Module Guide
Master
Global Public Health

Faculty European Campus Rottal-Inn

Examination Regulations: 01.04.2024

Study Plan

Global Public Health – Programme Structure

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GPH-1 ESSENTIALS OF GLOBAL PUBLIC HEALTH

Module code	GPH-1
Module coordination	Prof. Dr. Sabine Dittrich
Course number and name	GPH-01 Essentials of Global Public Health
Lecturer	Prof. Dr. Sabine Dittrich
Semester	1
Duration of the module	1 Semester
Module frequency	yearly
Course type	required course
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Written Examination (schrP)
Duration of Examination	90 min.
Weight	5/90
Language of Instruction	English

Module Objective

Introduce the students to global public health structures and challenges and introduce a range of stakeholders in the global public health space. The goal of this course is to give a broad understanding of the bigger picture of global health and how a variety of actors at regional, national, and international level are aiming to establish sustainable solutions for current and future health challenges.

Professional competence

Students

- Understand the structures of public health from local to international level
- Understand the issues ranging from traditional disease focus areas (eg: "the big three": malaria, TB, HIV; Neglected tropical diseases) to understand emerging areas of focus (eg. AMR, climate change, non-communicable diseases)
- Learn about the interconnected nature of health challenges and solutions
- Understand the different types of actors and their roles within the global public health space from national health system players, academics ranging to international stakeholders and donors

Methodological competence

Students

- Will be able to analyse the different roles and interactions of national and international actors within a specific health area
- Will learn to review data and literature on a health topic and summarize in a concise manner
- Will be able to understand global health relevant terminology and are able to critically assess challenges and solutions

Social and personal competence

Students, in a team, engage in an open and respectful discussion of lived and learned experiences in the space of global public health and will learn from each other as well as the lecturer and guest lecturers. Further the group work will mimic the real-life working environment in a global health organisation which has to harness different cultural and technical backgrounds to successfully complete a task.
Overcoming the corresponding challenges linked to communication styles, backgrounds and knowledge is a critical learning outcome for anybody aiming to embark on a career in the international public health space.

Applicability in this and other programs

This course is relevant to all health-related courses and all students interested to explore and translate their study area to a global context.

Learning Content

1. Overview of key health topics of the past, present, and future and why we (as a GPH community) care
    a. "the big 3": Malaria, TB, HIV
    b. Neglected tropical diseases (NTDs)
    c. Antimicrobial Resistance
    d. Non-communicable diseases (NCDs)
    e. Other emerging topics like surgical care, mental health
    f. Climate Change and Health
2. Explore the different health topics through a dual lens of public and individual health and explore how one links to the other
3. Historical context and how the past influences current actions and inactions particularly in view of the push to "decolonizing global health".
4. Identify different actors in the global public health space at all levels (locally and internationally) and link them to specific tasks and mandates:
    a. Local health providers
    b. Non-governmental organisations at national and international level
    c. Humanitarian organisations
    d. International actors (eg. UN, Red Cross….)
    e. Academic actors

Teaching Methods

Lectures, learning tasks, web-discussions/presentations, independent studies and seminars, case study exploring a key health challenge and developing a project with different stakeholders.

Recommended Literature

- Sign up to the World Health Organisation newsletter
- Factfulness book by Rosling: https://www.gapminder.org/factfulness-book/
- Essentials of Public Health: https://www.goodreads.com/book/show/41798501-essentials-of-public-health

GPH-2 DIGITAL HEALTH

Module code	GPH-2
Module coordination	Prof. Dr. Dominik Böhler
Course number and name	GPH-2 Digital Health
Lecturer	Prof. Dr. Dominik Böhler
Semester	1
Duration of the module	1 semester
Module frequency	Yearly
Course type	required course
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	written examination (schrP) // Project Report
Duration of Examination	90 min.
Weight	5/90
Language of Instruction	English

Module Objective

Students are equipped with hands-on knowledge about communicating and in socio-technical systems in global public health. The necessary basics for data-driven communication and implementation of digital systems will be created via interactive sessions and a real-world data visualization project:

Professional competence

Students

- understand the concept of qualified digital health as well as IT-Awareness: data security, privacy and safety methods to ensure the appropriate handling with sensitive data.
- know principles of software engineering foundations related to digital health
- are able to utilise the digital tools and have skills required to use of IoT in global public health (data gathering, analysis, anticipation, reaction)
- Can link the different digital infrastructures and solutions
- realise a digital implementation project

Methodological competence

Students

- produce user-centered digital solution prototype in the health sector and carry out an individual project work (incl. short presentations on the as-is analysis and project report)

Social and Personal competence

Students

- can view their own communication situations from the meta-level and use these skills in individual and group discussions as appropriate to the situation

Applicability in this and other Programs
The module can be used in other study programs related to healthcare.

Entrance Requirements
None.

Learning Content
- Concept of Digital Health in Theory and Practice
- Concepts of Computer Networking and Markup Languages
- Benefits and challenges related to Digital Technologies
- IT-Awareness: data security, privacy and safety concepts
- Digital Health, (Research and development process, versatile and multidisciplinary methods, oral/written presentations, scientific reports).
- Analytics and Visualisation
- Clouds
- Social and Healthcare IT systems
- Prototyping of IT project

Teaching Methods
Lectures, learning tasks, web-discussions/presentations, independent studies, seminars, workshops on methodology, Moodle learning environment contains materials

Recommended Literature

- Batra, Neale, et al. The Epidemiologist R Handbook. 2021. https://epirhandbook.com/en/
- Wickham, Hadley, and Garrett Grolemund. *R for Data Science : Import, Tidy, Transform, Visualize, and Model Data*, O'Reilly Media, Incorporated, 2017. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=4770093.

- *Advanced Data Analytics in Health*, edited by Philippe J. Giabbanelli, et al., Springer International Publishing AG, 2018. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=5356271.
- Rowell, Katherine, et al. *Visualizing Health and Healthcare Data : Creating Clear and Compelling Visualizations to See How You're Doing*, John Wiley & Sons, Incorporated, 2020. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=6370634.
- Braunstein, Mark L.. *Practitioner's Guide to Health Informatics*, Springer International Publishing AG, 2015. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=2094762.
- Nguyen, Andrew. *Hands-On Healthcare Data*, O'Reilly Media, Incorporated, 2022. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=29441724.
- Lau, Sam, et al. *Learning Data Science*, O'Reilly Media, Incorporated, 2023. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=30746386.

GPH-3 SUSTAINABLE HEALTH ECONOMY

Module code	GPH-3
Module coordination	Prof. Dr. Sabine Dittrich
Course number and name	GPH-3 Sustainable Health Economy
Lecturer	Dr. Petra Sevcikova
Semester	1
Duration of the module	1 semester
Module frequency	yearly
Course type	required course
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Written Exam (90 Minutes)
Weight	5/90
Language of Instruction	English

Module Objective

Students understand the concepts of digitalization and master the practical handling of these concepts, as well as tools and methods. The benefits, but also the risks of digitalization will be shown and discussed on the basis of various use cases.

