Hochschule
Flensburg
University of
Applied Sciences

Module directory
eHealth (M.A.)

Flensburg University of Applied Sciences ● School of Business

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Contents

Explanations

Kinds of modules

The structure of this module directory follows the kinds of modules that exist at FUAS:

- **Basic modules (BM)**: In these modules students acquire the basic knowledge and skills of their chosen degree programme; they do not specialise further. All basic modules are compulsory modules.
- **Major modules (MM):** Major modules offer students the chance to specialise in certain topics from their degree programme such as professional fields or industries. All major modules are binding elective modules.
- **Modules to be completed at the end of the studies (ESM):** These modules form the end of the studies.

This module directory uses the terms and terminology used and defined in the Principles of Assessment [Prüfungsverfahrensordnung] (PVO) of Flensburg University of Applied Sciences.

Type of module

Defines the character of a module. The different types of modules are:

- **Compulsory modules (CM)**: These modules have to be completed by all students enrolled in a degree programme.
- **Binding electives (BEM):** Students can choose a number of related modules from a number of module catalogues offered (here: major modules, supplementary modules).
- **Non-binding electives (NEM):** Students can choose any given number of modules from a number of module catalogues offered. Non-binding electives do not affect the final grade.

Type of assessment

Defines the type of assessment required to successfully complete a module. The different types of modules are:

- **Coursework (CW):** If graded “fail”, this type of assessment can be re-taken for an unlimited number of times; coursework can be assessed with a grade or a certificate of attendance. Grades awarded for coursework do not affect the final grade.
- **Examination (Ex):** If graded “fail”, this type of assessment can only be re-taken for a limited number of times; examinations are assessed with a grade. Grades awarded for examinations affect the final grade according to their weight in the curriculum.
- **Component of an examination (CEx):** In terms of how it is graded and how often it can be re-taken the same rules apply as for Ex. This examination is made up of several components. In accordance with art. 14 para. 2 of the Principles of Assessment [Prüfungsverfahrensordnung, PVO] if an assessment is made up of more than one part, each part has to be graded with “ausreichend” [sufficient] at least. Unless specified otherwise, the final grade for a subject is derived from the arithmetic average of the individual parts of that assessment.
- **Assessment pre-requisite to an exam (APE):** Assessment whose successful completion is pre-requisite for the admission to a (subordinate) examination. If an APE is graded “fail”, it may be re-taken for an unlimited number of times.

Form of assessment

Defines the form assessments can take. The different types of modules are:

- **Written exam (WE) in accordance with art. 11 of the PVO:** Written test usually to be completed at the end of a semester (at the end of a series of classes forming a module). The time a written exam is to be completed in is to be defined in minutes, e.g. WE 90.
- **Oral exam (OE) in accordance with art. 12 of the PVO:** Oral exam usually to be completed at the end of a semester (at the end of a series of classes forming a module). An oral exam usually takes 30 minutes per candidate. In group examinations each candidate shall be examined for 15 minutes.
- **Other form of assessment (OA) in accordance with art. 13 of the PVO:** Other forms of assessment can include term papers, presentations in class, practical exercises, case studies, projects, designs, computer programmes or a combination of these. For compulsory modules up to three possible forms have to be defined in the degree programme's Study and Examination Regulations in accordance with art. 3 para. 2. In the case of electives, the examiner in charge announces the specific form of assessment to be completed to the students and the Examinations Office at the beginning of the lecture period.
  A combination of different forms of assessment is permitted. This module directory uses "&" to mark a logical conjunction and "|" to mark a logical disjunction. For example: (Presentation in class | term paper) & oral exam, means the assessment is made up of a presentation in class or a term paper in addition to an oral exam. Presentation in class | (term paper & oral exam), however, means the assessment is made up of either a presentation in class or a term paper and an oral exam.

Type of class

Describes the manner in which the contents of a module are taught. The following types of class exist in accordance with art. 3 para. 5 of FUAS' Principles of Assessment [Prüfungsverfahrensordnung, PVO]:

- **Lecture (L):** Coherent presentation of the teaching content
- **Tutorial accompanying a lecture (T):** Applying and further understanding the teaching content in small groups
- **Seminar (SE):** Studying specific subject areas with the help of presentations independently created by the participants and/or in discussions in small groups
- **Laboratory (Lab):** Acquiring and further understanding of knowledge by solving hands-on experimental tasks in small groups
- **Project (P):** Working in teams to design and realise solutions for real-world problems
- **Workshop (W):** Moderated dialogue in a small group in which tasks are discussed and approaches for solutions are found
- **Long-distance (LDC) and virtual classes (VC):** Classes 1. - 6. above, held via digital communication between teaching staff and students
- **Field trip (FT):** Field trip led by a member of teaching staff
- **Others classes (SV):** Classes of another kind than those described under numbers 1. to 8.

Language of instruction and examination language

The following languages are mentioned in the module directory:

- German (GER)
- English (EN)

This module directory uses the following conventions to clarify which language is used:

GER **&** EN	The module is offered in both German and English, i.e. it is made up of German and English language parts.
GER **|** EN:	The module is taught either entirely in German or entirely in English. Which of the languages is used will be determined at the beginning of the lecture period.

Course plan

1. semester of the programme			
Module	*Type of assessment*	*HPW*	*CP*
Health Economics	BM	4	5
Applications in Health Management	BM	3	4
Medical Documentation	BM	4	5
Business Administration in Health Care	BM	3	4
Information Management	BM	4	5
IT Basics for Health Care	BM	4	5
Project Management	BM	4	5
All modules of the 1st semester of the programme		**26**	**33**

2nd semester of the programme			
Module	*Type of assessment*	*HPW*	*CP*
Health Care Systems	BM	4	5
Business Analytics	BM	4	5
Communication Technology (Mobile Communication)	BM	4	5
Applications for Patients	BM	3	4
Quality Management	BM	3	4
Health Care Management or eHealth Applications	MM	4	4
All modules of the 2nd semester of the programme		**22**	**27**

3rd semester of the programme	
Module	*CP*
eHealth Project (Internship)	30
All modules of the 3rd semester of the programme	**30**

4th semester		
Module	*Type of assessment*	*CP*
Master's thesis	Thesis and colloquium	30
All modules of the 4th semester of the programme		**30**

All semesters (1 to 4)	**HPW**	**CP**
	48	**120**

Basic modules (BM)

Basic modules are designed to allow students to acquire the basic knowledge and skills of their chosen degree programme. They do not specialise further. Basic module are always compulsory modules.

