M.Sc. Cybersecurity

Pflichtmodule (CS)

HPI-DE-RWM: Recht, Wirtschaft, Management

2	**Founder Fundamentals I**	
	Vorlesung/2	*Pawlitschek, Frank*
		Hahn, David
042	**IT-Recht**	
	Vorlesung/2	*Brandi-Dohrn, Anselm*
		Menz, Monika
		Fuerstenberg, Anja
106	**Management Essentials**	

Blockseminar/2 — The students learn about the most important aspects of managing organizations and of managing people in organizations and how to apply this knowledge to concrete challenges.

Kearney, Eric
Fuerstenberg, Anja

This course offers an overview of the main topics of management. We will first cover the basics of management *of* organizations (strategic leadership) and will then turn to management *in* organizations (people management). With regard to the latter, the topics include leadership and motivation, employee satisfaction, personnel selection, training and development, and employee evaluation and compensation. Management knowledge is essential for all those who at some point wish to start their own companies or strive to occupy leadership positions in organizations.

Conveyed competencies:

Knowledge-related competencies: strategic management; methods in management research; personnel selection; job and work design; training and development; motivation; satisfaction; leadership; personnel evaluation; personnel compensation.

Methodological competencies; case study analysis; presentation techniques.

Social competencies; group work and discussions.

Exam: The grade will be calculated on the basis of a group presentation (30%) and a written assignment (70%). Both the group presentation and the written assignment will focus on management aspects in organizations that the students select themselves. Further details will be provided at the beginning of the course.

011	**Rechtsfragen des „Data Engineering"**	

Blockseminar/2 — Die Veranstaltung vermittelt einen Überblick über die rechtlichen Anforderungen an die Entwicklung und den Vertrieb rechtskonformer digitaler Produkte bzw. Dienste und der ihnen zugrundeliegenden digitalen Geschäftsmodelle, wobei das Zusammenwirken von Jurist*Innen und Informatiker*Innen eine besondere Rolle spielt. Ferner werden Schutzmöglichkeiten digitaler Produkte dargestellt. Abschließend werden der rechtskonforme Außenauftritt eines Unternehmens und Marketingmaßnahmen besprochen.

Paschke, Anne
Fuerstenberg, Anja

Die Note ergibt sich aus einer Abschlussklausur (100 %)

Vermittelte Kompetenzen:

- Prüfung der rechtlichen Herausforderungen für digitale Produkte und Dienstleistungen
- Fähigkeit zum Dialog zwischen Jurist*Innen und Informatiker*Innen

Im Rahmen der Vorlesung wird das notwendige theoretische Wissen vermittelt. Darüber hinaus werden den Studierenden auch allgemeine praktische Hilfestellungen an die Hand gegeben, damit sich die Unternehmer*innen von morgen selbstständig in für sie relevanten Rechtsbereichen zurechtfinden und befähigt werden, in der Praxis die richtigen Fragen zu stellen.

016	**Unternehmenssimulation Strategisches Management**	
	Blockseminar/2	In dieser Veranstaltung erarbeiten sich die Teilnehmer zunächst im Selbststudium die Grundlagen strategischen Managements, festigen diese Kenntnisse im Rahmen eines Fallstudienseminars (Diskussion von Praxisfällen) und transferieren sie schließlich im Rahmen einer zweitätigen interaktiven Unternehmenssimulation („Berlinsim - digitale Transformation") in die (simulierte) Führungspraxis.	*Braun, Tobias* *Dabitz, Robert* *Fuerstenberg, Anja*

Schwerpunktthemen
Strategisches Entscheiden unter Unsicherheit, strategische Umweltanalyse, Unternehmensanalyse, Wettbewerbsstrategie (Kostenschwerpunkt, Differenzierung, Stuck-in-the-middle, Hybridposition), Gesamtunternehmensstrategie (Parenting Advantage; Portfolio-Management), Strategieimplementation, Strategische Kontrolle

Exam
Leistung in der Unternehmenssimulation (50%; Kriterien werden zu Beginn der Veranstaltung bekannt gegeben), Hausarbeit (Reflexion der eigenen Entscheidungspraxis aus der Simulation vor dem Hintergrund der Modelle und Methoden des strategischen Managements; 50%; ggf. als Gruppenhausarbeit)

Entwicklung und Verankerung eines branchenunabhängigen robusten mentalen Modells strategischer Unternehmensführung

Fallstudiendiskussion, Unternehmenssimulation (Gruppenentscheidungen, Einsatz strategischer Analysetools, Coaching), Erfahrungsbasiertes Lernen, Selbststudium.

8	**Product Builder**	
	Seminar/4	*Pawlitschek, Frank* *Hahn, David*

HPI-CS-T: Security Technologies

0	**Cyber Security Management**	
	Vorlesung/Übung/4	*Doerr, Christian*

HPI-CS-PE: Data Protection & Ethics

042	**IT-Recht**	
	Vorlesung/2	*Brandi-Dohrn, Anselm* *Menz, Monika* *Fuerstenberg, Anja*

HPI-CS-C: Advanced Cryptography

018	**Kryptographie**		
	Vorlesung/Übung/ 4	Die Vorlesung gibt eine umfassende Einführung in die moderne Kryptographie und die Grundkonzepte der beweisbaren Sicherheit. Dazu werden formale Angreifermodelle definiert und die Sicherheit der vorgestellten Kryptoverfahren unter wohldefinierten Komplexitätsannahmen in diesem Angreifermodell nachgewiesen. Der Vorlesung dient auch als Grundlage für andere Kurse zur Kryptographie, die vom Lehrstuhl angeboten werden.	*Lehmann, Anja* *Dayanikli, Dennis Kenan*

Content of teaching

- Informationstheoretische vs. Komplexitätstheoretische Sicherheit

- Symmetrische Kryptographie
  Symmetrische Verschlüsselung
  Pseudozufallsfunktionen
  Message Authentication Codes (MAC)
  Hash-Funktionen
  Authenticated Encryption

- Asymmetrische Kryptographie
  Diffie-Hellman Schlüsselaustausch
  Public-Key Verschlüsselung
  Digitale Signaturen

Die Vorlesung setzt Grundkenntnisse in Mathematik und theoretischer Informatik voraus, insbesondere müssen die formale mathematische Sprache und elementare Beweistechniken (Widerspruchsbeweis) problemlos angewandt werden können. Wenn diese Kenntnisse nicht vorhanden sind, wird empfohlen dieses Wissen vor der Vorlesung selbstständig zu erwerben, z.B. durch die Teilnahme an den Vorlesungen Mathematik I oder II (ITSE-Bachelor). In den ersten Vorlesungswochen wird es voraussichtlich auch zusätzliche Übungstermine und -materialien geben, in denen elementare Grundlagen aufgefrischt werden können.