After completing the module, students will have achieved the following learning objectives:Professional competence

Students are able to

- Think economically and understand economic problems related to health care
- Apply economic analysis to health policy issues
- Understand the effects of changes in the economy on public health
- Understand the impact of institutions on health economy

Methodological competence

Students are able to

- Question the present way of functioning regarding the economy in health care
- Think about possible solutions for current challenges that exist and future challenges that will arise in the health economy

Social and Personal competence

Students

- Question ideas of their own and those of other students
- Engage in constructive criticism
- Participate in group discussions

Applicability in this and other Programs

The module can be used in other study programs related to healthcare.

Entrance Requirements

None.

Learning Content

The course will address various facets of healthcare economics such as

- Supply and demand
- Determinants of population health
- Economics of Public Health and Health Promotion
- Effect of economic growth on public health
- The role of health insurance and the law of large numbers
- The impact of involvement of various institutions
- The economic behavior of those that provide health care
- The impact of uncertainty on economic behavior
- The impact of imperfect information on economic behavior
- Health care discrimination and equality

Teaching Methods

- Lecture
- Slides, combination of static and interactive content
- Presentation recorded
- Quiz
- Literature
- External Videos

Recommended Literature

- Rice, Thomas H., und Lynn Unruh. The economics of health reconsidered. Fourth edition. Chicago, Illinois : Arlington, Virginia: Health Administration Press ; Association of University Programs in Health Administration, 2016.
- Niu, Xiao-Tong, You-Cai Yang, und Yu-Cong Wang. „Does the Economic Growth Improve Public Health? A Cross-Regional Heterogeneous Study in China". Frontiers in Public Health 9 (2021).
- OECD. Promoting Health, Preventing Disease: The Economic Case. Paris: Organisation for Economic Co-operation and Development, 2015.

Videos

- https://www.youtube.com/watch?v=jsiCft5v2dk
  - Prof. Jonathan Gruber, Professor of Economics at MIT
- https://www.youtube.com/watch?v=LZZ2gyYSbzI
  - Greg Martin, Director of the Health Protection Surveillance Centre

GPH-4 ELECTIVE: GENDER EQUALITY IN GLOBAL PUBLIC HEALTH

Module code	GPH-4
Module coordination	Anna Schmaus-Klughammer
Course number and name	GPH-4 Gender Equality in Global Public Health
Lecturers	Anna Schmaus-Klughammer
Semester	1
Duration of the module	1 semester
Module frequency	Yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	portfolio examination (PoP)
Weight	5/90
Language of Instruction	English

Module Objective

In this module students will recognize the Sustainable Development Goals (SDG). They will identify and apply the SDGs 3 (Health), SDG 4 (Education) and 5 (Gender Equality) in details. Synergies between these SDGs will be analyzed. The importance of these three SDGs will provide a deep understanding how Gender Equality in Global Public Health can be achieved. Students will demonstrate knowledge about the significance of current research in the field of Gender Equality by writing a research paper.
After completing the module, the students will have achieved the following learning objectives:

Professional competence

Students

- Understand SDGs, especially SDG 3, 4 and 5
- Are able to recognise synergies between SDG 3,4 and 5
- Can identify the importance of SDG 3 and 4 to reach SDG 5
- Understand gender equality in different countries

Methodological competence

Students

- Discuss the importance of Gender Equality in Global Public Health
- Analyze the current situation of Gender Equality world wide
- Apply different scenarios to improve Gender Equality in Global Public Health

Social and personal competence

Students, in a team, develop joint project goals and research papers. They will be able to reflect on their working results and evaluate them.

Applicability in this and other Programs

The module can be used in other study programs related to Sustainability and Gender.

Entrance Requirements

None

Learning Content

- Gender Equality in General
- From MDGs to SDGs
- SDG3, 4 and 5 in detail
- Synergies between SDGs
- SDGs progressing worldwide
- Gender Equality in a national and international context

Teaching Methods

Lectures, learning tasks, web-discussions/presentations, independent studies, seminars, workshops on methodology, Moodle learning environment contains materials

Recommended Literature

- Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs): Addressing Unfinished Agenda and Strengthening Sustainable Development and Partnership (Dr. Sanjiv Kumar, National Health Systems Resource Centre, India)
- Positive health, education and gender equality outcomes for Myanmar youth, UNESCO
- Gender inequality and the COVID-19 crisis: A Human Development perspective, UNDP
- The Lost Girls of Covid, Bloomberg
- Measuring progress from 1990 to 2017 and projecting attainment to 2030 of the health-related Sustainable Development Goals for 195 countries and territories: a systematic analysis for the Global Burden of Disease Study 2017, Lancet Prof. Rafael Lozano, Universtiy of Washington, USA
- The Policy on Gender Equality in Germany, European Parliament
- Gender Equality Policy, PAHO
- Synergies and Trade-Offs in Reaching the Sustainable Development Goals

GPH-5 ELECTIVE: COLLABORATIVE HEALTH SYSTEMS

Module code	GPH-5
Module coordination	Anna Schmaus-Klughammer
Course number and name	GPH-5 Collaborative Health Systems
Lecturer	Anna Schmaus-Klughammer
Semester	1
Duration of the module	1 semester
Module frequency	yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Presentation (Präs)
Weight	5/90
Language of Instruction	English

Module Objective

In this module students will recognize different devices and services used for Digital Collaborative Systems in Healthcare. They will identify and apply health IT in details. Students will understand the differences between hardware devices and software. They will analyze different systems and recognize their application in primary, secondary and tertiary healthcare. Students will demonstrate knowledge about the significance of current research in the field of Collaborative Systems by writing a research paper.
After completing the module, the students will have achieved the following learning objectives:

Professional competence

Students
- Understand different Types of Health Information Technology
- Understand the application of different types of Health Information Technology
- understand Big Data and eHealth

Methodological competence

Students
- Discuss the importance of Collaborative Systems in Healthcare
- Analyze the different types of Health Information Technology
- Apply different devices in online scenarios

Social and Personal competence

Students, in a team, develop joint project goals and research papers. They will be able to reflect on their working results and evaluate them.

Applicability in this and other Programs

The module can be used in other study programs related to IT in healthcare and

healthcare in general.

Entrance Requirements

none

Learning Content

- Electronic Health Record (EHR)
- Personal Health Record (PHR)
- Health Information Exchange (HIE)
- Medical Interaction Platforms
- Collaboration in Healthcare across Borders
- eHealth / mHealth
- Health Technology Infrastructure
- Telemedicine
- Ambient Assisted Living
- Teletherapy
- Telemonitoring
- Foundations of Big Data
- Data Classification
- Data Analytics in eHealth

Teaching Methods

Online flipped classroom. Content (live lecture, recorded lecture, external videos, literature) is provided on a collaborative online platform. For each lecture a questionnaire is provided which is not mandatory yet allows students to control their knowledge.