If a degree programme accepts new students in every semester, basic modules are offered in every semester. If a degree programme only accepts new students once per year, basic modules are offered in that semester. (cf. “offered in”)

Health Economics

Module information

Semester of the programme	Duration (semesters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Workload (h)	Credit Points (CP)	Language of instruction	Module area
1st	1st	summer ☐ winter ☒	4/60	90	150	5	GER	BM

Intended learning outcomes

- Schulenburg describes Health Economics as the analysis of the economic aspect of health and medical care by applying theoretical concepts from economics. Based on this, the participants of this module understand how the German health care system works and they critically reflect the economic framework conditions putting a focus on modern networking structures.
- The students analyse and interpret control mechanisms, investments and employment in the health sector.
- They critically debate changes in current health politics.
- They are able to identify changing conditions in the health sector as a market and evaluate the success factors (opportunities and threats) that apply.
- They critically reflect on health-economic contents, assess the efficiency of measures and the financial systems in health and medical care.

Contents

1. The health sector
2. The health sector as an economic factor
3. Coordinated systems (integrated care, disease management, health centres etc.)
4. Suppliers and demanders/financing/sub-markets
5. Distribution
6. Evaluating the efficiency and effectivity of measures
7. Cost objects
8. Current health politics
9. Supply of pharmaceutical products
10. International projects

Teaching method

Seminar incl. external talks

Mode and type of assessment

Type of module	Type of assessment	Mode of assessment	Examination language
CM	Ex	OA: Presentation	GER | EN

Admission requirements

None

Reusability

None

Recommended reading

- Oberender, Zerth, Engelmann: Wachstumsmarkt Gesundheit; 4th ed., Konstanz 2016
- Schöffski, Schulenburg: Gesundheitsökonomische Evaluationen, Heidelberg 2012
- Grönemeyer: Med. in Deutschland. Standort mit Zukunft; Berlin 2013
- Hajen, Schumacher, Paetow: Gesundheitsökonomie: Strukturen - Methoden – Praxisbeispiele; 8th ed., Stuttgart 2017
- Breyer, Zweifel, Kifmann: Gesundheitsökonomie; 6th ed., Berlin Heidelberg 2013
- Amelung, Eble, Hildebrandt: Innovatives Versorgungsmanagement: Neue Versorgungsformen auf dem Prüfstand; Berlin 2011
- Granig, Nefiodow: Gesundheitswirtschaft: Wachstumsmotor im 21. Jahrhundert, Munich 2011
- Lüngen, Büscher: Gesundheitsökonomie; Stuttgart 2015
- Thielscher: Medizinökonomie 2: Unternehmerische Praxis und Methodik; 2nd ed., Wiesbaden 2017

- A list of recommended reading will be provided at the beginning of the semester.

Applications in Health Management

Module information

Semester of the programme	Duration (semesters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Workload (h)	Credit Points (CP)	Language of instruction	Module area
1st	1st	summer ☐ winter ☒	3 / 45	75	120	4	GER | EN	BM

Intended learning outcomes

- The students analyse and discuss the requirements different organisations have for information systems.
- They use examples from practice to discuss the importance of a given information system.
- They use hospital information systems, the ERP functions in particular.
- They analyse syntax problems of communication in health and medical care and they apply relevant standards top solve them.
- They deduct case studies from files from networks or institutions.
- They apply academic methods to design application scenarios for information systems in health care.
- They deduct architectures from requirements defined for information systems.

Contents

1. The relevance of ICT for health and medical care (focus: institutions/networks)
2. Web platforms using the “Gesundheitsportal Flensburg” as an example
3. Overview: Hospital information systems, esp. ERP, systems for departments or residential doctors
4. Syntactical interoperability (interfaces in particular)
5. Standards, e.g. xDT
6. Electronic patient and case files
7. System architectures

Teaching method

Seminar incl. external experts and field trips

Mode and type of assessment

Type of module	Type of assessment	Mode of assessment	Examination language
CM	Ex	OA: Oral exam & written exam	GER | EN

Admission requirements

None

Reusability

None

Recommended reading

- Andelfinger V, Hänisch T (2016) eHealth. Wie Smartphones, Apps und Wearables die Gesundheitsversorgung… . Springer, Wiesbaden. http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=4441829
- Coiera E (2015) Guide to health informatics. Taylor & Francis, Boca Raton (Glossar: online https://coiera.com/textbook-resources/glossary/) http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=11166982
- Dickhaus H et al. (Hrsg) (2015) Biomedizinische Technik - Medizinische Informatik. de Gruyter, Berlin http://www.degruyter.com/view/product/128868
- Einbinder L (2010) Transforming health care through information. Case studies. Springer, New York.
- Gärtner A (ed., 2011): Medizintechnik und Informationstechnologie. TÜV
- Gartee R (2011) Health information technology and management. Pearson, Upper Saddle River.
- Glaser J, Salzberg C (2011) The Strategic Application of Information Technology in Health Care Organizations. Jossey-Bass. http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=661526
- Greenes RA (2014) Clinical decision support. Academic Pr., Amsterdam http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=10853833
- Gocke P, Debatin JF (2011) IT im Krankenhaus. MWV, Berlin http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=11024686
- Jehle R et al. (ed, 2015) Medizinische Informatik kompakt. de Gruyter, Berlin. http://www.degruyter.com/view-booktoc/product/212950
- Johner C, Haas P (ed) (2009) Praxishandbuch: IT im Gesundheitswesen. Hanser, Munich
- Johner C et al. (2015) Basiswissen Medizinische Software. dpunkt, Heidelberg. http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=2082121
- Laudon K et al. (2010) Wirtschaftsinformatik. Pearson, Munich
- Laudon K et al. (2016) Wirtschaftsinformatik. Pearson, Hallbergmoos https://www.pearson-studium.de/drm/reader/nu/code/zhbfwinf
- Pianykh O (2012) Standards and System Integration in Digital Medicine. In: Pianykh OS (Hrsg.) Digital imaging and communications in medicine (DICOM). Springer, Berlin:319–329
- Pramann O, Albrecht U-V (2014) Smartphones, Tablet-PC und Apps in Krankenhaus und Arztpraxis. DKV-G., Düsseldorf
- Sarnikar S et al. (2013) Cases on healthcare information technology for patient care management. IGI, Hershey.
- Shortliffe E, Cimino J (ed) (2014) Biomedical informatics. Computer applications in health care and biomedicine. Springer, London (selected chapters) http://link.springer.com/book/10.1007%2F0-387-36278-9
- Trill R (Hrsg.) (2018) Praxisbuch eHealth. Kohlhammer, Stuttgart
- Wager K et al. (2013) Health care information systems. Jossey-Bass, San Francisco http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=433717
- Winter A et al. (2011) Health Information Systems. Springer, London

- An extended or updated list of recommended reading will be provided at the beginning of the semester.

Medical Documentation

Module information

Semester of the programme	Duration (semesters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Workload (h)	Credit Points (CP)	Language of instruction	Module area
1st	1st	summer ☐ winter ☒	4/60	90	150	5	GER | EN	BM

Intended learning outcomes

- Students are introduced to medical terminology.
- They analyse specific symptoms on the basis of basic medical knowledge (anatomy, physiology).
- In particular, they are able to correctly understand diagnoses (ICD-10) and procedures (OPS).
- They analyse and assess documentation processes up until billing: Starting from ICDs/OPS to DRG and e-prescriptions.
- They connect medical treatment paths to electronic and non-electronic documentation bases.
- They critically reflect the legal certainty of e-documentation.
- They apply documentation to exemplary patient histories.
- They discuss the basics of medical documentation and apply academic methods to describe correlations in writing. They cooperate with partners working as a team.

