



## Course and Examination Fact Sheet: Autumn Semester 2021

### 7,040 | 8,023: RPV: Design Thinking for Artificial Intelligence

ECTS credits: 8

#### Overview examination/s

(binding regulations see below)

Decentral - Presentation (in groups - all given the same grades) (50%)

Examination time: term time

Decentral - examination paper written at home (in groups - all given the same grades) (50%)

Examination time: term time

#### Attached courses

Timetable -- Language -- Lecturer

[7,040,1.00 RPV: Design Thinking for Artificial Intelligence](#) -- Englisch -- [Hehn Jennifer](#) , [van Giffen Benjamin](#)

#### Course information

#### Course prerequisites

No special requirements - this course addresses students who are interested in new innovation methodologies, emerging technologies, and creativity techniques.

This course is assigned to the profiles «Business Development» and «Startup & Technology Entrepreneurship», but can also be taken without selecting a specialisation.

#### Learning objectives

- Students gain knowledge about Design Thinking AND Artificial Intelligence (AI)
- Students learn how to apply Design Thinking methods for a real AI-driven business problem provided by a corporate partner
- Students understand the basics of user research by applying interview and observation techniques
- Students understand the central role of Design Thinking for structured prototype development by conducting rapid prototyping and early user testing
- Students acquire social competencies and learn to provide team feedback by collaborating with a designated team during all assigned activities
- Students understand the potential of Design Thinking for their own activities at university and at work by reflecting the applied methods and tools of Design Thinking

#### Course content

AI, machine learning, deep learning, and natural language processing - these terms are everywhere. You might know or not know what they mean, but you most probably know that you should not ignore them. AI is real, and it is revolutionary. It is already disrupting many industries and yet we have only scratched the surface.

AI entails a whole stack of new technologies upon which new services can be built. While most firms will not innovate in the hardware or algorithm space, it is a top priority to identify and realize AI use cases that fit into an organization and customer base. The course "Design Thinking for AI" is designed to tackle business and societal issues associated with AI by following a human-centered approach. "Design Thinking for AI" combines human-centered methodology and state of the art technology to create relevant and innovative solutions.

"Design Thinking" is an innovation philosophy that has its roots at Stanford University. It is a human-centered approach to innovation which focuses on feasibility, viability, and - even more importantly - on the desirability of new products and services.



Large corporations (e.g., General Electric, Deutsche Bank, Procter & Gamble, SAP) increasingly adopt this way of innovation to ensure that customers and users really need the newly developed product and services. The course teaches this innovation philosophy, various methods, and tools that have been developed globally by different companies and organizations.

As a student of our action-based course you work in a team and start your project by understanding human needs to define the right AI innovations in a creative manner. Design Thinking methods will help you to develop tangible, tested prototypes, and hundreds of creative ideas. You will work with a corporate partner in close collaboration to make sure that your innovative solution will provide value to customers and your partner company.

The primary objective of this course is to understand the value of the Design Thinking methodology and connect it to the development of emerging technologies such as AI. The lecture will show students how to empathize with humans, how to identify their needs, and how to provide them with innovative solutions.

## Course structure and indications of the learning and teaching design

Quick facts:

- This course counts 8 credits. Accordingly the total work load for students is 240 hours. This includes self-study, project work, campus time, assignments, and examination
- Students work in teams (three to five students) to develop new ideas for an AI-driven business problem provided by a corporate partner
- Lecture days in an interactive workshop format and individual team coaching sessions
- Blended mix of virtual & physical learning spaces to boost creativity and teamwork
- Close collaboration with the corporate partner to create real impact
- Each team will be provided with materials and equipment to prototype their ideas (each time will get their own budget)
- Each team presents their concepts and prototypes in a group presentation
- Hybrid course setting of in-person lectures (Introduction and 3-day deep dive Workshop in the break) in our Design Thinking Loft and remote lecture/coaching sessions (rest of the lectures)
- Students have the possibility to work on their project anytime in our Design Thinking Loft

Outcome

- 1 solution concept to meet the corporate challenge
- Customer insights to deepen the understanding of the business problem
- Tested prototypes to sharpen the solution vision

People involved

- Master degree students from Business Innovation with open minds and high motivation
- Lecturers & researchers with industry and research experience
- Industry experts with AI experience and domain knowledge

## Course literature

- Brown, T.: Design Thinking, Harvard Business Review, June 2008
- Kolko, J.: Design Thinking Comes of Age The approach, once used primarily in product design, is now infusing corporate culture, Harvard Business Review 2015
- Brenner et al. Design Thinking as Mindset, Process, and Toolbox, in: W. Brenner & F. Uebernickel (eds), Design Thinking for Innovation, Springer 2016
- Davenport, T. H. (2018). The AI advantage: How to put the artificial intelligence revolution to work. MIT Press.
- Russel, S., & Norvig, P. (2013). Artificial intelligence: a modern approach. Pearson Education Limited.
- Van Giffen, B., Borth, D., & Brenner, W. (2020). Management von Künstlicher Intelligenz in Unternehmen. HMD Praxis der Wirtschaftsinformatik, 57(1), 4-20.

