings of the 54th Hawaii International Conference on System Sciences*, S. 4996-5005.
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- BULIGA, Oana, SCHEINER, Christian W., VOIGT, Kai-Ingo, 2016. Business model innovation and organizational resilience: towards an integrated conceptual framework. In: *J Bus Econ (2016)* (86), S.647–670.
- SOLTANIFAR, Mariusz, HUGHES, Matthew, GÖCKE, Lutz, 2021. *Digital entrepreneurship: impact on business and society* [online]. Cham, Switzerland: Springer PDF E-Book. ISBN 978-3-030-53914-6. Verfügbar unter: https://doi.org/10.1007/978-3-030-53914-6.
- ZUCCHELLA, Antonella, URBAN, Sabine, 2019. *Circular Entrepreneurship: Creating Responsible Enterprise* [online]. Cham: Palgrave Macmillan PDF E-Book. ISBN 978-3-030-18999-0. Verfügbar unter: https://doi.org/10.1007/978-3-030-18999-0.

Additional remarks:

No remarks.

Advanced Theories and Methods of Sustainability Management in a Globalized Economy

Module abbreviation:	WMod_ATMSM	**SPO-Nr.:**	10
Curriculum:	**Programme**	**Module type**	**Semester**
	all Master programs	Elective subject	
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	only summer term

Responsible for module:	Schneider, Yvonne	
Lecturers:	Schneider, Yvonne	
Credit points / SWS:	5 ECTS / 4 SWS	
Workload:	Contact hours:	47 h
	Self-study hours:	78 h
	Total hours:	125 h
Subjects of the module:	10: Advanced Theories and Methods of Sustainability Management in a Globalized Economy	
Lecture types:	SU/Ü-Lecture with integrated exercises	
Examinations:	LN - oral exam, 15 minutes	

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

By actively participating in this course, students

- will get an understanding of sustainability management and its opportunities to achieve a competitive advantage in business.
- will analyze companies upon the basis of measurement tools and KPIs for actions in the field of sustainability.
- will be familiar with the theoretical basis of sustainability through applied examples and concepts.

Major theories, cases, examples and calculation exercises are integrated through the course to reinforce and to clarify major topics.

Content:

This module provides a deeper understanding of theory, methods and challenges of sustainability. Among others, the following aspects will be discussed:

- Advanced theories and methods of sustainability and in particular sustainability strategies for international companies
- Influence of a globalized economy on sustainability and vice versa
- Sustainability in business and the TBL influence on companies' organizations and strategies
- Applied stakeholder management perspectives

Literature:
• JONKER, Jan, FABER, Niels, 2021. *Organizing for sustainability: a guide to developing new business models* [online]. Cham, Switzerland: Palgrave Macmillan PDF e-Book. ISBN 978-3-030-78157-6. Available via: https://doi.org/10.1007/978-3-030-78157-6. • HAHN, Rüdiger, 2022. *Sustainability management: global perspectives on concepts, instruments, and stakeholders*. Fellbach: Rüdiger Hahn. ISBN 978-3-9823211-0-3, 3-9823211-0-7 • RITZ, Aixa A., RIMANOCZY, Isabel, 2021. *Sustainability mindset and transformative leadership: a multidisciplinary perspective* [online]. Cham, Switzerland: Palgrave Macmillan PDF e-Book. ISBN 978-3-030-76069-4. Available via: https://doi.org/10.1007/978-3-030-76069-4.
Additional remarks:
No remarks.