Contents

1. Medical terminology
2. Medical basics
3. Diagnoses (encoding) and procedures (encoding)
4. DRG codes
5. Basics of documentation
6. IT-based documentation processes
7. Digital patient file and digital signature
8. Case Management

Teaching method

Seminar; the students are given a detailed insight to medical basics and types of documentation.

Mode and type of assessment

Type of module	Type of assessment	Mode of assessment	Examination language
CM	Ex	WE 90	GER | EN

Admission requirements

None

Reusability

None

Recommended reading

- Sunyaev, Ali: Health-Care Telematics in Germany: Design and Application of a Security Analysis Method; Wiesbaden 2011
- Leiner, Gaus, Haux, Knaup-Gregori, Pfeiffer: Medizinische Dokumentation: Lehrbuch und Leitfaden; 6th ed., Stuttgart 2011
- Schlottmann, Kaczmarek: Kommentierung Deutsche Kodierrichtlinien Version 2018; Deutsche Krankenhaus V.-G., 2018
- Münch, Amelung, Chase, Urbanski, Bertram, Binder: Die elektronische Patientenakte; Heidelberg 2016
- Browser für Operationen- und Prozedurenschlüssel: https://www.dimdi.de/static/de/klassi/ops/kodesuche/onlinefassungen/opshtml2018/index.htm
- Huch, Jürgens: Mensch, Körper, Krankheit: Anatomie, Physiologie, Krankheitsbilder; 7th ed., Munich 2015
- Jehle, Czeschik, Freund, Wellnhofer: Medizinische Informatik kompakt; Berlin 2015
- Krankenhausentgeltgesetz (German hospital law) (in its current form)
- Webgrouper, Browser für Diagnosen und Prozeduren: http://drg.uni-muenster.de
- Huch, Jürgens: Mensch, Körper, Krankheit: Anatomie, Physiologie, Krankheitsbilder; 7th ed., Munich 2015
- Jehle, Czeschik Medizinische Informatik kompakt; Berlin 2015

Business Administration in Health Care

Module information

Semester of the programme	Duration (semesters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Workload (h)	Credit Points (CP)	Language of instruction	Module area
1st	1st	summer ☐ winter ☒	3 / 45	75	120	4	GER | EN	BM

Intended learning outcomes

- Students understand how individual factors in a business context interact in health-related businesses.
- They apply business administrative functions to calculate their cost-benefit-relation and thus make it transparent.
- They are familiar with the correlations in financing in the health sector (e.g. DRG system) and the impact they have on businesses in that sector.
- They analyse marketing measures in the health sector and appreciate them.
- They develop and present their own business cases.
- They reflect on given contents and are able to transfer contents from a general business administrative context to the specifics of the eHealth market.
- They review application aspects critically.

Contents

1. Business administrative framework conditions for health service providers
2. Basic terms of Business Administration
3. Correlations in financing in the health sector (e.g. DRG system) and their impacts on businesses
4. Marketing (the Internet and online applications in the context of communication policies)
5. Development of business cases/business models
6. Management control/IT control

Topics from health and medical care from a business administrative and eHealth perspective
Example for a semester project: Development of a business model for an eHealth application

Teaching method

Seminar incl. internal and external talks

Mode and type of assessment

Type of module	Type of assessment	Mode of assessment	Examination language
CM	Ex	OA: Written test (120 minutes) | presentation & semester project	GER | EN

Admission requirements

None

Reusability

None

Recommended reading

- Busse, Schreyögg, Stargardt: Management im Gesundheitswesen; 3rd ed., Berlin Heidelberg 2013
- Zapp, Oswald, Neumann, Wacker, Kurscheid: Controlling und Reporting im Krankenhaus; Stuttgart 2015
- Johner, Haas: Praxisbuch: IT im Gesundheitswesen; Munich 2009
- Debatin, Ekkernkamp, Schulte: Krankenhausmanagement; 2nd ed., Berlin 2016
- Sisignano: Management und Kommunikation: Erfolgsstrategien für die Klinik der Zukunft; Cologne 2008
- Wünsche: BWL für IT-Berufe; 2nd ed., Wiesbaden 2010
- Kreuzer: BWL kompakt; 4th ed., Vienna 2013
- Ehrmann: Kompakt-Training Balanced Scorecard; 4th ed., Ludwigshafen 2001
- Jäckel: Telemedizinführer (several volumes)
- a list of recommended reading will be provided at the beginning of the semester.

Information Management

Module information

Semester of the programme	Duration (semesters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Workload (h)	Credit Points (CP)	Language of instruction	Module area
1st	1st	summer ☐ winter ☒	4/60	90	150	5	GER | EN	BM

Intended learning outcomes

- The students analyse how individual factors in a business context interact in regard to domain-specific IT systems and draw conclusions for measures health-related businesses should take.
- They select appropriate data protection tools for given institutions in the health sector.
- They develop IT and business strategies.
- Students use innovation management methods and discuss and create their own business models for the health sector, also working in teams.
- They analyse semantic problems of communication in health and medical care and they apply relevant terminology standards to solve them.
- They model domain-specific processes, visualise them using software and chose the appropriate tools and notations to do so.
- They use specific parameters to control information processing for the health sector.
- They practice academic research methods and tools.

Contents

1. Information as a crucial factor
2. Domain-specific data protection requirements
3. Business and IT strategies
4. Strategic eHealth applications (overview, incl. HIS, telemedicine, electronic files)
5. Innovations & business modelling; service engineering
6. Semantic interoperability, e.g. subject-specific terminology
7. Modelling (e.g. UML, BPMN) & process management
8. IT control
9. Academic research techniques & clinical studies

Teaching method

Seminar incl. external talks and web-based elements (IT strategies)

Mode and type of assessment

Type of module	Type of assessment	Mode of assessment	Examination language
CM	Ex	WE 60	GER | EN