Recommended Literature

- Electronic Health Records (EHR)
  Authors: Tom Seymour, Minot State University, USA Dean Frantsvog, Minot State University, USA Tod Graeber, Minot State University, USA
- The value of health information exchange
  Authors: Joshua Richardson, Erika L. Abramson, Rainu Kaushal
- A_Distributed Collaborative Platform for Personal.pdf
  Authors: Ahmed M. Elmisery, Seungmin Rho, and Dmitri Botvich
- Telemedicine across borders: A systematic review of factors that hinder or support implementation
  Authors: Helena Legido-Quigley, Ain Aaviksoo, Josip Car, Martin Mckee
- Longbing Cao. 2017. Data Science: A Comprehensive Overview. ACM Comput. Surv. 50, 3, Article 43 (June 2017), 42 pages.
- Hanrahan, Pat. 2012. Analytic database technologies for a new kind of user: the data enthusiast. In Proceedings of the 2012 ACM SIGMOD International Conference on Management of Data (SIGMOD '12).
- Grabovschi, C., Loignon, C. & Fortin, M. Mapping the concept of vulnerability related to health care disparities: a scoping review. BMC Health Serv Res 13, 94 (2013).

GPH-6 ELECTIVE: HEALTH FORECAST – FUTURE CAUSES OF DEATH

Module code	GPH-6
Module coordination	Prof. Dr. Georgi Chaltikyan
Course number and name	GPH-6 Health Forecast – Future Causes of Death
Lecturer	Prof. Dr. Georgi Chaltikyan
Semester	1
Duration of the module	1 semester
Module frequency	yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Written assignment (PStA)
Weight	5/90
Language of Instruction	English

Module Objective

Health and healthcare are existing in ever changing context. Many diseases and conditions that have been the major health problems two centuries ago are either non-significant or sometimes not even existing today. The process is continuing, and future generations of healthcare and public health specialists are likely to face new challenges, such as emerging or re-emerging infections (similar to COVID-19), or consequences of significantly changing lifestyle. This module aims to introduce the students to the changing landscape of the burden of disease in the global context, including the population groups most affected by different current and upcoming disease burden, the risk factors, and the key measures to predict and address the future burden of disease.
After completing the module the students will have achieved the following learning objectives:

Professional competences:

Students

- Understand health and healthcare in a broader dynamic context;
- Acquire deepened knowledge of the determinants of health and the current and upcoming risk factors for conditions of importance to international health systems;
- know the most important components of healthcare delivery, of the structure and functioning of healthcare systems;
- understand important current and future health conditions;
- know the forecast and prognostication techniques with regard to the future health problems;
- know Digital Health approaches, applications and tools to address the future burden of disease.

Methodological expertise

Students

- Discuss with confidence the burden of disease in various regions of the world, how it varies both within and across countries, and how the disease burden will be changing in the upcoming decades;
- Analyze key challenges that are likely to arise in the coming decades in addressing the health in different high-, middle-, and low-income countries;
- Apply Digital Health tools to analyze and forecast the health trends.

Social and Personal competences:

Students

- Are able to analyze the structure and understand the meaning of commonly used international and global health concepts;
- Present a potential future health issue in a particular country or area in the world, or a global health issue, in a comprehensive way.
- Work in small groups discussing and presenting various healthcare management issues and challenges in different countries.

Applicability in this and other Programs

The module can be used in other study programs related to healthcare.

Entrance Requirements

No special requirements.

Learning Content

1. **Health Determinants, Measurements and Trends:** the determinants of health; the demographic and epidemiologic transitions; health indicators and key terms related to measuring health status and the burden of disease; concepts of health-adjusted life expectancy (HALE) and disability-adjusted life years (DALYs), and the Global Burden of Disease (GBD); current leading causes of death and the burden of disease in low-, middle-, and high-income countries, and their key risk factors; dynamic of the disease burden, and upcoming and future changes in GBD.
2. **Health, Education, Poverty and the Economy:** the links between health and education; connections between health, productivity, and earnings; key relationships between health, the costs of illness, and the impact of health expenditure on poverty; evolving connections between health and equity; relationships between expenditure on health and health outcomes; two-way relationship between health and development; changing global perspectives and potential future challenges.
3. **Communicable Disease:** the current burden of communicable diseases; the determinants of selected communicable diseases, including emerging and reemerging infectious diseases; key concepts concerning the prevention, transmission, and treatment of those diseases; the costs and consequences of communicable diseases of importance; case studies of successful interventions against communicable diseases; key challenges to the future prevention and control of these diseases; lessons learned from the COVID-19 pandemic; potential future infections and pandemics of global reach.
4. **Non-Communicable Diseases:** the burden of non-communicable diseases worldwide; the most important risk factors for the burden of non-communicable disease; the costs and consequences of non-communicable diseases, tobacco use, alcohol use disorders, mental health disorders, and others; the measures that can be taken to address the burden of non-communicable diseases in cost-effective ways; case studies of successful interventions against non-communicable diseases; upcoming and future non-communicable diseases; key challenges to the future prevention and control of these diseases.
5. **Unintentional Injuries:** the most important types of unintentional injuries; the

burden of disease related to those injuries; how that burden varies by age, sex, region, and type of injury; the costs and consequences of unintentional injuries; the measures that can be taken to address the burden of unintentional injuries in cost-effective ways; case studies of preventing unintentional injuries; upcoming trends and problems in unintentional injuries; key challenges to the future prevention and control of unintentional injuries.

6. **Environmental Health:** the importance of environmental health; key concepts; key environmental health burdens; the burden of environmentally related diseases; the costs and consequences of key environmental health problems reducing the burden of disease; case studies; upcoming and future environmental problems; key challenges to the future of the environmental health.
7. **Nutrition and Global Health:** the importance of nutrition; definitions and key terms; data on nutrition; the determinants of nutritional status; gauging nutritional status; key nutritional needs; overweight and obesity; nutritional needs throughout the life course; the changing nutritional state of the world; nutrition, health, and economic development case studies; addressing future nutrition challenges.
8. **Women's Health:** the importance of women's health; key definitions; the determinants of women's health; the burden of health conditions for females; leading causes of death and DALYs, males and females compared; selected health burdens for females; the costs and consequences of women's health problems; case studies; addressing future challenges; further measures to enhance the health of women.
9. **Child and Adolescent Health:** the importance of child and adolescent health; key terms; adolescence and young adulthood as transitional and critical periods; mortality and the burden of disease; risk factors for neonatal, infant, child and adolescent deaths; the costs and consequences of child and adolescent morbidity and mortality; immunization: a best buy in global health; case studies; addressing key challenges and future trends in child and adolescent health.
10. **Key messages and takeaways:** the future of health and healthcare, and how Digital Health technologies might be capable of addressing the future challenges.