International negotiation training

Module abbreviation:	WMod_InternNegoTrai	**SPO-Nr.:**	10
Curriculum:	**Programme**	**Module type**	**Semester**
	M-WI, M-EGM, M-GFTM, M-APE, M-DL	Elective subject	1
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	only summer term

Responsible for module:	Eberl, Sabine
Lecturers:	Eberl, Sabine
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 78 h Total hours: 125 h
Subjects of the module:	10: International negotiation training
Lecture types:	SU/Ü-Lecture with integrated exercises
Examinations:	LN - oral exam, 15 minutes

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

Students will

- understand the sensitivities of different cultures regarding the importance of negotiations in the purchasing environment
- learn about common scientific approaches to successful negotiation management (Harvard, Schranner)
- learn different methods of negotiation techniques
- practice various negotiation situations in challenging environments (technology dependency, market monopolist, oligopolies, corporations)
- can implement learned theories in negotiation strategies and deepen them in practical exercises

Content:

Structured into the topics culture - methods - technology

- Methods and theories of negotiation (e.g. Harvard)
- International negotiation cultures
- Negotiation strategies/techniques with monopolists
- Communication techniques, moderation methods,
- Crisis management, mediation
- Technical aspects/support for rational negotiation management (e.g. video, on-site negotiation)
- Practical exercises (sales talks)

Literature:
• DE BONO, Edward, 2009. *Think Before It's Too Late*. • KARSAKLIAN, Eliane, 2014. *The Intelligent International Negotiator*. • FISHER, Roger and William URY, 2007. *Getting to yes: negotiating an agreement without giving in*. London [u.a.]: Random House. ISBN 1-8441-3146-7, 0-09-924842-5 • SCHRANNER, Matthias, 2019. *Teure Fehler: die 7 größten Fehler in schwierigen Verhandlungen*. Berlin: Econ. ISBN 978-3-430-20075-2 • HEUSSEN, Benno, Gerhard PISCHEL and Jan CURSCHMANN, 2021. *Handbuch Vertragsverhandlung und Vertragsmanagement: Planung, Verhandlung, Design und Durchführung von Verträgen*. Köln: ottoschmidt. ISBN 978-3-504-06307-8, 3-504-06307-6 • RICHTER, Thorsten S., 2013. *Vertragsrecht: die Grundlagen des Wirtschaftsrechts*. München: Verlag Franz Vahlen. ISBN 978-3-8006-4673-9, 978-3-8006-4674-6 • ITZHAK, Gilboa, 2011. *Making Better Decisions*.
Additional remarks:
No remarks.

Corporate Transformation			
Module abbreviation:	WMod_CorpTrans	**SPO-Nr.:**	7
Curriculum:	**Programme**	**Module type**	**Semester**
	M-WI, M-DENS, M-EGM, M-APE, M-DL	Elective subject	
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	summer term

Responsible for module:	Kalmbach, Ralf
Lecturers:	Kalmbach, Ralf
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 79 h Total hours: 126 h
Subjects of the module:	7: Corporate Transformation
Lecture types:	SU/Ü – Lecture with integrated exercises
Examinations:	LN – Seminar paper with presentation

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

This module will provide a comprehensive understanding of the key elements and success factors as well as the design and management of a corporate transformation program.

After attending the course, the students:

- will be able to understand the need and magnitude of change, the approach and design as well as the management of a corporate transformation program.
- will have knowledge about success factors and roadblocks in such programs and develop understanding of how to overcome the classical pitfalls.
- will touch reality by walking through case studies of successful and failed transformations.

Content:

- Purpose: Refreshing the organization´s reason for being
- Full Potential Plan: Diagnosis of current performance and strategic position to identify the most important disruptive factors and important value levers to win today and in the future
- Leadership: Building a high performing, aligned, committed leadership team, and assign top talent to the critical roles that will drive the most value
- Program Design: Setting up an operating model that allows to rum and change the business at the same time
- Results Delivery: Rapidly delivering value by innovating, testing, and scaling solutions

- Orchestration: Building capabilities, boosting accountability, and managing change to realize rapid sustainable results
- Communication and Culture: Communication and behavior is key to "onboard" all relevant stakeholder and capture / energize the key people to support the transformation and creating a winning team / culture

Literature:

- DALPIAZ, E., DI STEFANO, G., 2018. A universe of stories: Mobilizing narrative practices during transformative change. In: *Strategic Management*. (39 (3)), S.664-696.
- BLENKO, Marcia W., Michael C. MANKINS und Paul ROGERS, 2010. *Decide & Deliver: 5 Steps to Breakthrough Performance in your Organization*. Harvard: Harvard Business Press.
- MANKINS, Michael und Patrick LITRE, 2024. *Middle Managers Should Drive Your Business Transformation*.
- HITT, M. A., HAYNES, K. T., SERPA, R., 2010. Strategic leadership for the 21st Century. In: *Business Horizons*. (53(5)), S.437–444.
- KARTAWIJAYA, T., 2022. HBR Case Study: Organizational Change. In: *Harvard Business Review*.
- KOTTER, J., 2012. Leading Change. In: *Harvard Business Review Press*.
- CHIDI, Ameke, 2021. *Purpose-Driven Transformation: The Corporate Leader´s Guide to Value Creation and Growth*.
- LOPARO, K., 2014. *The Executive Guide to Corporate Restructuring*.
- FURR, N., 2018. Leading Transformation: How to Change Your Company´s Future. In: *Harvard Business Review Press*.

Additional remarks:

No remarks.

Manufacturing Operations with No-Code/Low-Code

Module abbreviation:	WMod_ManuOperat	**SPO-Nr.:**	7
Curriculum:	**Programme**	**Module type**	**Semester**
	all Master programs	Elective subject	
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	summer semester

Responsible for module:	Vernim, Susanne	
Lecturers:	Vernim, Susanne	
Credit points / SWS:	5 ECTS / 4 SWS	
Workload:	Contact hours:	47 h
	Self-study hours:	79 h
	Total hours:	126 h
Subjects of the module:	7: Manufacturing Operations with No-Code/Low-Code	
Lecture types:	SU/Ü – Lecture with integrated exercises	
Examinations:	LN – oral examination, 15 minutes	

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

After attending the course, the students will be able to

- explain and describe current developments in manufacturing environments and the impact of digitization on shopfloor operations.
- understand the differences between traditional stand-alone software solutions and low-code/no-code software platforms.
- understand, describe and analyze the elements of a composable software architecture for manufacturing operations.
- design and create elements of a MES solution for a manufacturing use case.

Content:

- Developments and challenges in manufacturing and the implications of digitization on the shopfloor.
- Architecture, design and implementation of manufacturing execution systems.
- Composable software solution architecture and its advantages compared to stand-alone monolithic systems.
- Overview of low-code/no-code solutions for digitizing manufacturing processes.
- Best practices for designing custom manufacturing workflows and learning to build applications with the Tulip Frontline operations platform.

Literature:

- LINDER, Natan und Trond Arne UNDHEIM, 2022. *Augmented Lean: A Human-Centric Framework for Managing Frontline Operations*. Newark: John Wiley & Sons, Incorporated. ISBN 9781119906018, 9781119906001
- SIMON, Phil, 2022. *Low-Code/No-Code: citizen developers and the surprising future of business applications*. Arizona: Racket. ISBN 9798985814743
- ELSTERMANN, Matthes und andere, 2023. *Ganzheitliche Digitalisierung von Prozessen: Perspektivenwechsel - Design Thinking - Wertegeleitete Interaktion*. Wiesbaden: Springer Vieweg. ISBN 978-3-658-41776-5, 3-658-41776-5
- WOMACK, James P., Daniel T. JONES und Daniel ROOS, 1990. *The machine that changed the world: based on the Massachusetts Institute of Technology 5-million-dollar 5-year study on the future of the automobile*. New York: Rawson u.a.. ISBN 0-89256-350-8
- GOLDRATT, Eliyahu M., 1990. *What is this thing called theory of constraints and how should it be implemented?* Great Barrington, Mass.: North River Press. ISBN 0-88427-085-8, 0-88427-166-8

Additional remarks:

Lecture starts on April 24, 2025, and will have two special dates on April 26, 2025 (Saturday) and on June 28, 2025 (Saturday, exam).