Admission requirements

None

Reusability

None

Recommended reading

- Coiera E (2015) Guide to health informatics. Taylor & Francis, Boca Raton. http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=11166982
- Dickhaus H et al. (ed) (2015) Biomedizinische Technik - Medizinische Informatik. de Gruyter, Berlin http://www.degruyter.com/view/product/128868
- Gadatsch A, Meyer E (2014) Masterkurs IT-Controlling. Springer, Wiesbaden
- Gartee R (2011) Health information technology and management. Pearson, Upper Saddle River.
- Gärtner A (ed., 2015): Medizintechnik und Informationstechnologie, vols 1-3. TÜV Media, Cologne
- Glaser J, Salzberg C (2011) The Strategic Application of Information Technology in Health Care Organizations. Jossey-Bass, San Francisco
- Grando M et al. (2015) I.T. for patient empowerment in healthcare. de Gruyter, Boston http://www.degruyter.com/view/product/211055
- Gocke P, Debatin J (2011) IT im Krankenhaus. MWV, Berlin http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=11024686
- Hofmann J, Schmidt W (2010) Masterkurs IT-Management. Vieweg, Wiesbaden
- Hübner U et al. (2005-) IT-Report Gesundheitswesen. Nieders. Ministerium f. Wirtschaft https://www.ehealth-niedersachsen.de/it-report-gesundheitswesen.html
- Jehle R et al. (ed, 2015) Medizinische Informatik kompakt. de Gruyter, Berlin. http://www.degruyter.com/view-booktoc/product/212950
- Johner C, Haas P (ed) (2009) Praxishandbuch: IT im Gesundheitswesen. Hanser, M
- Johner C et al. (2015) Basiswissen Medizinische Software. dpunkt, Heidelberg
- Laudon K et al. (2016) Wirtschaftsinformatik. Pearson, Hallbergmoos [chapter 13 esp.]
- McLoughlin I et al. (2017) Digitalization of health care. Oxford Univ. Press. http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=1506335&lang=de&site=ehost-live
- Pramann O, Albrecht U-V (2014) Smartphones, Tablet-PC und Apps in Krankenhaus und Arztpraxis. DKV-G., Düsseldorf Schlegel H (ed) (2010) Steuerung der IT im Klinikmanagement. Vieweg, Wiesbaden
- Shortliffe E, Cimino J (ed) (2014) Biomedical informatics. Computer applications in health care and biomedicine. Springer, London (selected chapters) http://link.springer.com/book/10.1007%2F0-387-36278-9
- Trill R (Hrsg.) (2018) Praxisbuch eHealth. Kohlhammer, Stuttgart
- Wager K et al. (2017) Health care information systems. Jossey-Bass, , San Francisco
- Winter A et al. (2011) Health Information Systems. Springer, London
- Krankenhaus Umschau, führen und wirtschaften im Krankenhaus, das Krankenhaus, IT-Journal, G+G (Gesundheit und Gesellschaft), E-HEALTH-COM, subscription available.
- An extended or updated list of recommended reading will be provided at the beginning of the semester.

IT Basics in Health Care

Module information

Semester of the programme	Duration (semesters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Workload (h)	Credit Points (CP)	Language of instruction	Module area
1st	1st	SUMMER ☐ WINTER ☒	4/60	90	150	5	GER | EN	BM

Intended learning outcomes

- The students know the technological basics and are able to apply them.
- They analyse data protection and security requirements with a view to health data and develop appropriate concepts based on this.
- They develop decision-making criteria for the domain-specific selection of technological components.
- They reflect given contents, prepare them for application and test suitable academic research and writing techniques.

Contents

1. Technological basics (hardware, software)
2. Networks
3. Interface communication (HL 7, DICOM, XML etc.)
4. Cloud computing
5. Data bases
6. Data protection and security
7. Application in health care, e.g. KV-SafeNet, -FlexNet, KV-Connect or TI/ eGK
8. Exercises

Teaching method

Seminar

Mode and type of assessment

Type of module	Type of assessment	Mode of assessment	Examination language
CM	Ex	OA: Presentation & exercise at the computer	GER | EN

Admission requirements

None

Reusability

None

Recommended reading

- Tanenbaum A, Wetherall D (2014) Computernetzwerke. Pearson, Munich
- Kurose J, Ross K (2014) Computernetzwerke. Der Top-Down-Ansatz. Pearson, Hallbergmoos
- Coiera E (2015) Guide to health informatics. Taylor & Francis, Boca Raton. Link for FUAS net http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=11166982 [esp. chapter 20]
- Gärtner A (ed., 2015): Medizintechnik und Informationstechnologie, Band 1 – Grundlagen und Anwendungen. TÜV Media, Cologne [esp. chapters 1.3f.]
- Gärtner A (ed., 2015): Medizintechnik und Informationstechnologie, Band 3 – Telemedizin und computergestützte Medizin. TÜV Media, Cologne [esp. chapters 5.2f., chapter 6]
- Glaser J, Salzberg C (2011) The Strategic Application of Information Technology in Health Care Organizations. Jossey-Bass, San Francisco [esp. chapters 9, 8]
- Jehle R et al. (ed. 2015) Medizinische Informatik kompakt. de Gruyter, Berlin. http://www.degruyter.com/view-booktoc/product/212950 [esp. chapters 10, 9]
- Winter A et al. (2011) Health Information Systems. Springer, London [esp. chapter 6]
- An extended or updated list of recommended reading will be provided at the beginning of the semester.

Project Management

Module information

Semester of the pro-gramme	Dura-tion (se-mes-ters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Work-load (h)	Credit Points (CP)	Language of instruc-tion	Module area
1st	1st	summer ☐ winter ☒	4/60	90	150	5	GER | EN	BM

Intended learning outcomes

- Students practice project management methods and tools.
- They apply group work, conflict and personnel management techniques.
- They develop project management tools, esp. from IT and systems development, such as product specifications.
- They develop their own project plans and visualise them using software.
- Students who complete this module successfully, are prepared for the eHealth project.
- They understand requirements and put them down in performance specifications using tools and methods from Requirements Engineering.

Contents

1. Introduction to, basics of and motivation for the topic
2. Success factors and software (incl. exercises at the computer)
3. Communication and conflict management in the (project) team and the overall environment
4. Project implementation (managing a project): planning, implementation and control
5. Specific conceptualisation (from product specifications to performance specifications)
6. Project management frameworks and processes, e.g. PMI, agile etc.
7. Software and requirements engineering
8. Change management
9. Management control und quality management in projects (risks and how to manage them)
10. Project-based organisation
11. Case studies

Teaching method

Seminar

Mode and type of assessment

Type of module	Type of assess-ment	Mode of assessment	Examination language
CM	CW	OA: Active attendance	GER | EN

Admission requirements

None

Reusability

None

Recommended reading

- Avison D, Torkzadeh G (2009) Information systems project management. Sage, Los Angeles
- Balzert H (2008) Softwaremanagement. Spektrum, Munich
- Bergmann R, Garrecht M (2008) Organisation und Projektmanagement. Physica, Heidelberg
- Dillerup R, Stoi R (2013) Unternehmensführung. Vahlen, Munich [chapter 5.3] http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=4693028
- Einbinder L (2010) Transforming health care through information. Case studies. Springer, New York.
- Houston S, Bove L (2007) Project Management for Healthcare Informatics. Springer, New York
- Johner C, Haas P (ed.) Praxishandbuch: IT im Gesundheitswesen. Hanser, Munich [chapters 1.1, 18, 23]
- Johner C et al. (2015) Basiswissen Medizinische Software. dpunkt, Heidelberg
- Laudon K et al. (2016) Wirtschaftsinformatik. Pearson, Hallbergmoos https://www.pearson-studium.de/drm/reader/nu/code/zhbfwinf
- Litke H (2004) Projektmanagement. Hanser, Munich
- Lorenzi N et al. (2005) Transforming Health Care Through Information. Springer, New York
- Marchewka J (2015) Information technology project management. Wiley, Hoboken
- Pressman RS (1997) Software Engineering. McGraw-Hill, New York; 7th edition latest used (2009)
- Schelle H (2007) Projekte zum Erfolg führen. dtv, Munich
- Zuser W et al. (2004) Software Engineering. Pearson, Munich