Teaching Methods

Combination of lectures, seminars, case studies, class discussions, exercises, group work, student presentations, and lab training.

Remarks

Guest lecture by an external expert (optional)

Recommended Literature

- Richard Skolnik: Global Health 101, 4th edition, Jones & Bartlett Learning 2019;
- Kathryn H. Jacobsen: Introduction to Global Health, 3rd edition, Jones & Bartlett Learning 2019;
- Richard K. Riegelman: Public Health 101: Improving community health. Jones & Bartlett Learning 2019;
- IHME Vizhub GBD Compare https://vizhub.healthdata.org/gbd-compare/;
- WHO Global Health Observatory https://www.who.int/data/gho.

GPH-7 ELECTIVE: MANAGED CARE

Module code	GPH-7
Module coordination	Dr. Roland Wiest
Course number and name	GPH-7 Managed Care
Lecturer	Dr. Roland Wiest
Semester	1
Duration of the module	1 semester
Module frequency	yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	written examination (schrP)
Duration of Examination	90 minutes
Weight	5/90
Language of Instruction	English

Module Objective

The "Managed Care" module is designed to give students an insight into the basics of healthcare systems. Managed care was developed as a health economic management control system in USA and has since been applied to other healthcare systems. Implementation goals include more cost-effective care, as well as improvement in quality and in interface management. Given the structural inefficiencies in the German healthcare sector, students also recognise the opportunities and potentials of individual managed care instruments, such as integrated medical care, structural contracts, selective contracting, doctors' networks, ambulatory healthcare centres and DMP. Upon completion of the module, students should be able to distinguish between different managed care instruments, to evaluate them economically, and to provide consultation to companies in the healthcare industry.
After completing the module the students will have achieved the following learning objectives:

Professional competences

Students

- know the framework conditions of the application of managed care and can classify its various characteristics
- know the basics of managed care instruments
- are familiar with the assessment and classification systems of managed care.

Methodological expertise:

Students

- can analyse the various managed care instruments and perform sample calculations.

Social and Personal competences:

Students can compare the legal, economic and ethical issues related to the application of managed care and discuss the application critically. Approaches and solutions are developed and discussed in the group.

Applicability in this and other Programs

The module can be used in other study programs related to healthcare

Entrance Requirements

None

Learning Content

1. Historical development of managed care
2. Selective contracting
3. Gatekeeping
4. Utilisation review and management
5. Disease management
6. Case management
7. Guidelines
8. Remuneration systems
9. Quality management
10. HMO (Health Management Organisations) in different countries
11. Legal framework conditions for new forms of care
12. Assessment methods
13. Case study

Teaching Methods

Combination of lectures, seminars, case studies, class discussions, exercises, group work, student presentations, and lab training.

Recommended Literature

- Glied, S. (2000). Managed care. In Handbook of health economics (Vol. 1, pp. 707-753). Elsevier.
- Abadia, C. E., & Oviedo, D. G. (2009). Bureaucratic Itineraries in Colombia. A theoretical and methodological tool to assess managed-care health care systems. Social science & medicine, 68(6), 1153-1160.
- Hillblom, D., Schueth, A., Robertson, S. M., Topor, L., & Low, G. (2014). The impact of information technology on managed care pharmacy: today and tomorrow. Journal of Managed Care Pharmacy, 20(11), 1073-1079.

GPH-8 ELECTIVE: LIFE SCIENCE FOR PUBLIC HEALTH

Module code	GPH-8
Module coordination	Prof. Dr. Sabine Dittrich
Course number and name	GPH-8 Life Science for Public Health
Lecturer	Prof. Dr. Sabine Dittrich
Semester	1
Duration of the module	1 Semester
Module frequency	yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Portfolio Examination (PoP)
Weight	5/90
Language of Instruction	English

Module Objective

The objective of this course is to understand basic life science principles and their application in a public health context. The basics of molecular biology are critical to understand many of the public health tools that are used and discussed daily in public health practice. Further, basic life science knowledge is important to understand vaccine or diagnostic innovations, antimicrobial resistance as well as serological or molecular surveillance data. A basic understanding of the science will allow more critical review of data as well as a more informed and targeted use of tools and concepts.

Professional competence

Students

- gain a basic understanding of the cell and its genetic make-up and how it is used in screening activities or can be exploited for diagnostic, epidemiology/surveillance or the monitoring of risk factors or mutations
- gain a basic understanding of immunology and the human immune system and how it is exploited for vaccines, diagnostic or epidemiology
- understand the difference between different disease-causing agents and what the different properties mean for the monitoring of presence or absence of the infection and how immunological or molecular methods are used for diagnostic, surveillance or vector control in a public health context

Methodology competence

Students

- are able to understand the basics of molecular biology and immunology
- are able to critically review scientific data linked to diagnostic (molecular and immunological)
- are able to identify the most appropriate tools for disease surveillance depending on the epidemiological question (eg. Vaccine coverage, source identification,

immunity assessments)

Social competence

Students, in a team, engage in an open and respectful discussion of the topic and corresponding questions.

Applicability in this and other Programs

This course is relevant to global public health students or other students that are interested to understand the molecular world.

Entrance Requirements

None

Learning Content

- Review the basics of DNA, RNA and protein synthesis as the foundation of life
- Explore the molecular and immunological concepts linked to disease markers and antimicrobial resistance
- Link the basic biomolecular mechanisms to methodologies used to monitor or impact health, particularly linked to the monitoring of markers linked to disease frequency (both molecular, immunological)
- Explore emerging concepts interventions being used or explored for public health actions (eg. Epigenetics, gene-drive, CRISPR, precision health)

Teaching Methods

The course will contain lectures, learning tasks, web-discussions/presentations, independent studies and presentations by the students to emerging topics.

Recommended Literature

Essential Cell Biology: https://www.buecher.de/shop/molekularbiologie/essential-cell-biology-international-student-edition/johnson-alexander/products_products/detail/prod_id/57116102/

GPH-9 ELECTIVE: TECHNOLOGY FOR GLOBAL PUBLIC HEALTH

Module code	GPH-9
Module coordination	Prof. Dr. Sabine Dittrich
Course number and name	GPH-9 Technology for Global Public Health
Course lecturer	Prof. Dr. Sabine Dittrich
Semester	1
Duration of the module	1 semester
Module frequency	yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Portfolio Examination (PoP)
Weight	5/90
Language of Instruction	English

Module Objective

Innovations and Technologies (vaccines, medical devices, drugs, diagnostics, digital tools) for health have transformed how medicine is practiced and how public health practitioners are able to act upon challenges. The road from a good idea to a true innovation and subsequent use in clinics is long and this module aims to explore some of the steps and data needed to ensure only high-quality technologies/innovations make it to the patients. The goal is to introduce the students to the development and study pipeline needed to move technology innovations from concept to deployment. This module aims to enable students to understand how to set priorities and gather data to inform deployment. The module will particularly focus on clinical trials and research needs.