Cyber Attack and Defense (CYAD)

HPI-CYAD-T: Cyber Attack and Defense - Techniken und Werkzeuge

3	**Network Security in Practice**		
	Seminar/Praktikum /4		*Najafi, Peyman* *Cheng, Feng*
025	**Computing on Encrypted Data**		
	Vorlesung/Übung/ 2	This course offers an introduction to cryptographic techniques that enable computation over encrypted data, with a central focus on Homomorphic Encryption. We will follow a practical and engineering-focused approach: while we will touch on essential theoretical concepts, the primary emphasis will be on equipping participants with the skills needed to implement these techniques in real-world applications. The course will comprise a hands-on project where participants will apply what they've learned to develop a functional cryptographic system.	*Mouchet, Christian* *Lehmann, Anja*

Exam: The grading will be based on a final exam (70%) and a practical project evaluation (30%). The final exam will be oral, unless too many participant register

Content of teaching:
  Definitions and model
  Early constructions
  Current, lattice-based constructions
  Multiparty homomorphic encryption & Secure multiparty computations
  Implementation
Prerequisites:
  Introduction to cryptography: encryption, security property and game-based proofs.
  Basic discrete mathematics: modular algebra, very basic group and ring theory.
  Programming: current HE implementation are in C++ and Go.

026			

0	**Mobile Security**		
	Vorlesung/Übung/4	This lecture covers mobile security on an application and system level, with many hands-on exercises. Students will learn state-of-the-art security concepts for both, iOS and Android, and will be able to perform security testing of mobile apps, mobile malware analysis, as well as testing security-critical components within mobile operating systems.	*Classen, Jiska*

https://moodle.hpi.de/course/view.php?id=798

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Course contents include:
    Threat modeling for mobile devices and apps,
    building mobile applications with Xcode and Android Studio,
    application security and testing,
    mobile malware capabilities and detection,
    operating system internals, such as inter-process communication, threads, ...,
    kernel and firmware security,
    mobile forensics, and
    wireless security.

Grading is based on practical exercises and the final exam.
    Assignments (50%)
    Written exam, 90 minutes (50%)

044	**Cyberkriminalität: Täterstrukturen, Methoden und Gegenmaßnahmen**		
	Projektseminar/4		*Doerr, Christian*
9	**Applied Probabilistic Machine Learning**		
	Seminar/4		*Richard, Hugues*
			Renard, Bernhard Yves
1	**Mobilkommunikation**		
	Vorlesung/Übung/4	For details, please check Moodle.	*Karl, Holger*

017	**Digital Entomology: Tracking and Tackling Cyber Bugs**	
	Seminar/3	*Classen, Jiska*

Cybersecurity attacks happen frequently and have severe impact. Bugs in digital systems make these attacks possible. In this seminar, we'll take a look into these bugs, why they happen, how they can be exploited, and what could be done to mitigate them. We're collecting and studying cyber bugs – and you'll all be digital entomologists! https://moodle.hpi.de/course/edit.php?id=799

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- web and browser security,
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- binary exploitation,
- real-world bugs in cryptographic implementations,
- hardware bugs,
- ... 🐛🐞🕷️

Students can pick the bugs they present on their own, but there'll be some moderation to ensure no duplicate bugs and a high variety.

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Exam

- 70% Presentations (two 30 minute presentations per student – that means two bugs being presented; each presentation is 20 minutes talk + 10 minutes Q&A)
- 30% Creating quizzes (create multiple choice quizzes for two pressentations)
- Passing all multiple choice quizzes during the semester with at least 75% is mandatory, multiple attempts are allowed.

HPI-CYAD-S: Cyber Attack and Defense - Spezialisierung

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HPI-CYAD-K: Cyber Attack and Defense - Konzepte und Methoden

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Identity Management (IDMG)

HPI-IDMG-T: Identity Management - Techniken und Werkzeuge

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HPI-IDMG-S: Identity Management - Spezialisierung

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HPI-IDMG-K: Identity Management - Konzepte und Methoden

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Security Analytics (SECA)

HPI-SECA-T: Security Analytics - Techniken und Werkzeuge

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	Seminar/Praktikum	*Najafi, Peyman*
	/4	*Cheng, Feng*

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    Assignments (50%)
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027	**Process Mining**	
	Vorlesung/Übung/ 2	*Leopold, Henrik* *Weske, Mathias*
044	**Cyberkriminalität: Täterstrukturen, Methoden und Gegenmaßnahmen**	
	Projektseminar/4	*Doerr, Christian*
9	**Applied Probabilistic Machine Learning**	
	Seminar/4	*Richard, Hugues* *Renard, Bernhard Yves*

028	**Deep Learning for Molecular Biology**

Seminar/2

Rapid advances in both biology—through increased data availability and the insights derived from it—and in methods for handling high-dimensional data, such as deep learning architectures and computational resources, have created exciting opportunities for integrating these fields.

Renard, Bernhard Yves
Rissom, Francesca
Heyne, Henrike
Nowicka, Melania Maria
Bartoszewicz, Jakub
Maciej

This seminar will examine how state-of-the-art deep learning models, including **CNNs, GNNs, Transformers,** and **Diffusion models**, are applied to **genome, RNA,** and **protein sequence** analysis.
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The course will primarily consist of **student presentations** on recent, preselected publications in these areas, followed by in-depth **discussions**.

Biological background is **not** necessary to participate in the seminar, but you will need a basic understanding of deep learning.
Good **English** skills are required to understand and discuss current literature.