Health Care Systems

Module information

Semester of the pro-gramme	Dura-tion (se-mes-ters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Work-load (h)	Credit Points (CP)	Language of instruc-tion	Module area
2nd	1st	summer ☒ winter ☐	4/60	90	150	5	EN	BM

Intended learning outcomes

- The students understand and analyse the characteristic structures of international health systems and how they work.
- They develop criteria to assess them. They develop criteria to compare different health systems.
- They discuss how well prepared these systems are for the future and develop relevant influencing factors for the current status of eHealth.
- They develop indicators to assess health systems on their own and evaluate institution-specific aspects.
- They discuss the efforts being made to create international standards and reflect on how they can be developed further.

As the staff of this field are involved in several international projects, students can gain meaningful insights and may even become actively involved.

Contents

1. Health and medical care around the world
2. Criteria to compare health systems
3. IT tools used health and medical care around the world (research focus of the EU amongst others)
4. International efforts to create standards
5. International eHealth projects

The international aspect will be further promoted through cooperations with universities in Kaunas, Seinäjoki, Tromsoe, Aalborg and Talinn. Erasmus agreements have been signed.

Teaching method

Seminar with presentations held by the participants (in English)

Mode and type of assessment

Type of module	Type of assess-ment	Mode of assessment	Examination language
CM	Ex	OA: Presentation in English & semester project	EN

Admission requirements

None

Reusability

None

Recommended reading

- Schölkopf, Pressel: Das Gesundheitswesen im internationalen Vergleich: Gesundheitssystemvergleich und europäische Gesundheitspolitik (Health Care Management); 2nd ed., Berlin 2014
- Simon: Das Gesundheitssystem in Deutschland: Eine Einführung in Struktur und Funktionsweise; 6th ed., Bern 2017
- Busse, Zentner, Schlette: Health Policy Developments; Gütersloh 2006
- De Gooijer: Trends in EU Health Care Systems; Heidelberg 2010
- Busse, Blümel, Spranger: Das deutsche Gesundheitssystem: Akteure, Daten, Analysen; 2nd ed., Berlin 2017
- Various websites (e.g. WHO, OECD)
- A list of recommended reading will be provided at the beginning of the semester.

Business Analytics

Module information

Semester of the programme	Duration (semesters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Workload (h)	Credit Points (CP)	Language of instruction	Module area
2nd	1st	summer ☒ winter ☐	4/60	90	150	5	GER | EN	BM

Intended learning outcomes

- The students apply select tools to analyse data.
- They develop analysis processes and implement them.
- They process the results, visualise and interpret them.
- Students are familiar with the terminology of Artificial Intelligence and they are able to develop application scenarios.

Contents

1. Tools for data analysis
2. Descriptive statistics
3. Advanced analyses
4. Information visualisation
5. Conceptual basics of artificial intelligence

Teaching method

Lecture and project

Mode and type of assessment

Type of module	Type of assessment	Mode of assessment	Examination language
CM	Ex	OA: (Project report|presentation in class) & presentation	GER | EN

Admission requirements

None

Reusability

None

Recommended reading

A list of recommended reading will be provided at the beginning of the semester.

Communication Technology (Mobile Communication)

Module information

Semester of the programme	Duration (semesters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Workload (h)	Credit Points (CP)	Language of instruction	Module area
2nd	1st	summer ☒ winter ☐	4/60	90	150	5	GER | EN	BM

Intended learning outcomes

- Students are familiar with the architecture and services of current systems of mobile communication.
- They gain an understanding of the technological correlations of the (data) transfer aspects and the resulting mobile platforms and apps.
- They are able to assess how these technologies can be applied in the medical field.
- They can transfer these contents to medical applications.

Contents

Systems

- Mobile communication systems (development from GSM to LTE)
- Short-range systems (Bluetooth, Wi-Fi, DECT)
- Satellite communication systems (INMARSAT, GPS)

Application aspects

- Mobile platforms (Android, iOS, …)
- Mobile computing
- Mobile security
- Specifics of app development in the medical field

Others

- Interoperability aspect (short-range systems in particular)
- Radiation exposure and health risks

Teaching method

Seminar

Mode and type of assessment

Type of module	Type of assessment	Mode of assessment	Examination language
CM	Ex	OA: Presentation & term paper	GER | EN

Admission requirements

None

Reusability

None

Recommended reading

- Sauter: Grundkurs Mobile Kommunikationssysteme, 6th ed., Wiesbaden 2015.
- Lecture notes
- Knoll, M.; Meinhardt, S.: Mobile Computing: Grundlagen – Prozesse und Plattformen – Branchen und Anwendungsszenarien, Springer Verlag 2016.
- Leute, U.: Wie gefährlich ist Mobilfunk? Weil der Stadt 2002.
- Trill, R. (ed.): Praxisbuch eHealth. 1st ed.. Stuttgart 2009.

Applications for Patients

Module information

Semester of the programme	Duration (semesters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Workload (h)	Credit Points (CP)	Language of instruction	Module area
2nd	1st	summer ☒ winter ☐	3 / 45	75	120	4	GER | EN	BM

Intended learning outcomes

- The students analyse and discuss the requirements for information systems, which are not particular for different institutions and the potential of cloud computing for example.
- They use patients as examples to discuss the importance of a given information system.
- They develop case studies from files, which are not particular for different institutions.
- They use applications, especially in regards to their health file functionality.
- They apply academic methods to develop application scenarios for information systems in health care, which are not particular for different institutions.
- They work in teams to design applications focussing on the requirements non-professional users have.
- They analyse existing telematic fundamentals and telemedicine projects and identify potential for improvement.