Professional competence

Students

- Understand the different phases of product development: from concept to access
- Understand the concepts of evidence generation for technologies in the context of Good Clinical/Laboratory Practice (GC/LP) to ensure safe use
- Gain a basic understanding of different types of regulatory bodies and approvals as well as the types of studies that need to be conducted
- Understand basic concepts of challenges that arise when innovations are ready for deployment (eg. Market access challenges)

Methodological competence

Students

- are able to understand basic product development terminologies and pathways
- are able to plan and draft clinical study protocols considering GCP or GLP
- are able to do a basic assessment of evidence strengths of different types of data sets for regulatory bodies or policy recommendations

Social and Personal competence

Students, in a team, engage in an open and respectful discussion of lived and learned experiences linked to the use of technology for health. Further, students will develop a basic study protocol for an imagined health technology in a small group with a final presentation to the larger group. Overcoming the corresponding challenges linked to communication styles, backgrounds and knowledge is a critical learning outcome for anybody aiming to embark on a career in the international public health space.

Applicability in this and other Programs

This course is relevant to all courses dealing with health or engineering where to goal is the use in human subjects.

Entrance Requirements

None

Learning Content

1. Overview of product development steps and explore different pipelines for drugs, diagnostic or vaccines, or digitial innovations
2. Explore different concepts to ensure an innovation is addressing an existing need. Understand the concept of "use cases" and "target product profiles" and how they interact.
3. Review the different types of evidence that are needed and understand why good clinical practice is critical to ensure patient safety. Provide a basis to plan save evidence generation and enable students to continue to a GCP certificate
4. Review different types of regulatory approval needs and how these are used in the global public health context
5. After an innovation has been developed and approved, we will explore the deployment challenges and the ecosystem that needs to be in place to sustainable enable use in health settings

Teaching Methods

The course will be broken out into the 3 themes: Product development and pipelines; Clinical evidence generation and regulatory needs; Implementation and deployment. Across those themes Lectures, learning tasks, web-discussions/presentations, independent studies, and seminars will be conducted to allow applied learning and critical thinking.

Recommended Literature

- https://www.policycuresresearch.org/
- WHO RandD observatory: https://www.who.int/observatories/global-observatory-on-health-research-and-development

GPH-10 GLOBAL PUBLIC HEALTH LAW AND ETHICS

Module code	GPH-10
Module coordination	Prof. Dr. Sabine Dittrich
Course number and name	GPH-10 Global Public Health Law and Ethics
Lecturer	Inigo Miguel de Beriain Melissa McRae
Semester	2
Duration of the module	1 semester
Module frequency	yearly
Course type	required course
Niveau	Postgraduate - MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Portfolio examination (PoP)
Weight	5/90
Language of Instruction	English

Module Objective

Law in Global Public Health is a field that deals with legal norms and procedures necessary to create the conditions for people around the world to attain the highest possible level of physical and mental health. Ethics in Global Public Health support health professionals to mediate conflicts and questions around the connection between the individual's and the community's interests in health. The module provides ethical and legal concepts and mechanisms to explore global public health issues, human rights, national and international institutions, and their interplay from a discourse perspective**.**

Professional competence

Students

- Understand essentials in law
- Understand the relevance of national, regional and international law to public health and the impact in varying cultural settings
- Understand Legal Epidemiology and legal mapping and is able to apply mapping tools.
- Understand the impact of the World Health Organisation (WHO) in healthcare law
- Understand essentials in ethics
- are able to understand the challenges of legal and ethical questions
- understand the distinction between medical ethics, global public health ethics and bioethics

Methodological competence

Students

- are able to apply ethical reasoning towards questions in healthcare
- apply ethical decision-making to discuss legal and ethical dilemmas
- can critically assess legal and regulatory frameworks

Social and Personal competence

Students

- are able to synthesize and express ideas and develop public speaking skills for debates and presentations.
- Develop perspective taking by applying their listening skills, empathy and emotional intelligence.

Applicability in this and other Programs

The module can be used in other study programs related to healthcare

Entrance Requirements

None

Learning Content

- Global Public Health Law in theory
- Use cases of Global Public Health Law
- Ethics in Global Public Health in theory
- Use cases of ethics in Global Public Health

Teaching Methods

Independent studies, seminars, workshops and methodology, lectures, learning tasks and web-discussions/presentations, Moodle learning environment contains materials

Recommended Literature

- Coleman, C. H., Bouësseau, M. C., & Reis, A. (2008). The contribution of ethics to public health. *Bulletin of the World Health Organization*, *86*, 578A-578A
- Lee, L. M. (2017). A bridge back to the future: public health ethics, bioethics, and environmental ethics. The American Journal of Bioethics, 17(9), 5-12
- Barnett, D. J., Taylor, H. A., Hodge Jr, J. G., & Links, J. M. (2009). Resource allocation on the frontlines of public health preparedness and response: report of a summit on legal and ethical issues. Public Health Reports, 124(2), 295-303

GPH-11 EPIDEMIOLOGY AND HEALTH DATA ANALYTICS

Module code	GPH-11
Module coordination	Prof. Dr. Sabine Dittrich
Course number and name	GPH-11 Epidemiology and Health Data Analytics
Lecturer	Prof. Dr. Sabine Dittrich Andreas Wiedenhorn
Semester	2
Duration of the module	1 semester
Module frequency	yearly
Course type	required course
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Presentation (Präs)
Weight	5/90
Language of Instruction	English

Module Objective

Combining global public health with data analytics and epidemiology is essential to assist healthcare decision-making, change evidence-based policies and for healthcare interventions targeting diseases, health systems, lifestyles and the environment. The overall aim of the module is to introduce the students to the basic concepts and methods of epidemiology, data analysis and statistics. It further allows students to critically assess research papers, study designs and apply research methods.

Professional competence

Students

- Are able to critically evaluate and to use techniques of data acquisition, design of studies and data analysis.
- Are able to research and to understand epidemiological papers and to examine and evaluate their relevance
- know about common data analysis workflows and are able to interpret and visualize the achieved results
- know the basic statistical evaluation procedures used in health research
- acquire the ability to critically analyse existing epidemiological studies with regard to the quality of their statistical processing
- know epidemiological measures of risk and can calculate them from data

Methodological competence

Students

- know the different analysis methods and can use and analyze recommended systems.

Social and Personal competence

- By working in a team, students are able to achieve their own goals and to take on leadership tasks or to contribute to the project team.