## Additional course information

In the case of the President's Board having to implement new directions due to the SARS-CoV-2 pandemic in AS2021 course information listed above will be changed as follows:



- The course is conducted online via the platform Zoom
- The recordings of the course are available for 30 days
- The lecturers inform via StudyNet & e-mail on the changed implementation modalities of the course
- The course content and examination information stay the same

## Examination information

### Examination sub part/s

#### 1. Examination sub part (1/2)

##### Examination time and form

Decentral - Presentation (in groups - all given the same grades) (50%)

Examination time: term time

##### Remark

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##### Examination-aid rule

Presentations

In presentations, aids for visual presentation can be used. These aids can be specified or restricted by the lecturers.

##### Supplementary aids

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##### Examination languages

Question language: English

Answer language: English

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#### 2. Examination sub part (2/2)

##### Examination time and form

Decentral - examination paper written at home (in groups - all given the same grades) (50%)

Examination time: term time

##### Remark

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##### Examination-aid rule

Term papers

Written work must be written without outside help according to the known citation standards, and a declaration of authorship must be attached, which is available as a template on the StudentWeb.

Documentation (quotations, bibliography, etc.) must be carried out universally and consistently according to the requirements of the chosen/specified citation standard such as e.g. APA or MLA.

The legal standard is recommended for legal work (cf. by way of example: FORSTMOSER, P., OGOREK R., SCHINDLER B., Juristisches Arbeiten: Eine Anleitung für Studierende (the latest edition in each case), or according to the recommendations of the Law School).

The reference sources of information (paraphrases, quotations, etc.) that has been taken over literally or in the sense of the original text must be integrated into the text in accordance with the requirements of the citation standard used. Informative and bibliographical notes must be included as footnotes (recommendations and standards e.g. in METZGER, C., Lern- und Arbeitsstrategien (latest edition)).

For all written work at the University of St.Gallen, the indication of page numbers is mandatory, regardless of the standard chosen. Where page numbers are missing in sources, the precise designation must be made differently: chapter or section title,



section number, article, etc.

Supplementary aids

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Examination languages

Question language: English

Answer language: English

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## Examination content

**Group presentations:** Students are required to present their teamwork in a group presentation at the end of the course. The presentation will be graded in regard to content, level of reflection of applied methods, and presentation style. Relevant evaluation criteria are the following:

- Explanatory power of the presentation with regards to content (including relevance of the prototype, derivation/deduction of Customer-insights, precision of explanations)
- Compliance with Design Thinking methodology
- Language (Colloquial vs adequately formal language) /Presentation-style
- Novelty of presentation-style

**Group examination paper:** Student teams hand in a final project documentation that includes the key results (form of the documentation will be an extended slidedeck of your final presentation). The documentation might include:

- User observations and interviews like persona descriptions (understanding end user needs) and evaluations of designs/prototypes
- Analysis of competitive products and solutions
- Screening of emerging and AI technologies
- Conceptual prototype(s) for new products or services

Relevant evaluation criteria are based on the following categories:

- Assessment criteria:
- Correctness of problem analysis
- Quality of conceptual design
- Application of scientific knowledge in practical environment
- Compliance with Design Thinking methodology
- Quality of project documentation for industry partner
- Quality of prototypes and solutions
- Writing quality: using concrete and precise language, grammar, punctuation, and spelling

## Examination relevant literature

none



## Please note

Please note that only this fact sheet and the examination schedule published at the time of bidding are binding and takes precedence over other information, such as information on StudyNet (Canvas), on lecturers' websites and information in lectures etc.

Any references and links to third-party content within the fact sheet are only of a supplementary, informative nature and lie outside the area of responsibility of the University of St.Gallen.

Documents and materials are only relevant for central examinations if they are available by the end of the lecture period (CW51) at the latest. In the case of centrally organised mid-term examinations, the documents and materials up to CW 42 are relevant for testing.

Binding nature of the fact sheets:

- Course information as well as examination date (organised centrally/decentrally) and form of examination: from bidding start in CW 34 (Thursday, 26 August 2021);
- Examination information (regulations on aids, examination contents, examination literature) for decentralised examinations: in CW 42 (Monday, 18 October 2021);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised mid-term examinations: in CW 42 (Monday, 18 October 2021);

Examination information (regulations on aids, examination contents, examination literature) for centrally organised examinations: two weeks before the end of the registration period in CW 45 (Monday, 8 November 2021).