Lectures contain digital learning elements like meetings via Web conferences. Every participant needs an own laptop / tablet.

Design and modelling with CATIA			
Module abbreviation:	WMod_DesModellCatia	**SPO-Nr.:**	11
Curriculum:	**Programme**	**Module type**	**Semester**
	M-EGM, M-APE, M-DL	Elective subject	1
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	only summer term

Responsible for module:	Basta, Georg
Lecturers:	Basta, Georg
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 78 h Total hours: 125 h
Subjects of the module:	11: Design and modelling with CATIA
Lecture types:	SU/Ü-Lecture with integrated exercises
Examinations:	Proj - Project work with oral presentation (15 min) and written elaboration (5 - 25 pages)

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

Students are able to

- develop components in Part-Design and Generative Shape Design.
- create single part drawings and assembly drawings.
- organize themselves with several people in the design process.

Content:

- Working on a constructive student research project in a team
- Learn working with CATIA and practice by modelling components
- Part design
- Assembly design
- Drawings from single parts and assemblies

Literature:

Will be specified at the beginning of the course.

Additional remarks:

Summer term 2025:
Block seminar on April 26, May 3, May 17 and June 28. Some of the courses might take place online.

Entrepreneurship Coaching

Module abbreviation:	MVM_EC	**SPO-Nr.:**	10
Curriculum:	**Programme**	**Module type**	**Semester**
	M-APE, M-DL	Elective subject	2
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	German/English	1 semester	only summer term

Responsible for module:	Bader, Martin
Lecturers:	Bader, Martin
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 78 h Total hours: 125 h
Subjects of the module:	10: Entrepreneurship Coaching
Lecture types:	SU/Ü-Lecture with integrated exercises
Examinations:	Proj - Project work with oral presentation (15 min) and written elaboration (5 - 25 pages)

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

After successful participation in the module course, students can

- analyze customer and market needs on basis of advanced design thinking approaches.
- develop and assess a business idea on this basis and apply it to a consistent business model.
- identify and analyze key success factors for implementation.
- prepare and apply implementation on basis of a minimal viable product approach.
- apply the agile business development, prototype testing and lean startup methods and integrate the principles of entrepreneurial thinking in business and leadership.
- prepare participation in a business plan competition at graduate level and to meet the specific challenges.
- successfully integrate the listed competencies with the content of other modules from their degree program and develop new, overarching approaches.

Content:

- Ideation
- Value Proposition Design
- Business Model Canvas
- Business Model Innovation
- Minimal Viable Product & Preto-/Prototyping

- Business Planning

Literature:

- AULET, Bill, Thomas DEMMIG and Marius URSACHE, 2013. *Disciplined entrepreneurship: 24 steps to a successful startup*. Hoboken, NJ: Wiley. ISBN 978-1-118-69228-8, 978-1-118-72088-2
- BayStartUP, 2024. Handbuch Business Planning - Der Weg zum erfolgreichen Unternehmen. [online]. https://www.baystartup.de/startups/handbuch-business-planning: BayStartUP GmbH, 9. überarbeitete Auflage [Accessed on: 17.12.2024]. Available via: https://www.baystartup.de/startups/handbuch-business-planning
- KAWASAKI, Guy, 2015. *The art of the start 2.0: The time-tested, battle-hardened guide for anyone starting anything*. London: Portfolio Penguin. ISBN 978-0-241-18726-5, 978-1-59184-811-0
- RIES, Eric, 2017. *The lean startup: how today's entrepreneurs use continuous innovation to create radically successful businesses*. New York: Currency. ISBN 978-1-5247-6240-7
- FUEGLISTALLER, Urs, FUST, Alexander, MÜLLER, Christoph, MÜLLER, Susan, ZELLWEGER, Thomas, 2019. *Entrepreneurship: Modelle – Umsetzung – Perspektiven: Mit Fallbeispielen aus Deutschland, Österreich und der Schweiz* [online]. Wiesbaden: Springer Gabler PDF e-Book. ISBN 978-3-658-26800-8. Available via: https://doi.org/10.1007/978-3-658-26800-8.
- GASSMANN, Oliver, Karolin FRANKENBERGER and Michaela CSIK, 2017. *Geschäftsmodelle entwickeln: 55 innovative Konzepte mit dem St. Galler Business Model Navigator*. München: Hanser. ISBN 978-3446451759
- GASSMANN, Oliver, Karolin FRANKENBERGER and Michaela CHOUDURY, 2020. *Business Model Navigator: The Strategies Behind the Most Successful Companies*. Harlow: Pearson. ISBN 978-1292327129
- OSTERWALDER, Alexander and Yves PIGNEUR, 2010. *Business Model Generation: Ein Handbuch für Visionäre, Spielveränderer und Herausforderer*. ISBN 978-3-593-39474-9
- OSTERWALDER, Alexander and Yves PIGNEUR, 2014. *Value Proposition Design: How to Create Products and Services Customers Want*. ISBN 978-1118968055