Contents

1. ICT in health and medical care independent of specific institutions
2. Patient empowerment
3. Health platforms
4. Domain-specific CRM solutions
5. Software-as-a-service models in health care
6. Patients in control of electronic health files (EGA/PHR, PEPA)
7. Telemedicine
8. Telematics, esp.: TI: eGK & HBA

Teaching method

Seminar

Mode and type of assessment

Type of module	Type of assessment	Mode of assessment	Examination language
CM	Ex	OA: Term paper & OE	GER | EN

Admission requirements

None

Reusability

None

Recommended reading

- Andelfinger V, Hänisch T (2016) eHealth. Wie Smartphones, Apps und Wearables die Gesundheitsversorgung… . Springer, Wiesbaden. http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=4441829
- Coiera E (2015) Guide to health informatics. Taylor & Francis, Boca Raton (Glossar: online https://coiera.com/textbook-resources/glossary/) http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=11166982
- Dickhaus H et al. (ed) (2015) Biomedizinische Technik - Medizinische Informatik. de Gruyter, Berlin http://www.degruyter.com/view/product/128868
- Einbinder L (2010) Transforming health care through information. Case studies. Springer, New York.
- Gärtner A (ed., 2011): Medizintechnik und Informationstechnologie. TÜV
- Gartee R (2011) Health information technology and management. Pearson, Upper Saddle River.
- Glaser J, Salzberg C (2011) The Strategic Application of Information Technology in Health Care Organizations. Jossey-Bass. http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=661526
- Greenes RA (2014) Clinical decision support. Academic Pr., Amsterdam http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=10853833
- Gocke P, Debatin JF (2011) IT im Krankenhaus. MWV, Berlin http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=11024686
- Jehle R et al. (ed, 2015) Medizinische Informatik kompakt. de Gruyter, Berlin. http://www.degruyter.com/viewbooktoc/product/212950
- Johner C, Haas P (ed) (2009) Praxishandbuch: IT im Gesundheitswesen. Hanser, Munich
- Johner C et al. (2015) Basiswissen Medizinische Software. dpunkt, Heidelberg. http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=2082121
- Laudon K et al. (2010) Wirtschaftsinformatik. Pearson, Munich
- Laudon K et al. (2016) Wirtschaftsinformatik. Pearson, Hallbergmoos https://www.pearson-studium.de/drm/reader/nu/code/zhbfwinf
- Pramann O, Albrecht U-V (2014) Smartphones, Tablet-PC und Apps in Krankenhaus und Arztpraxis. DKV-G., Düsseldorf
- Sarnikar S et al. (2013) Cases on healthcare information technology for patient care management. IGI, Hershey.
- Shortliffe E, Cimino J (ed) (2014) Biomedical informatics. Computer applications in health care and biomedicine. Springer, London (selected chapters) http://link.springer.com/book/10.1007%2F0-387-36278-9
- Trill R (Hrsg.) (2018) Praxisbuch eHealth. Kohlhammer, Stuttgart
- Wager K et al. (2013) Health care information systems. Jossey-Bass, San Francisco http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=433717
- Winter A et al. (2011) Health Information Systems. Springer, London

- An extended or updated list of recommended reading will be provided at the beginning of the semester.

Quality Management

Module information

Semester of the programme	Duration (semesters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Workload (h)	Credit Points (CP)	Language of instruction	Module area
2nd	1st	summer ☒ winter ☐	3 / 45	75	120	4	GER | EN	BM

Intended learning outcomes

- Students examine quality standards in the German health system.
- They analyse how applicable processes are.
- They develop assessment criteria for the quality of processes, structures and results.
- They analyse the certificates currently in use in the German health system.
- Students critically examine guidelines used in the health system.
- They apply workflow management systems and assess clinical processes using quantitative methods.
- They apply group work techniques in an adequate manner.

Contents

1. Introduction to quality management
2. Customer and process orientation
3. Certificates in the health system (DIN ISO EN; EFQM; KTQ)
4. Internal process orientation
5. Guidelines
6. Workflow management systems
7. Application of quantitative methods

Teaching method

Seminar/project

Mode and type of assessment

Type of module	Type of assessment	Mode of assessment	Examination language
CM	Ex	OA: Term paper & OE	GER | EN

Admission requirements

None; recommended: completion of Health Economics

Reusability

None

Recommended reading

- Paschen: Qualitätsmanagement in der Gesundheitsversorgung nach DIN EN SO 9001 und DIN EN 15224, Berlin 2016
- Hensen, Peter: Qualität im Gesundheitswesen, Wiesbaden 2016
- Rath/Strong: Six Sigma Pocket Guide: Werkzeuge zur Prozessverbesserung, Cologne 2008
- Magnusson/Kroslid/Bergmann: Six Sigma umsetzten: die neue Qualitätsstrategie für Unternehmen; mit neuen Unternehmensbeispielen, Munich 2004
- Lauterbach/Schrappe: Gesundheitsökonomie, Management und Evidence-based Medicine, Stuttgart 2010
- Haeske-Seeberg, Heidemarie: Handbuch Qualitätsmanagement im Krankenhaus, 2nd edited ed., Stuttgart 2008
- Kahla-Witzsch: Praxiswissen Qualitätsmanagement im Krankenhaus, 2nd edited ed., Stuttgart 2009
- Krankenhaus-Umschau: KU Fachmagazin für Führungskräfte der Gesundheitswirtschaft, Kulmbach 2008
- Wagner, Karin (Hrsg.): Qualitätsmanagement im Gesundheitswesen und präventive Vorsorge in Unternehmen, Munich 2009
- Hummel, Thomas/Malorny, Christian: Total Quality Management, 4th ed., Munich 2011 (electronic resource)
- Ertl-Wagner/Steinbrucker/Wagner: Qualitätsmanagement und Zertifizierung, 2nd ed., Heidelberg 2013
- Klauber/Robra/Schellschmidt: Krankenhaus-Report 2008/2009, 2009 Stuttgart
- A list of recommended reading will be provided at the beginning of the semester.

eHealth Project (Internship)

Module information

Semester of the pro-gramme	Dura-tion (se-mes-ters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Work-load (h)	Credit Points (CP)	Language of instruc-tion	Module area
3	1st	summer ☒ winter ☒			900	30	GER | EN	BM

Intended learning outcomes

- Students experience work situations in businesses in the field of eHealth.
- They solve personal, subject-specific and contextual conflicts.
- They understand how technologies and solutions are applied.

Contents

Students work on eHealth projects in companies and organisations in the field of health and medical care and write a final report.

Teaching method

Project; project supervision by a member of teaching staff of the degree programme (cf. internship guidelines)

Mode and type of assessment

Type of module	Type of assess-ment	Mode of assessment	Examination language
CM	APE	OA: Active attendance (certificate & project report)	GER | EN

Admission requirements

Successful completion of the Project Management module in the first semester

Reusability

None

Major modules (MM)

Major modules offer students the chance to specialise on certain topics from their degree programme such as professional fields or industries. They can choose modules from a pre-defined catalogue. All major modules are binding elective modules. The major modules are offered in the 2nd semester of the programme. Each major is made up of modules adding up to 4 hours per week or 4 Credit Points per semester.