In the seminar, each participant will give a presentation about a predefined topic within the research area and a short report. The final grade consists of the following parts:
Oral presentation (60%)
Written report (30%)
Participation (10%)

Goals:
Identify **current topics** and **open challenges** in the field of artificial intelligence for molecular biology
Improve your understanding of **best practices in scientific research**
Effectively communicate complex scientific topics in this field and lead a discussion
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The seminar will be conducted on-site (with a hybrid option if needed).
Please register on the course's Moodle page for further information.

Max. number of participants: 10

4	**Big Data Systeme**

Vorlesung/4

Rabl, Tilmann
Boissier, Martin
Salazar Diaz, Ricardo
Strassenburg, Nils

020	**Data Processing on Modern Hardware**

Projektseminar/4

Rabl, Tilmann
Weisgut, Marcel

019	**Modern and Secure Internet: Design and Operations**

Vorlesung/4

Bajpai, Vaibhav
Ververis, Vasileios

017	**Digital Entomology: Tracking and Tackling Cyber Bugs**	
	Seminar/3	Cybersecurity attacks happen frequently and have severe impact. Bugs in digital systems make these attacks possible. In this seminar, we'll take a look into these bugs, why they happen, how they can be exploited, and what could be done to mitigate them. We're collecting and studying cyber bugs – and you'll all be digital entomologists! https://moodle.hpi.de/course/edit.php?id=799	*Classen, Jiska*

The seminar follows a weekly schedule. Each week, we'll talk about recent, impactful bugs. The research talks will be split into bugs presented by the lecturer as well as bugs presented by students. We aim at covering highly diverse and recent bugs and bug classes, such as:

- web and browser security,
- internet-facing services including firewalls, mail, ...,
- binary exploitation,
- real-world bugs in cryptographic implementations,
- hardware bugs,
- ... 🐛🐞🪲

Students can pick the bugs they present on their own, but there'll be some moderation to ensure no duplicate bugs and a high variety.

Some experience in the area of cyber security is recommended. You should be able to follow technical writeups about bugs and how they were exploited in order to give presentations about these bugs.

Exam

- 70% Presentations (two 30 minute presentations per student – that means two bugs being presented; each presentation is 20 minutes talk + 10 minutes Q&A)
- 30% Creating quizzes (create multiple choice quizzes for two pressentations)
- Passing all multiple choice quizzes during the semester with at least 75% is mandatory, multiple attempts are allowed.

HPI-SECA-S: Security Analytics - Spezialisierung

3	**Network Security in Practice**	
	Seminar/Praktikum	*Najafi, Peyman*
	/4	*Cheng, Feng*

0	**Mobile Security**	
	Vorlesung/Übung/ 4	This lecture covers mobile security on an application and system level, with many hands-on exercises. Students will learn state-of-the-art security concepts for both, iOS and Android, and will be able to perform security testing of mobile apps, mobile malware analysis, as well as testing security-critical components within mobile operating systems. https://moodle.hpi.de/course/view.php?id=798 This lecture covers mobile security on an application and system level, with many hands-on exercises. Students will learn state-of-the-art security concepts for both iOS and Android. They will be able to perform security testing of mobile apps, mobile malware analysis, and testing security-critical components within mobile operating systems. Course contents include: Threat modeling for mobile devices and apps, building mobile applications with Xcode and Android Studio, application security and testing, mobile malware capabilities and detection, operating system internals, such as inter-process communication, threads, ..., kernel and firmware security, mobile forensics, and wireless security. Grading is based on practical exercises and the final exam. Assignments (50%) Written exam, 90 minutes (50%)	*Classen, Jiska*

027	**Process Mining**	
	Vorlesung/Übung/ 2	*Leopold, Henrik* *Weske, Mathias*
044	**Cyberkriminalität: Täterstrukturen, Methoden und Gegenmaßnahmen**	
	Projektseminar/4	*Doerr, Christian*
9	**Applied Probabilistic Machine Learning**	
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028	**Deep Learning for Molecular Biology**

Seminar/2

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Max. number of participants: 10

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Rissom, Francesca
Heyne, Henrike
Nowicka, Melania Maria
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4	**Big Data Systeme**

Vorlesung/4

Rabl, Tilmann
Boissier, Martin
Salazar Diaz, Ricardo
Strassenburg, Nils

020	**Data Processing on Modern Hardware**

Projektseminar/4

Rabl, Tilmann
Weisgut, Marcel

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Vorlesung/4

Bajpai, Vaibhav
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HPI-SECA-K: Security Analytics - Konzepte und Methoden

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- application security and testing,
- mobile malware capabilities and detection,
- operating system internals, such as inter-process communication, threads, ...,
- kernel and firmware security,
- mobile forensics, and
- wireless security.

Grading is based on practical exercises and the final exam.
- Assignments (50%)
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027	**Process Mining**	
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028	**Deep Learning for Molecular Biology**	
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Rissom, Francesca
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	Vorlesung/4	*Rabl, Tilmann*

Rabl, Tilmann
Boissier, Martin
Salazar Diaz, Ricardo
Strassenburg, Nils

020	**Data Processing on Modern Hardware**	
	Projektseminar/4	*Rabl, Tilmann*

Rabl, Tilmann
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Bajpai, Vaibhav
Ververis, Vasileios

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Professional Skills (SSK)

HPI-PSK-ML: Management und Leadership

5	**Global Team-Based Innovation I**		

Projektseminar/4 | Global Team-based Innovation (GTI) is a course designated for master students of the Hasso Plattner Institute (HPI) and the University of Potsdam (UP).

Uebernickel, Falk
Beermann, Vincent
Enkmann, Jan
Rolfes, Theresa Maria
Cauderay, Virginie
Wuttke, Tobias

In our course, students apply IT knowledge to engineer digital solutions for real business challenges provided by prominent global companies. We follow the Design Thinking methodology to innovate on wicked problems given by our project partners. Within GTI, HPI students collaborate with students from other leading global universities: HPI is a partner in ME310 (for projects with the Stanford University) as well as part of the SUGAR Network for Design Innovation (for projects with other global universities).
https://hpi.de/uebernickel/teaching/global-team-based-innovation-gti-design-thinking.html
This class is exclusively available to students who have been accepted through our application process.