Additional remarks:

Coaching is carried out (where possible) in cooperation with a business partner as a business mentor. Through this co-operation, each team receives a business mentor in addition to support from THI lecturer.

Project work
The aim is, among other things, to use the various media in the further development of business models and for the final presentation.

Integrated Safety and Assistance Systems

Module abbreviation:	IAE_ISAS	**SPO-Nr.:**	10
Curriculum:	**Programme**	**Module type**	**Semester**
	M-WI, M-APE	Elective subject	1
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	only summer term

Responsible for module:	Botsch, Michael
Lecturers:	Botsch, Michael; Dirndorfer, Tobias
Credit points / SWS:	5 ECTS / 4 SWS
Workload:	Contact hours: 47 h Self-study hours: 78 h Total hours: 125 h
Subjects of the module:	10: Integrated Safety and Assistance Systems
Lecture types:	SU/Ü-Lecture with integrated exercises
Examinations:	LN - written exam, 90 minutes

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

After successfully completing the module, the students are able

- to explain basic vehicle components that are required for driver assistance systems and for vehicle integrated safety functions.
- to analyze and evaluate state of the art driver assistance systems.
- to describe testing procedures that are used for vehicle active safety functions.
- to explain mathematically the concepts for motion planning that are used in algorithms for driver assistance systems and integrated safety functions.
- to implement basic trajectory planning algorithms in Matlab.

Content:

- Introduction to IS & DAS
- Examples of Driver Assistance and Integrated Vehicle Safety Systems: Parking Systems, Adaptive Cruise Control, Autonomous Emergency Braking
- Position and Orientation: Pose, Representing Pose in 2-D and in 3-D
- Time and Motion: Generation of Trajectories, Rate of Change and Inverse Problem
- Vehicle Motion Models: Decoupled X- and Y-Dynamics, Constant Velocity Model, Constant Steering Angle and Velocity Model, Constant Turn Rate and Acceleration Model, One-Track Model, Two-Track Model
- Navigation and Localization

Literature:
• KELLY, Alonzo, 2013. *Mobile robotics: mathematics, models, and methods*. New York, NY: Cambridge Univ. Press. ISBN 978-1-107-03115-9 • HEIßING, Bernd, 2011. *Chassis handbook: fundamentals, driving dynamics, components, mechatronics, perspectives* [online]. Wiesbaden: Vieweg Teubner PDF E-Book. ISBN 978-3-8348-9789-3. Available via: https://doi.org/10.1007/978-3-8348-9789-3 • WINNER, Hermann, HAKULI, Stephan, LOTZ, Felix, SINGER, Christina, 2019-. *Handbook of Driver Assistance Systems: Basic Information, Components and Systems for Active Safety and Comfort* [online]. Cham: Springer International Publishing PDF e-Book. ISBN 978-3-319-09840-1. Available via: https://doi.org/10.1007/978-3-319-09840-1 • BOTSCH, Michael, UTSCHICK, Wolfgang, 2020. *Fahrzeugsicherheit und automatisiertes Fahren: Methoden der Signalverarbeitung und des maschinellen Lernens* [online]. PDF e-Book. ISBN 978-3-446-46804-7
Additional remarks:
No remarks.