- By working in a team on a complex question, the students are able to communicate precisely and purposefully.

Applicability in this and other Programs

The module can be used in other study programs related to healthcare

Entrance Requirements

None

Learning Content

- Introduction to concepts and methods of epidemiology
- deepening statistical data analysis
- deepening epidemiological study types
- critical analysis and evaluation of an epidemiological article
- meaningfulness of test procedures
- possible disturbance variables in studies and their prevention or control data visualisation
- Mobile Health Applications
- Wireless Monitoring for Health and Disease
- Consumer Digital Health Applications
- Medical Imaging Informatics
- Enhanced Medical Intervention, Virtual and Augmented Reality
- Artificial Intelligence in Medicine and Healthcare
- Legal and Regulatory Aspects of Digital Health Applications

Teaching Methods

Independent studies, seminars, workshops and methodology, lectures, learning tasks and web-discussions/presentations, Moodle learning environment contains materials

Recommended Literature

- Gupta R.P. (2021): Digital Health ? Truly Transformational. Wolters Kluwer.
- Gogia S (2020): Fundamentals of Telemedicine and Telehealth. Elsevier. https://doi.org/10.1016/B978-0-12-814309-4.00004-5
- Jude H.D., Balas V.E. (2019): Telemedicine Technologies: Big Data, Deep Learning, Robotics, Mobile and Remote Applications for Global Healthcare. Elsevier.
- Topol E. (2019): Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again. 1st Edition. Basic Books, NY (US).
- Hoyt R.E., Hersh W.R. (2018): Health Informatics: Practical Guide. 7th edition. Endorsed by AMIA.
- Istepanian R.S.H., Woodward B. (2017): m-Health: Fundamentals and Applications. Wiley, New Jersey
- Venot A., Burgun A., Quantin C. (2014): Medical Informatics, e-Health. Springer, Paris/Heidelberg.
- Fong B., Fong A.C.M., Li C.K. (2011): Telemedicine Technologies: Information Technologies in Medicine and Telehealth. Wiley, Chichester (UK).
- Wootton R., Patil N.G., Scott R.E., Ho K. (2009): Telehealth in the Developing World. Royal Society of Medicine Press, London/Glasgow.
- Graschew G. and Rakowsky S. (2011): Telemedicine Techniques and Applications. InTech.

GPH-12 UNIVERSAL HEALTH COVERAGE

Module code	GPH-12
Module coordination	Prof. Dr. Sabine Dittrich
Course number and name	GPH-12 Universal Health Coverage
Lecturer	Prof. Dr. Sabine Dittrich
Semester	2
Duration of the module	1 semester
Module frequency	yearly
Course type	required course
Niveau	Postgraduate - MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Written assignment (PStA)
Weight	5/90
Language of Instruction	English

Module Objective

Universal Health Coverage (UHC) is one part of the Sustainable Development Goals (SDG). UHC aims to provide financial risk protection in healthcare, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all. The overall aim of the course is to develop an understanding of health financing, policies and its aspects to improve universal health coverage whilst ensuring no one is left behind. It further equips with skills to understand, analyse and evaluate UHC in different countries, policies and health systems.

Professional competence

Students

- understand essentials in Universal Health Coverage
- understand technical aspects of health financing
- are able to understand UHC in different settings
- understand the different challenges of UHC in high income countries and in low- and middle-income countries.
- understand how to measure and evaluate UHC are able to develop methods to improve UHC

Methodological competence

Students

- analyse in-depth concepts of Universal Health Coverage in higher-income and low- and middle-income countries
- are able to evaluate UHC by using adequate measures and methods

Social and Personal competence

Students are able to reflect upon problems and apply logical reasoning to connect ideas in order to make clear judgements and develop critical thinking.

Applicability in this and other Programs

The module can be used in other study programs related to healthcare

Entrance Requirements

None

Learning Content

- Relationship in quality between health, healthcare and UHC
- Monitoring and evaluating quality in health
- Approach to improve quality in current national and international practices
- Health financing for UHC
- Regulatory mechanisms
- Concepts and implications for policy

Teaching Methods

Independent studies, seminars, workshops and methodology, lectures, learning tasks and web-discussions/presentations, Moodle learning environment contains materials

Recommended Literature

- Bukhman, G., Mocumbi, A. O., Atun, R., Becker, A. E., Bhutta, Z., Binagwaho, A., ... & Wroe, E. B. (2020). The Lancet NCDI Poverty Commission: bridging a gap in universal health coverage for the poorest billion. The Lancet, 396(10256), 991-1044.
- Lal, A., Erondu, N. A., Heymann, D. L., Gitahi, G., & Yates, R. (2021). Fragmented health systems in COVID-19: rectifying the misalignment between global health security and universal health coverage. The Lancet, 397(10268), 61-67.
- World Health Organization. (2010). Health financing challenges and institutional options to move towards universal coverage in Nicaragua: discussion paper number 2-2010 (No. HSS/HSF/DP. E. 10.2). World Health Organization

GPH-13 ELECTIVE: KNOWLEDGE BASED SYSTEMS

Module code	GPH-13
Module coordination	Prof. Dr. Dominik Böhler
Course number and name	GPH-13 Knowledge Based Systems
Course Lecturer	Prof. Dr. Dominik Böhler
Semester	2
Duration of the module	1 semester
Module frequency	Yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Project Report
Duration of Examination	90 Minutes
Weight	5/90
Language of Instruction	English

Module Objective

Knowledge acquisition of the essential methods of the application-oriented field of Artificial Intelligence (AI) and the ability to apply them to the issues of health sciences and professional practice. As an educational goal, students experience the scope of "artificial intelligence" and can generate knowledge using AI methods. Participants become acquainted with the knowledge management process and learn to optimise its sub-processes in the professional environment of the healthcare sector. To do so, they now pay particular attention to "soft factors" and the knowledge culture in their professional environment in the healthcare sector. As a result of the interdisciplinary approach, participants acquire the corresponding methodological competence in knowledge logistics, such as knowledge modelling and knowledge representation, as well as knowledge assessment procedures with an intellectual capital report in order to become a role model and lead knowledge management projects. They can assess the different research directions. After completing the module, students will have achieved the following learning objectives:

Professional competence

Students

- have knowledge of soft factors and knowledge culture, of the knowledge management process, knowledge search, the knowledge epresentation methods (such as ontologies), knowledge assessment methods (such as intellectual capital report), knowledge management software (such as knowledge portals), chatbots and methods of machine learning (such as neural networks and 4.0 techniques).
- Use Information Visualization Methods for Different Data Types
- Are able to design interactive visualization systems for data from different application areas
- Combine visualization and automated data processing to solve big data Problems
- Apply knowledge about main characteristics of human visual perception in information visualization and visual analytic

Methodological competence

Students

- know programming with a statistics focused programming language such as R or Python
- can deal with the basic concepts of AI and know which knowledge representation formalisms are appropriate for which problems and can map domains in suitable formalisms.
- can create an implementation to solve a self-chosen problem with the means of machine learning.