Exam
    Project work (20%)
                Individual participation during lectures, group meetings and in project work
                Stakeholder management
                Project management (sticking to deadlines, etc.)
    Milestone presentations (20%)
                GTI 1: Fall & winter presentation
                GTI 2: Final presentation
    Tangible outcomes (20%)
                One-Pagers for corporate partners
                Intermediate prototypes
    Milestone documentations (40%)
                GTI 1: Fall & winter documentation
                GTI 2: Final documentation & videos
The estimated workload is 2-3 days per week.

Goals:
Students from Potsdam and leading global partner universities tackle design innovation challenges posed by global corporations. The 9 months (2 semesters) course focuses on the application of IT knowledge for engineering solutions to real business challenges. Further, we put emphasis on teaching students human-centered innovation methods and processes required for designers, engineers, and project managers of the future.
Within the projects, students go through an intense and iterative process of need finding, ideation, and rapid prototyping to create and evaluate new concepts. Company involvement provides the reality check necessary for teams to improve their innovation abilities. The team is supported by a professional coach, corporate liaisons, and faculty advisors.
Projects typically involve systems integration and include a mix of mechanical, electronic and software design. The results of all projects are real prototypes that have a user-centric design, are economically viable and technically feasible.

2	**Founder Fundamentals I**	

Vorlesung/2

Pawlitschek, Frank
Hahn, David

040 **Führungskompetenz - über die harten Auswirkungen der Soft Skills**

Blockseminar/2   Fachliche Kompetenzen werden in Unternehmen als selbstverständlich vorausgesetzt. Das Seminar geht von der These aus, dass mit jedem Karriereschritt in der Hierarchie auch die Anforderungen an soziale Kompetenz (Kommunikationsfähigkeit, Konfliktfähigkeit, Werteorientierung) steigen.   *Heidemann, Michael Karl*
Unger, Eugen
Fuerstenberg, Anja

Modul 1 - Referent Michael Karl Heidemann

Führung in Veränderungsprozessen: Unternehmenskultur gestalten

Verantwortung in Unternehmen zu tragen, heißt heute vor allem, Veränderungsprozesse zu initiieren, zu begleiten und erfolgreich zu machen. Welche Herausforderung bedeutet das für Führungskräfte? Wodurch ist die Unternehmenskultur eines Unternehmens bestimmt? Welche Faktoren spielen grundsätzlich eine Rolle, welche sind im Alltag wirksam? Lässt sich die Führungskultur eines Unternehmens beeinflussen und wenn ja – wie? Im ersten Modul der Reihe wird eine grundsätzliche, an der Führungsverantwortung orientierte Sicht auf das Thema entfaltet.

- Was ist Unternehmenskultur?
- Welche Bedeutung hat sie für den Erfolg des Unternehmens?
- Kann man Menschen verändern?
- Kann man Unternehmen verändern?
- Kulturelle Aspekte im Change Management
- Führung als Identitätsstiftung
- Herausforderungen in Veränderungsprozessen
- Autonomie und Heteronomie im Führungsalltag

Modul 2 - Referent Eugen Unger

Führungsalltag: Führungssituationen und Führungskommunikation

Führung beruht, wie alles soziale Handeln, auf Verhaltensmustern, die weitgehend automatisch, also unbewußt ablaufen. Das eigene Handeln an selbst entwickelten Qualitätsmaßstäben zu orientieren, bedeutet demnach Bewusstsein zu schaffen. Die Teilnehmer reflektieren ihr Führungsverständnis, indem sie sich mit ihren eigenen Annahmen und daraus resultierenden Verhaltensstrategien auseinandersetzen. Auf diese Weise bietet das Format einen diskursiven Rahmen für relevante Führungsthemen des Alltags und fördert damit ein klares Rollenverständnis als Führende.

- Selbstverständnis als Führungskraft
- Rollenanforderungen zwischen Zielen und Bedürfnissen
- Anerkennung, Kritik und Potentialentwicklung
- Führungskommunikation bewußt gestalten
- Feedbacksicherheit
- Motivation und Demotivatoren
- Zusammenspiel der Führungsinstrumente

Exam: Die Leistungserfassung erfolgt im Rahmen einer mündlichen Prüfung (Kolloquium).

043 **Leading Yourself and Others in a Virtual World**

Blockseminar/2 **1. Leading Self** *Drath, Karsten*
Leading Self *Fuerstenberg, Anja*
How does Resilience work?
Risk- and Protective Factors
Victim- or Shaper mode
Interview "Leaders Talk"
My development plan

2. Leading Others
Management vs. Leadership
Six Leadership Styles by Daniel Goleman
Self Assessment: My leadership signature
How leaders grow
Interview "Leaders Talk"
My development plan

3. Leading Virtually
Leading virtual teams
Success factors
Self-Assessment Leading Virtually
Interview "Leaders Talk"
Virtual Inspiration Challenge
My development plan

Exam:
COURSE HOMEWORK
Due 14 days after end of course:
• Hand in individual reflection journal (structured course handout with guiding questions)
• Structured essay: "My Development Plan"
GRADING
• Reflection Journal (50%)
• My Development Plan (50%)

106 **Management Essentials**

Blockseminar/2 The students learn about the most important aspects of *Kearney, Eric*
managing organizations and of managing people in organizations and *Fuerstenberg, Anja*
how to apply this knowledge to concrete challenges.

This course offers an overview of the main topics of management. We will first cover the basics of management *of* organizations (strategic leadership) and will then turn to management *in* organizations (people management). With regard to the latter, the topics include leadership and motivation, employee satisfaction, personnel selection, training and development, and employee evaluation and compensation. Management knowledge is essential for all those who at some point wish to start their own companies or strive to occupy leadership positions in organizations.
Conveyed competencies:
Knowledge-related competencies: strategic management; methods in management research; personnel selection; job and work design; training and development; motivation; satisfaction; leadership; personnel evaluation; personnel compensation.
Methodological competencies; case study analysis; presentation techniques.
Social competencies; group work and discussions.