Entrepreneurial Finance & Growth Management			
Module abbreviation:	EDB_EF&GM	**SPO-Nr.:**	7
Curriculum:	**Programme**	**Module type**	**Semester**
	M-WI	Elective subject	1
Module attributes:	**Language of instruction**	**Duration of module**	**Frequency of offer**
	English	1 semester	summer semester

Responsible for module:	Marques, Thiago	
Lecturers:	Marques, Thiago; Theinert, Sarah	
Credit points / SWS:	5 ECTS / 4 SWS	
Workload:	Contact hours:	47 h
	Self-study hours:	79 h
	Total hours:	126 h
Subjects of the module:	7: Entrepreneurial Finance & Growth Management	
Lecture types:	SU/Ü - Lecture with integrated exercises	
Examinations:	mdlP - oral examination, 15-20 minutes	

Prerequisites according examination regulation:

None

Recommended prerequisites:

None

Objectives:

On completing the module part Entrepreneurial Finance, the students will have achieved the following learning outcomes based on scientific methods:

- Students have in-depth theoretical and practical knowledge of entrepreneurial finance particularly start-up financing. Students understand the entrepreneurial process and the sources of financing which are relevant in different development stages of emerging ventures.
- Students know conventional and innovative financing instruments and can assess their advantages and disadvantages for new ventures and start-ups. They are familiar with start-up financing through support programs, networks, business angels, various forms of venture capital and crowdfunding, as well as loans and can classify and practically apply them. Students have a comprehensive understanding of the chances and risks resulting from different means of capital and fund raising.
- In addition, students can understand the business model of private equity and venture capital firms including their special refinancing and investment process. Finally, students have the skill to apply and analyze valuation methods which are suitable for entrepreneurial companies.
- Students can apply different entrepreneurial financing instruments. They can prepare, resolve, and critically appraise alternatives for decisions regarding the sources and use of financing instruments considering risk and return aspects for new ventures. They can evaluate their impact and can translate their proposed solutions into business practice.
- Students develop, analyze and critically appraise alternative courses of action through group work, case studies and discussion sessions. They benefit from debating and reasoning skills, can work in a team and can present and defend results in front of an audience.

- Students can contribute theoretically sound and practicable ideas for entrepreneurial financing problems and decision-making process, and to critically discuss them. They are aware of the financial and capital consequences of their decisions and can incorporate them into their own value system.

On completing the module part Growths Management, the students will have achieved the following learning outcomes based on scientific methods:

- Students have a strong methodological and theoretical knowledge regarding the process of scaling exponentially the growth of a startup business, understanding the different applications regarding early stage, traction or mass market moment for new ventures.
- Students apply the Objective and Key Results methodology under a Business Plan or Strategic Planning context, using the method to understand the venture stage and to project the growth through a structured and pragmatic approach. In addition, the students use the overall business perspective to adapt the strategy to a tactical point of view, deriving KPIs for teams and squads, aiming for a result-based management system.
- Students apply modern marketing and sales techniques to support the growth of the business, integrating the strategic perspective with a client base scale process. Outbound and Inbound strategies can be applied, using the main acquisition channels for B2C and B2B markets. Digital x Traditional marketing and sales perspective can be used, creating an omnichannel approach for business growth.
- Finally, students understand different approaches for different market scenarios, using budgeting for capex and opex and measuring financial results for pivoting to new strategies.

All objectives will be fulfilled through a project-based lecture, using group work, case studies and field practice to create a solid understanding of the growth management of an innovative and/ or emerging venture. All the theory and tools presented will be applied in real cases, reinforcing the constructed knowledge during the classes.