Health Care Management

(made up of module parts 1 and 2)

Module information

Semester of the programme	Duration (semesters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Workload (h)	Credit Points (CP)	Language of instruction	Module area
2nd	1st	summer ☒ winter ☐	4/60	60	120	4	GER | EN	MM

Module part Health Care Management 1

Intended learning outcomes

- The students understand how the factors relevant to ensure a health care that meets the demands of the patients correlate.
- They analyse interface problems in health care management and use eHealth solutions to develop possible improvements.
- They are aware of epidemiological principles and discuss them.
- They understand the relevance of a health system for the health of the people of a country.
- They are familiar with the basic principles of planning, control, implementation and analysis of epidemiological studies and apply them.
- They include health prevention aspects in their work and assess eHealth solutions in this area.
- They reflect on their work considering ethical framework conditions and medical ethics in particular.

Contents

1. Public Health basics
2. Epidemiology: definition and terminology
3. Prevalence and incidence
4. Exemplary public health cases from the region and the world
5. Medical ethics

Recommended reading

- Egger, M., Razum, O. (eds.), (2012): Public Health Sozial- und Präventivmedizin kompakt, Berlin.
- Schwartz, F. W et. al.(2012): Public Health Gesundheit und Gesundheitswesen, 3rd ed., Urban &Fischer Verlag, Munich.
- Thielscher, C. (ed.) (2012): Medizinökonomie, vols 1 and 2, Springer Gabler Verlag, Wiesbaden.
- A list of recommended reading will be provided at the beginning of the semester.
- Module part Health Care Management 1

Module part Health Care Management 2

Intended learning outcomes

- Students assess the change digital transformation causes in the doctor-doctor and the doctor-patient relationship and evaluate corresponding measures from a management perspective.
- They are familiar with the basics of personnel management and apply them to structures in health and medical care.
- They know leadership theories and discuss their relevance for the health sector.
- They acquire leadership and management skills for their roles on that level in the health sector.
- They reflect how eHealth applications can be used to increase efficiency, improve quality and reduce costs.

Contents

1. Doctor-doctor and the doctor-patient relationship
2. Leadership and management in health care
3. Leadership and management roles in the health sector
4. HR-specific challenges in health care
5. Methods for managing and leading staff in the health sector
6. Using eHealth applications to increase efficiency

Recommended reading

A list of recommended reading will be provided at the beginning of the semester.

Teaching method

Seminar/project

Mode and type of assessment

Type of module	Type of assess-ment	Mode of assessment	Examination lan-guage
BEM	Ex	OA: Presentation & oral exam	GER | EN

Admission requirements

None

Reusability

None

eHealth Applications

(made up of module parts 1 and 2)

Module information

Semester of the programme	Duration (semesters)	Offered in	Time in class (hpw/h)	Revision (outside class) (h)	Workload (h)	Credit Points (CP)	Language of instruction	Module area
2nd	1st	summer ☐ winter ☒	4/60	60	120	4	GER | EN	MM

Module part eHealth Applications 1

Intended learning outcomes

- The students analyse and discuss the requirements service providers have for information systems and the potential of the app market for example.
- They analyse modern technologies to use data, in particular those for analysis and the support in decision-making and they develop case studies from the service providers' requirements.
- Based on academic methods, they work in teams to design applications focussing on the requirements professional users have.
- They develop scenarios for the application of robotic and cyber-.physical systems in health and medical care, in particular for staff in the health sector.
- They analyse existing projects of IT-based supply of health care and deduce potential for improvement, for the German health market in particular.

Contents

1. Service providers' perspective on and requirements for IT
2. From data collections to big data in the health sector
3. Support in decision-making, e.g. with the help of AI
4. Service robots & CPS (health/hospital 4.0)
5. Apps, in particular those for professional users
6. eHealth: Potentials and limits in an international comparison (sample projects)

Recommended reading

- Andelfinger V, Hänisch T (2016) eHealth. Wie Smartphones, Apps und Wearables die Gesundheitsversorgung… . Springer, Wiesbaden. http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=4441829
- Coiera E (2015) Guide to health informatics. Taylor & Francis, Boca Raton (Glossar: online https://coiera.com/textbook-resources/glossary/) http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=11166982
- Dickhaus H et al. (ed) (2015) Biomedizinische Technik - Medizinische Informatik. de Gruyter, Berlin http://www.degruyter.com/view/product/128868
- Einbinder L (2010) Transforming health care through information. Case studies. Springer, New York.
- Gärtner A (ed., 2011): Medizintechnik und Informationstechnologie. TÜV
- Gartee R (2011) Health information technology and management. Pearson, Upper Saddle River.
- Glaser J, Salzberg C (2011) The Strategic Application of Information Technology in Health Care Organizations. Jossey-Bass. http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=661526
- Greenes RA (2014) Clinical decision support. Academic Pr., Amsterdam http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=10853833
- Gocke P, Debatin JF (2011) IT im Krankenhaus. MWV, Berlin http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=11024686
- Jehle R et al. (ed, 2015) Medizinische Informatik kompakt. de Gruyter, Berlin. http://www.degruyter.com/viewbooktoc/product/212950
- Johner C, Haas P (ed) (2009) Praxishandbuch: IT im Gesundheitswesen. Hanser, Munich

- Johner C et al. (2015) Basiswissen Medizinische Software. dpunkt, Heidelberg. http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=2082121
- Laudon K et al. (2010) Wirtschaftsinformatik. Pearson, Munich
- Laudon K et al. (2016) Wirtschaftsinformatik. Pearson, Hallbergmoos https://www.pearson-studium.de/drm/reader/nu/code/zhbfwinf
- Pramann O, Albrecht U-V (2014) Smartphones, Tablet-PC und Apps in Krankenhaus und Arztpraxis. DKV-G., Düsseldorf
- Sarnikar S et al. (2013) Cases on healthcare information technology for patient care management. IGI, Hershey.
- Shortliffe E, Cimino J (ed) (2014) Biomedical informatics. Computer applications in health care and biomedicine. Springer, London (selected chapters) http://link.springer.com/book/10.1007%2F0-387-36278-9
- Trill R (Hrsg.) (2018) Praxisbuch eHealth. Kohlhammer, Stuttgart
- Wager K et al. (2013) Health care information systems. Jossey-Bass, San Francisco http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=433717
- Winter A et al. (2011) Health Information Systems. Springer, London
- An extended or updated list of recommended reading will be provided at the beginning of the semester.

Module part eHealth Applications 2

Intended learning outcomes

- The students analyse and discuss the requirements consumers have for information systems and the potential of the app market for example.
- They use examples such as fitness trackers to discuss the importance of a given information system and assess their value.
- Based on academic methods, they work in teams to design applications focussing on the requirements non-professional users have.
- They develop scenarios for the application of tele monitoring or AAL systems, in particular for patients or private individuals as users.
- They analyse market trends and deduce requirements, for the German health market in particular.

