University of St.Gallen

Course and Examination Fact Sheet: Spring Semester 2025

11,807 | 12,807: Digital Health Forum

ECTS credits: 1

Overview examination/s

(binding regulations see below)
decentral - Written examination, Digital, Group work group grade (70%, 90 mins.)
Examination time: Term time
decentral - Quiz, Digital, Individual work individual grade (15%)
Examination time: Term time
decentral - Presentation, Analog, Group work group grade (15%)
Examination time: Term time

Attached courses

Timetable -- Language -- Lecturer
12,807,1.00 Digital Health Forum -- English -- Kowatsch Tobias

Course information

Course prerequisites

Interest in **Digital Health** at the intersection of **health economics, management, information systems research, computer science**, and **behavioral medicine**.

Learning objectives

To do no harm — and the most good — with AI in health care (Nature Medicine 2024), **Digital Therapeutics from Bench to Bedside** (npj Digital Medicine 2023), **Digital Therapeutics for Mental Health & Addiction** (Elsevier 2023), **Large Language Models in Medicine** (Nature Medicine 2023), **Benefits, Limits, and Risks of GPT-4 as an AI Chatbot for Medicine** (The New England Journal of Medicine 2023), **Wearable sensors enable personalized predictions of clinical laboratory measurements** (Nature Medicine 2021), **The advent of health technologies associated with artificial intelligence (AI) will be the most radical change in how medical care is delivered in our lifetime** (The Lancet Digital Health, 2023)

What are the **implications** and **rationale** behind the recent developments in **digital health technologies**?

Digital health technologies (DHTs) are used for **preventing**, **managing,** and **treating disease**. DHTs may leverage digital biomarkers, digital coaches and healthcare chatbots, telemedicine, mobile and wearable computing, self-tracking, personalized medicine, connected health, smart homes, or smart cars.

In the **20th century**, healthcare systems specialized in **acute care**. In the **21st century**, we now face the challenge of dealing with the specific characteristics of **chronic conditions**. These are now responsible for around 70% of all deaths worldwide and 85% of all deaths in Europe and are associated with an estimated **economic loss of $7 trillion between 2011 and 2025**. Chronic diseases require an intervention paradigm that focuses on **health-promoting behavior**. Lifestyle (e.g., diet, physical activity, tobacco, or alcohol consumption) can reduce the risk of suffering from a chronic condition. However, a lifestyle change is only implemented by a fraction of those affected, partly because of missing or inadequate interventions or health literacy, partly due to sociocultural influences. Individual personal coaching of these individuals is neither scalable nor financially sustainable.

Against this background, the question arises of how **DHTs** allow **medical doctors** and other **caregivers** to **scale** and **tailor long-term treatments** to **individuals** in need at **sustainable costs**. At the intersection of **health economics, information systems research, computer science**, and **behavioral medicine**, this lecture aims to help **students** and **upcoming healthcare executives** interested in the **DHTs** better understand the **latest developments** in this field.

After the course, students will be able to...

1. understand the importance of DHTs for health care management
2. describe and understand a specific DHT
3. discuss the advantages and disadvantages of a specific DHT

Course content

To reach the learning objectives, students will assess the most innovative Digital Health Technologies (DHTs) that are currently being discussed (e.g., large language model AI chatbots in healthcare, holographic physiotherapy coaches) from multiple perspectives (e.g., benefits for an aging society, regulatory aspects, ethical aspects, health economics, technology acceptance).

Course structure and indications of the learning and teaching design

The lecture is structured in **three parts,** with **guest lectures**, **complementary online exercises**, and **group presentations**. In the first part, students in groups will pick or propose a specific DHT they will assess. In the second part, national and international **experts** from **industry** and **academia** will provide valuable input via **guest lectures** (primarily online via Zoom). Complementary **learning material and multiple-choicequestions** are provided **online**. In the third part, students will **present and discuss the results** with fellow students.

Course literature

1. Digital Therapeutics Alliance (2023) DTx Evaluation Toolkit, https://dtxalliance.org/understanding-dtx/dtx-evaluation-toolkit/

2. Gilbert, S., Harvey, H., Melvin, T. et al. (2023). Large language model AI chatbots require approval as medical devices. *Nature Medicine*. 10.1038/s41591-023-02412-6

3. Goldberg, C. B., Adams, L., Blumenthal, D. et al (2024). To do no harm — and the most good — with AI in health care. *Nature Medicine*. https://doi.org/10.1038/s41591-024-02853-7

4. Jacobson, N., Kowatsch, T., & Marsch, L. (2023). *Digital Therapeutics for Mental Health and Addiction: The State of the Science and Vision for the Future* (1st ed.). Elsevier, Academic Press. 10.1016/C2020-0-02801-X.