Content:

Entrepreneurial Finance:

- Sources and forms of financing and evaluation of start-ups from seed financing to exit, e.g. through buy-back, IPO and sale of the company or transition.
- Knowledge of the business model of private equity firms and refinancing: fundraising, investor relations and the return of funds.
- Knowledge of the investment process: sourcing, screening, contracting, venture management and exiting.
- Special forms of entrepreneurial activity (especially digital entrepreneurship, corporate and social entrepreneurship and family entrepreneurship)
- Digital startup financing and valuation, Crowdfunding, -investing as financing instruments

Growth Management:

- Startup and innovation performance management
- Objective and Key Results methodology and Key Performance Indicators approach
- Marketing techniques applied for growth and hypergrowth scenarios
- Inbound and Outbound Sales processes, pipeline management and tactical and strategic sales performance
- Marketing and Sales integration, Omnichannel perspective and technological tendencies for growth management
- Customer Success management
- Budgeting, opex and capex, scenarios, financial performance indicators and pivoting strategies

Literature:

- STAROßOM, Heike. *Corporate Finance Teil 2. Finanzierung in den Lebensphasen einer Unternehmung* [online]. Verfügbar unter: https://doi.org/10.1007/978-3-8349-4101-5
- NIVEN, Paul R. und Ben LAMORTE, 2016. *Objectives and key results: driving focus, alignment, and engagement with OKRs*. Hoboken, New Jersey: Wiley. ISBN 978-1-119-25558-1, 978-1-119-25566-6

- ROSS, Aaron und Marylou TYLER, 2020. *Predictable revenue: turn your business into a sales machine with the $ 100 million best practices of Salesforce.com*. West Hollywood, CA: Pebblestorm. ISBN 978-0-9843802-4-4
- BREALEY, Richard A., Stewart C. MYERS und Franklin ALLEN, 2020. *Principles of corporate finance*. 13. Auflage. New York, NY: McGraw-Hill Education. ISBN 978-1-260-56555-3, 978-1-260-01390-0
- LYNN, Theo und andere, 2019. *Disrupting finance: Fintech and strategy in the 21st century*. Cham: Palgrave Macmillan. ISBN 978-3-030-02329-4, 3-030-02329-X
- WILSON, Jay D., 2017. *Creating Strategic Value Through Financial Technology*. Somerset: John Wiley & Sons, Incorporated. ISBN 978-1-119-24387-8
- VOLKMANN, Christine K., Kim Oliver TOKARSKI und Marc GRÜNHAGEN, 2010. *Entrepreneurship in a European perspective: concepts for the creation and growth of new ventures*. Wiesbaden: Gabler. ISBN 978-3-8349-2067-6
- TIMMONS, Jeffry A. und Stephen SPINELLI, 2016. *New venture creation: entrepreneurship for the 21st century*. 10. Auflage. New York: McGraw-Hill. ISBN 978-0-07-786248-0
- GOMPERS, Paul A. und William A. SAHLMAN, 2002. *Entrepreneurial finance: a case book*. New York: Wiley. ISBN 0-471-45283-1
- SMITH, Richard L. und Janet Kiholm SMITH, 2004. *Entrepreneurial finance*. New York, NY: Wiley. ISBN 0-471-45221-1, 0-471-23072-3
- AMIS, David und Howard H. STEVENSON, 2001. *Winning angels: the seven fundamentals of early-stage investing; [sourcing, evaluating, valuing, structuring, negotiating, supporting, harvesting; featuring interviews with more than 50 well-known angels including the angels behind]*. London; Munich [u.a.]: Pearson Education. ISBN 0-273-64916-7
- ELLIS, Sean und Morgan BROWN, 2017. *Hacking growth: how today's fastest-growing companies drive breakout success*. New York: Currency. ISBN 978-0-451-49721-5
- KINGSNORTH, Simon, 2019. *Digital marketing strategy: an integrated approach to online marketing*. London; New York; New Delhi: Kogan Page. ISBN 978-0-7494-8422-4, 978-0-7494-9808-5
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Additional remarks:

No remarks.