Exam: The grade will be calculated on the basis of a group presentation (30%) and a written assignment (70%). Both the group presentation and the written assignment will focus on management aspects in organizations that the students select themselves. Further details will be provided at the beginning of the course.

050 **Power and Power Misuse in Organizations**

Blockseminar/2 Part 1: Power in Organizations. What is it? (0.75 days) *Drath, Karsten*
Part 2: Destructive Leaders – Born or made? (0.75 days) *Fuerstenberg, Anja*
Part 3: Power Misuse in Organizations (0.75 days)
Part 4: Managing Power in Organizations (0.75 day)

Exam:
Class presentation (50%)
Written exam (50%)

016	**Unternehmenssimulation Strategisches Management**

Blockseminar/2

In dieser Veranstaltung erarbeiten sich die Teilnehmer zunächst im Selbststudium die Grundlagen strategischen Managements, festigen diese Kenntnisse im Rahmen eines Fallstudienseminars (Diskussion von Praxisfällen) und transferieren sie schließlich im Rahmen einer zweitägigen interaktiven Unternehmenssimulation („Berlinsim - digitale Transformation") in die (simulierte) Führungspraxis.

Schwerpunktthemen
Strategisches Entscheiden unter Unsicherheit, strategische Umweltanalyse, Unternehmensanalyse, Wettbewerbsstrategie (Kostenschwerpunkt, Differenzierung, Stuck-in-the-middle, Hybridposition), Gesamtunternehmensstrategie (Parenting Advantage; Portfolio-Management), Strategieimplementation, Strategische Kontrolle

Exam
Leistung in der Unternehmenssimulation (50%; Kriterien werden zu Beginn der Veranstaltung bekannt gegeben), Hausarbeit (Reflexion der eigenen Entscheidungspraxis aus der Simulation vor dem Hintergrund der Modelle und Methoden des strategischen Managements; 50%; ggf. als Gruppenhausarbeit)

Entwicklung und Verankerung eines branchenunabhängigen robusten mentalen Modells strategischer Unternehmensführung

Fallstudiendiskussion, Unternehmenssimulation (Gruppenentscheidungen, Einsatz strategischer Analysetools, Coaching), Erfahrungsbasiertes Lernen, Selbststudium.

Braun, Tobias
Dabitz, Robert
Fuerstenberg, Anja

2	**Wayfinder: Self- and Leadership Development (D-School)**

Projekt/Seminar/2

Wayfinder is a newly developed program by HPI D-School that adds an essential perspective to the other program offerings in the area of Design Thinking: for self-leading and designing your own well-lived life and career.
https://hpi.de/en/school-of-design-thinking/for-students/wayfinder.html
Working in innovation teams requires flexibility, agility and, above all, empathy. Empathy, and thus empathic leadership, requires skills in self-awareness and self-leadership, and shaping one's own life as well as one's own career. We believe that a structured design process can help people to develop and grow. Such a process allows them to find out what they want and how to design a satisfying and successful life.
By applying and developing the methods of Design Thinking combined with fundamentals from systemic coaching and self-leadership, this program aims to learn and apply tools and techniques to improve self-awareness, recognize one's own behavioral patterns and values, reflect on and expand one's context of experience to make self-efficacy a reality in the future; building on this, to explore, prototype and test new options for a successful future. The program is based on the "Designing Your Life" Concept and has been extended and further developed by the HPI School of Design Thinking.

Wayfinder has **four major focus areas**:
1. Empathy and Self-Awareness: Understanding one's own values and attitudes.
2. Exploring: Shaping career and personal life with purpose and energy.
3. Prototyping: Making good choices and exploring options.
4. Iterate: Learning forward in a strong network.

Session 1: 15. November 2024 (D-School, House D)
Session 2: 6. December 2024 (remote)
Session 3: 10. January 2025 (remote)
Session 4: 31. January 2025 (D-School, House D)

The Wayfinder program is aimed at HPI students as well as participants of the Design Thinking Studios of the HPI School of Design Thinking. The course is limited to 18 participants to allow for intensive exchange and reflection in small groups.

Schwemmle, Martin
Thal, Klaudia
Klonower, Janet
Nicolai, Claudia

8	**Product Builder**

Seminar/4

Pawlitschek, Frank
Hahn, David

HPI-PSK-KO: Kommunikation

5	**Academic Writing for Science**	
Seminar/2	**"*Scientific writing is not a science. It does not contain laws obtained through derivations and experiments. Scientific writing is a craft. It consists of skills that are developed through study and practice. Moreover, scientific writing is not mystical. In fact, scientific writing is straightforward. Unlike other forms of writing … scientific writing has two specific goals: to inform readers and to persuade readers*."** – Michael Alley, "*The Craft of Scientific Writing"*	*Fuerstenberg, Anja* *Nemeth, Sharon*

"Things should be made as simple as possible, but not any simpler."
– Albert Einstein

The course, "Academic Writing for Science" aims to take the mystery out of scientific writing by providing knowledge and practice in the skills necessary to produce a well-written scientific paper in English. Our focus is on those qualities crucial to the positive reception of written work within the scientific community.

Class members are required to give a short presentation based on their assessment of a writing excerpt (maximum 2 pages) from a scientific text of their choice.

Participants learn what comprises clear, concise, and effective written expression. We practice identifying and resolving problems in areas that are often obstacles to good writing. In this sense, we target language and punctuation.

In new course content, participants also learn how to structure and design sentences and paragraphs for the most effective presentation of written work.   The principles we learn will help improve *all* professional and academic writing.

Performance Measurement:
In-class participation, performance, and progress. A mid-term test and a final test, based on points covered in the course and writing exercises. The final grade is based on the average of the midterm and final exams points. The oral presentation is a pre-requisite to completion of the course.

Participation in class discussions plays an important role in this course, as does holding the oral presentation and completing writing activities.