Social and Personal competence

Students

- can implement their own knowledge-based ideas and defend them against competing approaches.
- Deepen their problem-solving skills through group work and team work

Applicability in this and other Programs

The module can be used in other study programs related to healthcare.

Entrance Requirements

Recommended: Basic understanding of R or Python, e.g. for data visualization

Learning Content

1. Statistical Learning
2. Linear Regression
3. Classification
4. Resampling Methods
5. Linear Model Selection
6. Moving Beyond Linearity
7. Tree-based Methods
8. Support Vector Machines
9. Deep Learning
10. Survival Analysis and Censored Data
11. Unsupervised Learning
12. Multiple Testing

Teaching Methods

The module provides a framework for self-organised learning in order to support students in the reflection and further development of professional, methodological and social competencies. In addition to theoretical inputs, interaction exercises, problem-solving tasks and role-plays are also used as the key methods. Guided feedback sessions sensitise students to their communication style, their role behaviour in groups, and the conditions for successful collaboration.

Recommended Literature

T. Hastie, R. Tibshirani, and J. Friedman. An Introduction to Statistical Learning. Springer Series in Statistics Springer New York Inc., New York, NY, USA, (2021)

Russell, Stuart, Norvig, Peter, Artificial Intelligence: A Modern Approach, The Intelligent Agent Book, Prentice Hall, 2003

GPH-14: ELECTIVE: HEALTH ECONOMY & MANAGEMENT

Module code	GPH-14
Module coordination	Prof. Dr. Georgi Chaltikyan
Course number and name	GPH-14
Course Lecturer	Prof. Dr. Georgi Chaltikyan
Semester	2
Duration of the module	1 semester
Module frequency	Yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Written Assignment (PStA)
Weight	5/90
Language of Instruction	English

Module Objective

The module aims to provide a profound understanding and equip students with an extended skills set in health management and health economics. Abilities to perform managerial tasks in various areas such as healthcare facilities, medical and pharmaceutical industries are essential requirements to systematically prepare and implement larger projects in healthcare.

Professional competence

Students

- understand principles in Health Economics, Marketing and corporate social responsibility
- know the functions of management and administration of healthcare business
- are able to describe and apply concepts of health financing
- recognise the complexity of the healthcare labour market and discuss different responses to it
- understand quality management in healthcare
- are able to evaluate key mechanisms of global and national health systems to deliver integrated high-quality health services

Methodological competence

Students

- are able to apply evidence-based leadership principles within health care environments
- apply managerial skills sets to perform productive teamwork and support innovation processes
- utilise statistical analyses methods to predict organisational responses to policy changes
- are able to plan and implement healthcare projects

Social and Personal competence

Students

- develop their conflict management skills in order to create productive, people-centered work cultures

Applicability in this and other Programs

The module can be used in other study programs related to healthcare.

Entrance Requirements

None.

Learning Content

- Application of economic principles in healthcare
- Workforce planning, forecasting and human resource crisis
- Social justice and health inequalities in health systems
- Health financing system
- Reimbursement systems
- Strategy and modern healthcare management
- Evidence-based quality improvement and quality domains
- Collecting, processing and analyzing economic data

Teaching Methods

Independent studies, seminars, workshops and methodology, lectures, learning tasks and web-discussions/presentations, Moodle learning environment contains materials

Recommended Literature

- Gupta, R., Bush, B. P., Dorsey, J., Moore, E., van der hoof Holstein, C., & Farmer, P. E. (2015). Improving the global health workforce crisis: an evaluation of Global Health Corps. The Lancet Global Health, 3(11), e679
- Çevik, S., & Taşar, M. O. (2013). Public spending on health care and health outcomes: cross-country comparison. Journal of Business Economics and Finance, 2(4), 82-100.
- Øvretveit, J. (2001). Quality evaluation and indicator comparison in health care. The International journal of health planning and management, 16(3), 229-241.Senthilkumar, S. A., Rai, B. K., Meshram, A. A., Gunasekaran, A., & Chandrakumarmangalam, S. (2018). Big data in healthcare management: a review of literature. American Journal of Theoretical and Applied Business, 4(2), 57-69.

GPH-23: ELECTIVE: OUTBREAKS, EPIDEMICS AND PANDEMICS

Module code	GPH-23
Module coordination	Prof. Dr. Sabine Dittrich
Course number and name	GPH-23 Outbreaks, Epidemics and Pandemics
Course Lecturer	Prof. Dr. Sabine Dittrich
Semester	2
Duration of the module	1 semester
Module frequency	Yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Research Paper
Weight	5/90
Language of Instruction	English

Module Objective

Understand how outbreaks, epidemics, and pandemics emerge, what drives their emergence, and how public health measures and actions are used to mitigate the consequences. Understand how early warning systems (EWRS) are developed and used to assess threats and risks in a public health context.

Professional competence

Students

- Understand what drives the spread of diseases
- Ability to assess emerging alerts and propose actions as part of a EWRS
- Understand actions, precautions and interventions related to outbreak control
- Understand the local and global infrastructures and laws that govern responses.
- Critically assess outbreaks and pandemics of the past to learn for the future

Methodological competence

Students

- Will be able to assess disease alerts within the context of public health relevant EWRS
- Will be able to ably structure and standardized processes to unstructured problems
- Will be able to understand national and global infrastructures and their limitations when it comes to alert response

Social and Personal competence

Students, in a team, engage in an open and respectful discussion of lived and learned experiences in the space of global public health and will learn from each other as well as the lecturer and guest lecturers. Further the group work will mimic the real-life working environment in a global health organisation which has to harness different cultural and technical backgrounds to successfully complete a task.

Applicability in this and other Programs

This course is relevant to all health-related courses and all students interested to explore and translate their study area to a global context.

Entrance Requirements

None

Learning Content

1. Disease transmission and related mitigation measures
2. EWRS decision processes and risk assessments
3. National and international laws that govern actions (eg. International Health Regulations)
4. Relevance of standardized and defensible decision making

Teaching Methods

Lectures, learning tasks, web-discussions/presentations, independent studies and seminars, case study exploring a key health challenge and developing a project with different stakeholders.

