



Course and Examination Fact Sheet: Spring Semester 2024

12,805: Emerging Business Models in Digital Health

ECTS credits: 3

Overview examination/s

(binding regulations see below)

decentral - Digital written examination, Digital, Group work group grade (70%, 90 mins.)

Examination time: Term time

decentral - Digital written examination, Digital, Individual work individual grade (15%, 90 mins.)

Examination time: Term time

decentral - Presentation, Analog, Group work group grade (15%)

Examination time: Term time

Attached courses

Timetable -- Language -- Lecturer

[12,805,1.00 Emerging Business Models in Digital Health](#) -- English -- [Kowatsch Tobias](#)

Course information

Course prerequisites

Interest in the multi-disciplinary field of **Digital Health** at the intersection of **health economics, management, business informatics, computer science, and behavioral medicine**.

Learning objectives

After the course, students ...

1. know what a business model in digital health is
2. can explain the elements of a business model in digital health
3. understand specific aspects of business models in private/public health care systems
4. can identify top-funded companies providing digital health services
5. can systematically assess the business models of companies providing digital health services

Course content

Digital therapeutics for mental health and addiction (Elsevier 2023), **Digital therapeutics from bench to bedside**(npj Digital Medicine, 2023), **Economic Burden of Alzheimer's Disease** (Value in Health Regional Issues 2023), **Reimbursement strategies to guide value-based adoption and utilization of medical AI** (npj Digital Medicine 2022), **Paying for artificial intelligence in medicine** (npj Digital Medicine 2022), **Reimbursement of digital health solutions**(Frontiers in Medical Technology, 2023)

What are the business models behind the recent developments in digital health?

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 non-communicable diseases (NCDs), including common mental disorders. NCDs 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 and mental diseases are characterized in particular by the fact that they require an intervention paradigm that focuses on prevention and lifestyle change. Lifestyle (e.g., diet, physical activity, tobacco, or alcohol consumption) can reduce the risk of suffering from a chronic condition or, if already present, can reduce its burden. However, a corresponding change in lifestyle is only implemented by a fraction of those affected, partly because of missing or inadequate interventions or health literacy and partly due to socio-cultural influences. Individual personal coaching of these individuals is neither scalable nor financially sustainable.



To this end, the question arises of how business models address these challenges. Digital health services rely on information and communication technologies (e.g., smartphones, wearables, digital biomarkers, conversational agents, voice assistants, and artificial intelligence) to prevent and treat diseases in our everyday lives. They also allow medical doctors and other caregivers to scale and tailor long-term treatments to individuals in need. At the intersection of health economics, behavioral medicine, business informatics, and computer science, this lecture aims to help students and upcoming healthcare executives interested in the multi-disciplinary field of digital health to understand better business models of top-funded companies that offer digital health services.

The following topics are covered in this lecture to reach the learning objectives:

1. Introduction to business models in digital health
2. Specifics of business models in digital health
3. Identification of top-funded digital health companies
4. Systematic assessment of the business models of digital health companies

Course structure and indications of the learning and teaching design

The lecture is structured in two parts. In the first part, students will learn key aspects of business models in digital health. Complementary learning material (e.g., video clips), multiple-choice questions, and exercises are provided online via Canvas.

In the second part, students work in teams and will systematically assess the business models of top-funded companies that offer digital health services (e.g., with the help of financial data bases, such as PitchBook). Each team will then present and discuss the findings of the assessment with their fellow students. Additional coaching sessions and keynotes from the healthcare industry are offered to support the teams with the preparation of their presentations.

Course literature

1. Cohen, A. B., Dorsey, E. R., Mathews, S. C., Bates, D. W., & Safavi, K. (2020). A digital health industry cohort across the health continuum. *Nature Digital Medicine*, 3(68). [10.1038/s41746-020-0276-9](https://doi.org/10.1038/s41746-020-0276-9)
2. Essén, A., Stern, A. D., Haase, C. B., Car, J., Greaves, F., Papparova, D., Vandeput, S., Wehrens, R., & Bates, D. W. (2022). Health app policy: international comparison of nine countries' approaches. *npj Digital Medicine*, 5(1), 31. [10.1038/s41746-022-00573-1](https://doi.org/10.1038/s41746-022-00573-1)
3. Gassmann, O., Frankenberger, K., & Choudury, M. (2020). *The Business Model Navigator*. Pearson Education, Limited.
4. Grichnik, D., Hess, M., Probst, D., Antretter, T., & Pukall, B. (2020). *Startup navigator : guiding your entrepreneurial journey*. Red Globe Press.
5. Jacobson, N., Kowatsch, T., & Marsch, L. (2023). *Digital Therapeutics for Mental Health and Addiction: The State of the Science and Vision for the Future*. Elsevier, Academic Press. [10.1016/C2020-0-02801-X](https://doi.org/10.1016/C2020-0-02801-X)
6. 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](https://doi.org/10.1007/978-3-030-76897-3_4)
7. Mantovani, A., Leopaldi, C., Nighswander, C. M., & Di Bidino, R. (2023). Access and reimbursement pathways for digital health solutions and in vitro diagnostic devices: Current scenario and challenges. *Front Med Technol*, 5, 1101476. [10.3389/fmedt.2023.1101476](https://doi.org/10.3389/fmedt.2023.1101476)
8. Mathews, S. C., McShea, M. J., Hanley, C. L., Ravitz, A., Labrique, A. B., & Cohen, A. B. (2019). Digital health: a path to validation. *npj Digital Medicine*, 2(1), 38. [10.1038/s41746-019-0111-3](https://doi.org/10.1038/s41746-019-0111-3)
9. Safavi, K., Mathews, S. C., Bates, D. W., Dorsey, E. R., & Cohen, A. B. (2019). Top-Funded Digital Health Companies And Their Impact On High-Burden, High-Cost Conditions. *Health Affairs*, 38(1), 115-123. [10.1038/s41746-020-0276-9](https://doi.org/10.1038/s41746-020-0276-9)
10. Venkatesh, K. P., Raza, M. M., Diao, J. A., & Kvedar, J. C. (2022). Leveraging reimbursement strategies to guide value-based adoption and utilization of medical AI. *npj Digital Medicine*, 5(1), 112. [10.1038/s41746-022-00662-1](https://doi.org/10.1038/s41746-022-00662-1)
11. 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](https://doi.org/10.1038/s41746-023-00777-z)

Additional course information

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Examination information



Examination sub part/s

1. Examination sub part (1/3)

Examination modalities

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

Examination languages

Question language: English

Answer language: English

Remark

Group presentation document

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	Digital written examination
Responsible for organisation	decentral
Examination form	Written exam
Examination mode	Digital
Time of examination	Term time
Examination execution	Asynchronous
Examination location	Off Campus
Grading type	Individual work individual grade
Weighting	15%
Duration	90 mins.

Examination languages

Question language: English

Answer language: English

Remark



Online exercises, e.g. 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

1. Introduction to business models in digital health
2. Specifics of business models in digital health
3. Identification of top-funded digital health companies
4. Systematic assessment of the business models of digital health companies

Examination relevant literature

Mandatory Material



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

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 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, 25 January 2024);
- Examination information (supplementary aids, examination contents, examination literature) for decentralised examinations: in CW 12 (Monday, 18 March 2024);
- Examination information (supplementary aids, examination contents, examination literature) for centrally organised mid-term examinations: in CW 13 (Monday, 25 March 2024);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised examinations: Starting with de-registration period in CW 15 (Monday, 08 April 2024).