038   **Communicating Technology Successfully - Developing Communication Strategies**

Blockseminar/2   The seminar is designed for students in the five master's degree programs in Digital Engineering who want to communicate their research topics in a structured manner and present them successfully. The main focus is on comprehensible communication of specialized knowledge to different target groups in different media. The seminar is designed to enable participants to:

Lux, Nadine
Fuerstenberg, Anja

- prepare communication strategies for complex topics from science, research and development for various target groups, and communicate transfer projects successfully

- apply a methodical toolbox with simple communication and strategy tools and

- to coach and support each other in the conception and implementation of communication tasks in a collegial exchange

Day 1 - Basics of Science and Technology Communication
Input on science and technology communication; overview of typical characteristics and problem areas, good practice examples
Input & exercise: target groups and goals, formulating messages, communicating knowledge
Input: Elevator pitch training - idea pitch for group work (day 2 and day 3), input on set-up and structure
Exercise: Preparing idea pitchs for day 2 (individual and partner exercise)

Day 2 - Idea Pitch & Communication Strategies
Warm-up: speech and voice training
Idea pitch: Presentation of project ideas, selecting topics and forming teams for the elaboration of the communication strategies
Input: Elements of communication strategies, examples of communication concepts
Exercise: Stakeholder analysis for own projects and definition of communication goals and target groups (group work)
Input & exercise: Comprehensible language, formulating core messages (group work)
Input: Communication measures, instruments, and formats
Exercise: Rapid prototyping for technology communication of own projects (group work)

Day 3 – Planning of communication activities
Input: Technology communication, examples of various media channels, including digital communication, social media, audio-visual communication, press and media work
Continuation of exercise: Rapid prototyping of own projects (group work) - focus on one measure, e.g. for social media, and its implementation (communication examples)
Presentation of prototypes - communication concepts for technology communication (group work, part 1 of graded exam)
Reality check & feedback from trainer and peers
Wrapup and briefing for the written assignment

The block seminar can be taken either as a supplement to the seminar "Communicating Technology Successfully - Developing Content and Formats " or independently.

Exam:
Idea pitch, development and presentation of first ideas for communication strategies for technology communication (50%)
Written assignment (max. 12 pages), elaboration of the communication strategies for technology communication presented in the seminar (50%)

039	**Communicating technology successfully – Developing Content and Formats**	
Blockseminar/2	The seminar is aimed at students of the five master's programs in the field of digital engineering who want to communicate their research topics in a structured way and present them successfully. The focus is on developing successful formats and comprehensible content for communication with different target groups. The seminar is designed to enable the participants to	*Lux, Nadine* *Fuerstenberg, Anja*

- communicate complex topics from science, research and development in a way that is appropriate for the target group and pass on knowledge in a comprehensible way

- apply methods for format development and

- to coach each other and to support each other in communication tasks in collegial exchange during conception and implementation.

The block seminar can be taken either as a supplement to the seminar "Communicating Technology Successfully - Developing Communication Strategies " or independently.

Day 1 - Basic knowledge of format development for science and technology communication

Input on the topic of science and technology communication; overview of typical characteristics and problem areas, best and worst practice examples

Input & exercise: understanding audiences and target groups

Exercise: text formats - comprehensible language, tips and tricks for writing

Input & exercises: Trends in research communication - social media, websites, community participation & citizen science

Input & exercise: hands-on research - Visitor centers, science centers, fairs, events & co.

Day 2 - Communicating science and technologies

Input & exercises: Media and public relations

Easy listening: Audio formats, radio & podcasts

Visualizing research: Image formats, clips and documentaries

Discussing science: Interview situations and public dialogues

Input & presentation training: My (research) project in 120 seconds; input on composition and structure (individual and partner exercise)

Input & exercise: oral presentations, body language, preparing scripts; feedback from trainer and peers

Day 3 – Developing formats for digital Science and Technology Communication

Input on format development in science and technology communication

Input & exercise: Digital storytelling for the communication of own projects (group work), storyboards & conception

Presentation of format ideas (group work, part 1 of graded exam)

Reality check and feedback from trainer and peers

Wrapup and briefing for the written assignment

Exam

- Presentation "My (research) project in 120 seconds", development and presentation of a digital (storytelling) format for own research and/or technology communication (group work) (50%)

- Written paper (max. 12 pages), elaboration of the ideas for technology communication presented in the seminar (50%)

040	**Führungskompetenz - über die harten Auswirkungen der Soft Skills**	

Blockseminar/2   Fachliche Kompetenzen werden in Unternehmen als selbstverständlich vorausgesetzt. Das Seminar geht von der These aus, dass mit jedem Karriereschritt in der Hierarchie auch die Anforderungen an soziale Kompetenz (Kommunikationsfähigkeit, Konfliktfähigkeit, Werteorientierung) steigen.

Heidemann, Michael Karl
Unger, Eugen
Fuerstenberg, Anja

Modul 1 - Referent Michael Karl Heidemann

Führung in Veränderungsprozessen: Unternehmenskultur gestalten

Verantwortung in Unternehmen zu tragen, heißt heute vor allem, Veränderungsprozesse zu initiieren, zu begleiten und erfolgreich zu machen. Welche Herausforderung bedeutet das für Führungskräfte? Wodurch ist die Unternehmenskultur eines Unternehmens bestimmt? Welche Faktoren spielen grundsätzlich eine Rolle, welche sind im Alltag wirksam? Lässt sich die Führungskultur eines Unternehmens beeinflussen und wenn ja – wie? Im ersten Modul der Reihe wird eine grundsätzliche, an der Führungsverantwortung orientierte Sicht auf das Thema entfaltet.

- Was ist Unternehmenskultur?
- Welche Bedeutung hat sie für den Erfolg des Unternehmens?
- Kann man Menschen verändern?
- Kann man Unternehmen verändern?
- Kulturelle Aspekte im Change Management
- Führung als Identitätsstiftung
- Herausforderungen in Veränderungsprozessen
- Autonomie und Heteronomie im Führungsalltag

Modul 2 - Referent Eugen Unger

Führungsalltag: Führungssituationen und Führungskommunikation

Führung beruht, wie alles soziale Handeln, auf Verhaltensmustern, die weitgehend automatisch, also unbewußt ablaufen. Das eigene Handeln an selbst entwickelten Qualitätsmaßstäben zu orientieren, bedeutet demnach Bewusstsein zu schaffen. Die Teilnehmer reflektieren ihr Führungsverständnis, indem sie sich mit ihren eigenen Annahmen und daraus resultierenden Verhaltensstrategien auseinandersetzen. Auf diese Weise bietet das Format einen diskursiven Rahmen für relevante Führungsthemen des Alltags und fördert damit ein klares Rollenverständnis als Führende.