Contents

1. Perspective on and requirements for IT users have (esp. patients, health-aware users, friends and family)
2. Apps, in particular those for consumers
3. Fitness trackers/quantified self
4. Tele monitoring
5. AAL & home care
6. eHealth - trends and expectations for health and medical care

Recommended reading

- Andelfinger V, Hänisch T (2016) eHealth. Wie Smartphones, Apps und Wearables die Gesundheitsversorgung… . Springer, Wiesbaden. http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=4441829
- Coiera E (2015) Guide to health informatics. Taylor & Francis, Boca Raton (Glossar: online https://coiera.com/textbook-resources/glossary/) http://site.ebrary.com/lib/zhbflensburg/detail.action?docID=11166982
- Dickhaus H et al. (ed) (2015) Biomedizinische Technik - Medizinische Informatik. de Gruyter, Berlin http://www.degruyter.com/view/product/128868
- Einbinder L (2010) Transforming health care through information. Case studies. Springer, New York.
- Gärtner A (ed., 2011): Medizintechnik und Informationstechnologie. TÜV
- Gartee R (2011) Health information technology and management. Pearson, Upper Saddle River.
- Glaser J, Salzberg C (2011) The Strategic Application of Information Technology in Health Care Organizations. Jossey-Bass. http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=661526
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- Haas P (2006) Gesundheitstelematik, Springer, Berlin
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- Laudon K et al. (2016) Wirtschaftsinformatik. Pearson, Hallbergmoos https://www.pearson-studium.de/drm/reader/nu/code/zhbfwinf
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- Sarnikar S et al. (2013) Cases on healthcare information technology for patient care management. IGI, Hershey.
- Shortliffe E, Cimino J (ed) (2014) Biomedical informatics. Computer applications in health care and biomedicine. Springer, London (selected chapters) http://link.springer.com/book/10.1007%2F0-387-36278-9
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- Wager K et al. (2013) Health care information systems. Jossey-Bass, San Francisco http://ebookcentral.proquest.com/lib/zhbflensburg-ebooks/detail.action?docID=433717
- Winter A et al. (2011) Health Information Systems. Springer, London
- An extended or updated list of recommended reading will be provided at the beginning of the semester.

Teaching method

Seminar

Mode and type of assessment

Type of module	Type of assessment	Mode of assessment	Examination language
BEM	Ex	OA: Presentation in class	GER | EN

Admission requirements

None

Reusability

None

Modules to be completed at the end of the studies (ESM):

Master's thesis

Module information

Semester of the programme	Duration (semesters)	Offered in	Mode of assessment	Time invested	Workload (h)	Credit Points (CP)	Language of instruction	Module area
4	1st	summer ☒ winter ☒	Final thesis and Colloquium	5 months 45 minutes	900	30	GER | EN	ESM

Intended learning outcomes

- The students prove that they are able to apply academic research and writing techniques by showing how individual factors relate to each other in a complex context. They do so with a topic of their own choice agreed upon with a supervisor.
- They produce an extensive written paper in a target-oriented manner and without external help while keeping the necessary critical distance (in consultations).
- They apply appropriate methods to visualise their findings.
- They critically discuss and present these findings.

Contents

The master's thesis consists of a final thesis and a colloquium. In the thesis the student carries out extensive research and reflects on a topic; it is written based on academic standards. The colloquium follows the thesis and aims to reflect the main findings made and methods applied.

The final thesis typically is written in cooperation with a company or organisation from the health sector.

Teaching method

Written copy, electronic copy (e.g. CD)

Mode and type of assessment

Type of module	Type of assessment	Mode of assessment	Examination language
CM	Ex	Thesis (70%) & 45 minute Colloquium (30%)	GER | EN

Admission requirements

Successful completion of all modules from semesters 1 to 3.

Reusability

None

Recommended reading

- Bänsch A, Alewell D (2009) Wissenschaftliches Arbeiten. Oldenbourg, Munich
- Balzert H (2008ff.) Softwaremanagement. vols 1–3. Spektrum, Munich
- Hammerschall U, Beneken GH (2013) Software Requirements. Pearson, Munich
- Jehle R et al. (ed, 2015) Medizinische Informatik kompakt. de Gruyter, Berlin. http://www.degruyter.com/view-booktoc/product/212950
- Kallus K (2010) Erstellung von Fragebogen. Facultas, Vienna
- Kornmeier M (2007) Wissenschaftstheorie und wissenschaftliches Arbeiten. Physica, Heidelberg
- Laudon K, Laudon J, Schoder D (2016) Wirtschaftsinformatik. Pearson, Hallbergmoos. https://www.pearson-studium.de/drm/reader/nu/code/zhbfwinf
- Rupp C (2009) Requirements-Engineering und -Management. Professionelle, iterative Anforderungsanalyse für die Praxis. Hanser, Munich
- Stickel-Wolf C, Wolf J (2006) Wissenschaftliches Arbeiten und Lerntechniken. Gabler, Wiesbaden
- Trill R (ed., 2018) eHealth. Kohlhammer, Stuttgart
- Zuser W, Grechenig T, Köhle M (2004) Software Engineering. Pearson Studium, Munich, Boston [et al.].
- ku – Krankenhaus Umschau, führen und wirtschaften im Krankenhaus, kma, das Krankenhaus, Krankenhaus IT-Journal, E-HEALTH-COM, subscription available.

- An extended or updated list of recommended reading may be provided at the beginning of the semester.

Annex 1: Contact

Module	Semester	Contact
Health Economics	1st	Prof. Dr. Lehr
Applications in Health Management	1st	Stappenbeck
Medical Documentation	1st	Prof. Dr. Lehr
Business Administration in Health Care	1st	Prof. Dr. Lehr
Information Management	1st	Albert
IT Basics in Health Care	1st	Prof. Dr. Lübben
Project Management	1st	Fendt
Health Care Systems	2nd	Prof. Dr. Lehr
Business Analytics	2nd	Prof. Dr. Gerken
Communication Technology (Mobile Communication)	2nd	Prof. Dr. Lübben
Applications for Patients	2nd	NN
Quality Management	2nd	Prof. Dr. Lehr / Prof. Dr. Severin
eHealth Applications (sub-module 1)	2nd	NN
eHealth Applications (sub-module 2)	2nd	NN
Health-Care-Management (sub-module 1)	2nd	Prof. Dr. Lehr
Health-Care-Management (sub-module 2)	2nd	Prof. Dr. Lehr
eHealth Project	3	Prof. Dr. Lehr

Documentation of changes/updates:

When	Who	What	Where
4 Aug 2019	Klaus von Stackelberg	Version control set up	File
4 Aug 2019	Bosco Lehr	Updated the module names according to requirements and recommendation	File
4 Aug 2019	Klaus von Stackelberg	Deleted class numbers and weighting factors (after consulting Gudrun Dix)	File
5 Aug 2019	Klaus von Stackelberg	Compared and matched module names and structures with Examination and Study Regulations	File
5 Aug 2019	Bosco Lehr	Small changes, mainly language-related	File
16 Aug 2019	Bosco Lehr & Klaus von Stackelberg	Checked corrections	File
2 Mar 2020	Jan Gerken & Klaus von Stackelberg	Included AI contents in the Business Analytics module description	File

Last update: 2 Mar 2020 [Version_20200802]