5. Kowatsch, T., & Fleisch, E. (2021). Digital Health Interventions. In O. Gassmann & F. Ferrandina (Eds.), *Connected Business: Create Value in a Networked Economy* (pp. 71-95). Springer International Publishing. 10.1007/978-3-030-76897-3_4

6. Sim, I. (2019). Mobile Devices and Health. *N Engl J Med*, *381*(10), 956-968. 10.1056/NEJMra1806949

7. Thirunavukarasu, A. J., Ting, D. S. J., Elangovan, K., Gutierrez, L., Tan, T. F., & Ting, D. S. W. (2023). Large language models in medicine. *Nature Medicine*, *29*(8), 1930-1940. 10.1038/s41591-023-02448-8

8. Wang, C., Lee, C., & Shin, H. (2023). Digital therapeutics from bench to bedside. *npj Digital Medicine*, *6*(1), 38. 10.1038/s41746-023-00777-z

Mandatory Material

The mandatory material will be provided via the online learning platform.

Additional course information

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Examination information

Examination sub part/s

1. Examination sub part (1/3)

Examination modalities

Examination type	Written examination
Responsible for organisation	decentral
Examination form	Written exam
Examination mode	Digital
Time of examination	Term time
Examination execution	Synchronous
Examination location	On Campus
Grading type	Group work group grade
Weighting	70%
Duration	90 mins.

Examination languages

Question language: English
Answer language: English

Remark

Group presentation slides

Examination-aid rule

Open Book

Students are free to choose aids, apart from the following restrictions:

- pocket calculator models which are not part of the Texas Instruments TI-30 series, as well as any programmable electronic devices that are capable of communication such as electronic dictionaries, notebooks, tablets, smartphones, headsets, additional screens, etc. are not admissible;
- there is an option for faculty members to explicitly define exceptions under supplementary aids.

Procuring any aids, as well as ensuring their working order, is the exclusive responsibility of students.

Supplementary aids

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2. Examination sub part (2/3)

Examination modalities

Examination type	Quiz
Responsible for organisation	decentral
Examination form	Written exam
Examination mode	Digital
Time of examination	Term time
Examination execution	Synchronous
Examination location	On Campus
Grading type	Individual work individual grade
Weighting	15%
Duration	--

Examination languages

Question language: English
Answer language: English

Remark

Online assignments (eg multiple choice questions)

Examination-aid rule
Open Book

Students are free to choose aids, apart from the following restrictions:

- pocket calculator models which are not part of the Texas Instruments TI-30 series, as well as any programmable electronic devices that are capable of communication such as electronic dictionaries, notebooks, tablets, smartphones, headsets, additional screens, etc. are not admissible;
- there is an option for faculty members to explicitly define exceptions under supplementary aids.

Procuring any aids, as well as ensuring their working order, is the exclusive responsibility of students.

Supplementary aids
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3. Examination sub part (3/3)

Examination modalities

Examination type	Presentation
Responsible for organisation	decentral
Examination form	Oral examination
Examination mode	Analog
Time of examination	Term time
Examination execution	Asynchronous
Examination location	On Campus
Grading type	Group work group grade
Weighting	15%
Duration	--

Examination languages
Question language: English
Answer language: English

Remark
Group presentation

Examination-aid rule
Free aids provision

Basically, students are free to choose aids. Any restrictions are defined by the faculty members in charge of the examination under supplementary aids.

Supplementary aids
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Examination content

Systematic assessment of a recent Digital Health Technology (e.g., AI chatbots in health care).

Examination relevant literature

Mandatory Material

The mandatory material will be provided via the online learning platform.

University of St.Gallen

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 (CW21) at the latest. In the case of centrally organised mid-term examinations, the documents and materials up to CW 13 (Monday, 25 March 2025) 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 04 (Thursday, 23 January 2025);
- Examination information (supplementary aids, examination contents, examination literature) for decentralised examinations: in CW 12 (Monday, 17 March 2025);
- Examination information (supplementary aids, examination contents, examination literature) for centrally organised mid-term examinations: in CW 14 (Monday, 31 March 2025);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised examinations: two weeks before ending with de-registration period in CW 15 (Monday, 07 April 2025).