- Selbstverständnis als Führungskraft
- Rollenanforderungen zwischen Zielen und Bedürfnissen
- Anerkennung, Kritik und Potentialentwicklung
- Führungskommunikation bewußt gestalten
- Feedbacksicherheit
- Motivation und Demotivatoren
- Zusammenspiel der Führungsinstrumente

Exam: Die Leistungserfassung erfolgt im Rahmen einer mündlichen Prüfung (Kolloquium).

041	**Intrapersonelle & Interpersonelle Kompetenzen**	

Blockseminar/2

Leidenfrost, Jana
Fuerstenberg, Anja

050	**Power and Power Misuse in Organizations**	

Blockseminar/2   Part 1: Power in Organizations. What is it? (0.75 days)
Part 2: Destructive Leaders – Born or made? (0.75 days)
Part 3: Power Misuse in Organizations (0.75 days)
Part 4: Managing Power in Organizations (0.75 day)

Drath, Karsten
Fuerstenberg, Anja

Exam:
    Class presentation (50%)
    Written exam (50%)

HPI-PSKDTB: Design Thinking Basics

0	**Foundations for Design Thinking**	

Projekt/Seminar/6 — Foundations for Design Thinking ist ein 16-wöchiges Programm, in dem die Teilnehmer grundlegende Kenntnisse, Fähigkeiten und Fertigkeiten erwerben, um die Prinzipien des Design Thinking anzuwenden und so kreatives Selbstvertrauen aufzubauen. Während des Programms, das von April bis Juli und von Oktober bis Januar läuft, arbeitest du in verschiedenen Teams unter der Leitung unserer erfahrenen Design Thinking Coaches. Wir streben ein unterstützendes und integratives Umfeld an, das Geschlechtsidentitäten, kulturellen Hintergrund und Berufserfahrung berücksichtigt.

Nicolai, Claudia
Lata, Lukasz

Das Programm gibt Einblick in verschiedene Aspekte des Design Thinking und bietet die Möglichkeit, grundlegende Werkzeuge, Methoden und Denkweisen zu erlernen, die erfolgreiche, lebenszentrierte Innovationen fördern. Du tauchst in einen experimentellen Lernansatz ein, der auf Teamarbeit basiert.

Da unser Programm auf verschiedenen Perspektiven aufbaut, suchen wir Studierende und Absolvent:innen aller Disziplinen und Fachrichtungen – von Architektur, Pädagogik, IT Systems Engineering und BWL bis hin zu Zukunftsforschung.

Foundations findet ausschließlich vor Ort an der HPI School of Design Thinking und wird im Wintersemester 2024-2025 mit 6 ECTS bewertet. Die Teilnehmeranzahl ist begrenzt auf maximal 60 Personen. Das Programm ist ein 100%iges Vor-Ort-Programm. Um das Abschlusszertifikat und ECTS-Punkte zu erhalten, ist eine regelmäßige, pünktliche und physische Teilnahme an allen Programmtagen erforderlich.

Das Programm beginnt am 20.09.2024 mit dem "Experience Day". Im Wintersemester 2024-2025 finden vom 15.10.2024 bis 28.01.2025 insgesamt 20 Programmtage (meist dienstags und freitags) vor Ort an der HPI School of Design Thinking statt. Alle Programmtage sind von 9:00 Uhr bis 17:00 Uhr. Im Februar arbeiten die Studenten an ihren Projektdokumentationen.

Englisch version:
Foundations for Design Thinking is a 16-week program where participants get the basic knowledge, skills, and capabilities to apply the principles of Design Thinking to build creative confidence. During the program, which runs from April – July and October – January you will work in different teams led by our experienced Design Thinking Coaches. We aim for a supportive and inclusive environment that considers gender identities, cultural background, and professional experience.

The program gives insight into different aspects of Design Thinking and provides the opportunity to learn basic tools, methods, and mindsets that foster successful human-centered innovations. You will dive into an experimental learning approach that is based on teamwork.

Foundations take place on site at the HPI School of Design Thinking and will be graded with 6 ECTS in the winter semester 2024-2025. The number of participants is limited to a maximum of 60 people. The program is a 100% on-site program. Regular, on-time, physical class attendance is required on all program days to be awarded Completion Certificate and ECTS points

Since our program is based on different perspectives, we are looking for students and graduates from all disciplines - from Architecture, Pedagogy, IT systems Engineering or Business to Futurology.
The program starts on 20.09.2024 with the "Experience Day". In the winter semester 2024-2025, a total of 20 program days (mostly Tuesday and Friday) will take place on site at the HPI School of Design Thinking from 15.10.2024 to 28.01.2025. All program days are from 9:00 am to 5:00 pm. In February the students are working on their project documentations.

2 | **Wayfinder: Self- and Leadership Development (D-School)**

Projekt/Seminar/2

Wayfinder is a newly developed program by HPI D-School that adds an essential perspective to the other program offerings in the area of Design Thinking: for self-leading and designing your own well-lived life and career.

https://hpi.de/en/school-of-design-thinking/for-students/wayfinder.html

Working in innovation teams requires flexibility, agility and, above all, empathy. Empathy, and thus empathic leadership, requires skills in self-awareness and self-leadership, and shaping one's own life as well as one's own career. We believe that a structured design process can help people to develop and grow. Such a process allows them to find out what they want and how to design a satisfying and successful life.

By applying and developing the methods of Design Thinking combined with fundamentals from systemic coaching and self-leadership, this program aims to learn and apply tools and techniques to improve self-awareness, recognize one's own behavioral patterns and values, reflect on and expand one's context of experience to make self-efficacy a reality in the future; building on this, to explore, prototype and test new options for a successful future. The program is based on the "Designing Your Life" Concept and has been extended and further developed by the HPI School of Design Thinking.

Wayfinder has **four major focus areas**:
1. Empathy and Self-Awareness: Understanding one's own values and attitudes.
2. Exploring: Shaping career and personal life with purpose and energy.
3. Prototyping: Making good choices and exploring options.
4. Iterate: Learning forward in a strong network.

Session 1: 15. November 2024 (D-School, House D)
Session 2: 6. December 2024 (remote)
Session 3: 10. January 2025 (remote)
Session 4: 31. January 2025 (D-School, House D)

The Wayfinder program is aimed at HPI students as well as participants of the Design Thinking Studios of the HPI School of Design Thinking. The course is limited to 18 participants to allow for intensive exchange and reflection in small groups.

Schwemmle, Martin
Thal, Klaudia
Klonower, Janet
Nicolai, Claudia

HPI-PSKDTA: Design Thinking Advanced

5	**Global Team-Based Innovation I**

Projektseminar/4   Global Team-based Innovation (GTI) is a course designated for master students of the Hasso Plattner Institute (HPI) and the University of Potsdam (UP).

In our course, students apply IT knowledge to engineer digital solutions for real business challenges provided by prominent global companies. We follow the Design Thinking methodology to innovate on wicked problems given by our project partners. Within GTI, HPI students collaborate with students from other leading global universities: HPI is a partner in ME310 (for projects with the Stanford University) as well as part of the SUGAR Network for Design Innovation (for projects with other global universities).

https://hpi.de/uebernickel/teaching/global-team-based-innovation-gti-design-thinking.html

This class is exclusively available to students who have been accepted through our application process.

Uebernickel, Falk Beermann, Vincent Enkmann, Jan Rolfes, Theresa Maria Cauderay, Virginie Wuttke, Tobias

Exam
    Project work (20%)
        Individual participation during lectures, group meetings and in project work
        Stakeholder management
        Project management (sticking to deadlines, etc.)
    Milestone presentations (20%)
        GTI 1: Fall & winter presentation
        GTI 2: Final presentation
    Tangible outcomes (20%)
        One-Pagers for corporate partners
        Intermediate prototypes
    Milestone documentations (40%)
        GTI 1: Fall & winter documentation
        GTI 2: Final documentation & videos

The estimated workload is 2-3 days per week.

Goals:
Students from Potsdam and leading global partner universities tackle design innovation challenges posed by global corporations. The 9 months (2 semesters) course focuses on the application of IT knowledge for engineering solutions to real business challenges. Further, we put emphasis on teaching students human-centered innovation methods and processes required for designers, engineers, and project managers of the future.

Within the projects, students go through an intense and iterative process of need finding, ideation, and rapid prototyping to create and evaluate new concepts. Company involvement provides the reality check necessary for teams to improve their innovation abilities. The team is supported by a professional coach, corporate liaisons, and faculty advisors.

Projects typically involve systems integration and include a mix of mechanical, electronic and software design. The results of all projects are real prototypes that have a user-centric design, are economically viable and technically feasible.

0	**Design Thinking Studio: Sustainability**

Projekt/Seminar/6

*Nicolai, Claudia
Grundnigg, Thomas*

7	**Design Thinking Studio: Open Innovation**

Projektseminar/6

*Nicolai, Claudia
Juarez Rodriguez, Maria-Jose
Osman, Sherif Hussein Ibrahim*

3	**Global Design Thinking-Workshop (D-School)**	
	Projekt/Seminar/2	Die Global Design Thinking Workshops sind ein Programm, das über die reine Einführung in Design Thinking als Prozess hinausgeht. In diesem Programm erleben die Teilnehmer:innen Design Thinking als einen lebenszentrierten Ansatz und arbeiten in verschiedenen Teams an komplexen Innovationsproblemen, unterstützt von internationalen Design Thinking-Coaches. Wir kombinieren diese Arbeit an einem konkreten Innovationsprojekt mit Reflexionen zu einem spezifischen Fokusthema. Der nächste Global Design Thinking Workshop findet im März 2025 statt Our Global Design Thinking Workshops are a education concept that goes beyond the mere introduction to Design Thinking as a process. In this program participants experience Design Thinking as a life-centered approach by dealing with complex innovation problems in diverse teams and supported by international Design Thinking coaches. We combine the work on a concrete innovation project with reflections on a specific focus topic. The next Global Design Thinking Workshop will take place in March 2025!	*Nicolai, Claudia* *Osman, Sherif Hussein Ibrahim* *Juarez Rodriguez, Maria-Jose* *Klonower, Janet*

2	**Wayfinder: Self- and Leadership Development (D-School)**	
	Projekt/Seminar/2	**Wayfinder is a newly developed program by HPI D-School that adds an essential perspective to the other program offerings in the area of Design Thinking: for self-leading and designing your own well-lived life and career.** https://hpi.de/en/school-of-design-thinking/for-students/wayfinder.html Working in innovation teams requires flexibility, agility and, above all, empathy. Empathy, and thus empathic leadership, requires skills in self-awareness and self-leadership, and shaping one's own life as well as one's own career. We believe that a structured design process can help people to develop and grow. Such a process allows them to find out what they want and how to design a satisfying and successful life. By applying and developing the methods of Design Thinking combined with fundamentals from systemic coaching and self-leadership, this program aims to learn and apply tools and techniques to improve self-awareness, recognize one's own behavioral patterns and values, reflect on and expand one's context of experience to make self-efficacy a reality in the future; building on this, to explore, prototype and test new options for a successful future. The program is based on the "Designing Your Life" Concept and has been extended and further developed by the HPI School of Design Thinking. Wayfinder has **four major focus areas**: 1. Empathy and Self-Awareness: Understanding one's own values and attitudes. 2. Exploring: Shaping career and personal life with purpose and energy. 3. Prototyping: Making good choices and exploring options. 4. Iterate: Learning forward in a strong network. Session 1: 15. November 2024 (D-School, House D) Session 2: 6. December 2024 (remote) Session 3: 10. January 2025 (remote) Session 4: 31. January 2025 (D-School, House D) The Wayfinder program is aimed at HPI students as well as participants of the Design Thinking Studios of the HPI School of Design Thinking. The course is limited to 18 participants to allow for intensive exchange and reflection in small groups.	*Schwemmle, Martin* *Thal, Klaudia* *Klonower, Janet* *Nicolai, Claudia*