Recommended Literature

GPH-24: ELECTIVE: INTERCULTURAL HEALTH COMMUNICATION

Module code	GPH-24
Module coordination	Prof. Dr. Michelle Cummings-Koether
Course number and name	GPH-24 Intercultural Health Communications
Course lecturer	Prof. Dr. Michelle Cummings-Koether
Semester	2
Duration of the module	1 semester
Module frequency	Yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Portfolio Exam: Poster (20%) Report (80%)
Duration of Examination	90 min.
Weight	5/90
Language of Instruction	English

Module Objective

Intercultural differences can affect the ability to constructively work together in international environments. Often those differences are not recognized until after misunderstandings have already begun. In the field of health communication, this differences can not only affect the ability to work together, but can also affect the quality of health care that can be provided or is accepted by the local communities. Many conflicts in distribution of health products, or the acceptance of health care or the can be led back to cultural differences, and the ability to recognize the causes of these conflicts, as well as the ability to rationalize different possibilities to solve these conflicts, is an essential part of being culturally competent. This is why the importance of intercultural communication skills is necessary to effectively work intercultural teams and settings in an ever increasing internationalized work environment.
This ability to recognize and respond appropriately to cultural differences can help lead to more successful working relationships within organizations or with patients. Intercultural competence is the ability to recognized one's own cultural patterns, and the ability to respond to others cultural patterns in the best way possible for both sides, and to find way to reduce misunderstandings and conflicts for future cultural interactions.
After completing the course, the students are expected to have the following competences and skills:

Professional competence and skills

- Develop knowledge and understanding of key theories, concepts and models in intercultural health communication.

- Familiar with different cultural standardization models, and how to apply these to various cultures.

- The ability to work with other cultures on a common level of understanding, based on an analysis of commonalities and differences.
- To better understand and solve cultural and communication problems, and to recognize how these affect international working environments in the area of health communication.
- The ability to combine different approaches to cultural awareness and sensitivity, medical needs and urgency, and communication skills, in order to analyze the best approach to utilizing these so that medical information can be communicated more effectively.
- To be more effective in international environments, by recognizing their own cultural and emotional intelligence.

Methodological competence

- The students are able to understand how health communication differs in various cultures, and how communication styles need to be adjusted to various combinations of culture.
- They are able to analyze the effectiveness of working with others on various levels, that go beyond skill sets, and look for cultural and communication patterns that work well with their own patterns.
- They can rationalize which communication approaches will be best suited for various situation.
- The ability to differentiate between the different types of cultures.
- They will be able to combine soft skills and communication skills, to better be able to communicate on different levels in differing fields, especially in health communication.

The module examines case studies and readings that focus on general concepts of culture as well as in particular on issues of intercultural competence, cultural identity and cultural diversity from a strategic, organizational and health perspective, combined with communication skills on various levels, and applies this to communication theory, with a focus on communication within the medical field.

Social and Personal competence

- They can look at certain behavior in a certain cultures and are able to recognize what cultural standards and communication expectations are driving this behavior, thus being able to adapt their own behavior to be able to react appropriately.
- They will be able to combine approaches from interdisciplinary fields, in order to communicate more effectively and individually.
- The ability to understand one's own cultural patterns and attitude.
- The possibility to increase one's own tolerance for cultural differences.
- Increased cultural and emotional intelligence.

- Students should develop written and verbal presentational skills.
- They can demonstrate group-work, questioning and listening skills.

Applicability in this and other Programs

Intercultural and communication problems and challenges in different international environments can identified by the students and can be solved by students after the course in an effective manner. The added communication skills will benefit the students in other fields. And the communication skills will be a good addition to most other courses.

Entrance Requirements

Fluent in English

Learning Content

- Definition of intercultural health communication and application
- How soft skills shape international health communication
- Emotional/cultural intelligence
- Organizational culture in an international environment
- How intercultural leadership and scientific communication affects the medical field
- Cultural Theories
- Rhetoric in the business and scientific environment
- Intercultural leadership and communication across various cultures
- Cultural sensitivity

More topics can be added depending of progress of the discussion, or to include current events.

Teaching Methods

Group discussions, interactive teaching, presentations, project and case studies, self-study and certain parts in a flipped classroom environment, journaling.

Recommended Literature

Recommended reading (if possible, in the most current edition):

- Hsieh, E. (2021). Rethinking Culture in Health Communication : Social Interactions as Intercultural Encounters. Hoboken, NJ: Wiley Blackwell.
- Meyer, E. (2016). The Culture Map. New York: Public Affairs.
- Molinsky, A. (2013). Global Dexterity: How to Adapt Your Behavior Across Cultures without Losing Yourself in the Process. Boston, MA: Harvard Business Review.
- Ngyuen-Phuong-Mai, M. (2020). Cross-cultural Management: with Insights from Brain Science. New York**:** Routledge, Taylor & Francis Group
- Spieldenner A.R., Toyosaki S. (2020). Intercultural Health Communication. New York: Peter Lang.

GPH-: ELECTIVE: SUSTAINABLE ENERGY PROVISION AND HEALTH

Module code	GPH-
Module coordination	Prof. Dr. Sabine Dittrich
Course number and name	GPH- Sustainable Energy Provision and Health
Course Lecturer	Prof. Dr. Sabine Dittrich Prof. Dr. Roland Augustin
Semester	2
Duration of the module	1 semester
Module frequency	Yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Research Paper
Weight	5/90
Language of Instruction	English

Module Objective
Connecting across disciplines and connecting with different fields that link and contribute to the health of the population is critical. Understanding connections and being able to collaborate across disciplines will be critical skills to solve the big health and development challenges of our times. This module aims to link the Sustainable Development Goal (SDG), particularly SDG7 (Affordable & Clean Energy) and SDG3 (Health & Wellbeing), the development goal dedicated to healthier lives and improved well-being of all ages. Cross-discipline learning will achieved by connecting medical professionals (MSc GPH) and engineering professionals (BSc ESE) in this module for joint discussion and learning from each other.

This elective will review the individual and public health consequences of a lack of sustainable energy around the world and critically review how improved energy provision at different levels (home, industry, health facilities) could have a profound impact on global indicators of health and mortality and as such connect engineers and health care providers. This module will enable students to establish transversal skills that enable them to make the connection between energy projects and global public health indicators and learn to speak similar languages.

Note: The 2nd half of this module is focused on practical experimentation and the development of experimental plans to measure indoor pollution and estimate health impacts. Onsite participation in these practical sessions is expected.

Professional competence (after the course)
Students

- Understand the connection between SDG 7 and 3 and the wider landscape of SDGs
- Understand the concepts of global health indicators and determinants of health and how to connect across disciplines

- Understand the link between climate change and changing health conditions.
- Understand the World Health Organisations action plan to tackle "Energy & Health" and how engineering
- Plan quantitative experiments using predefined WHO standards
- Understand how ISO standards are applied to indoor/outdoor pollution monitoring
- Ability to connect micro-level actions to macro-level consequences both for health and energy projects

Methodology competence
Students

- Ability to identify and monitor global health indicators
- Ability to plan experiments related to indoor/outdoor pollution based on ISO standards and WHO guidance
- Ability to review, assess and synthesize scientific/technical literature linked to energy/health
- Ability to draft a briefing document linking practical measurements to WHO models (eg. HOMES) and the related health consequences

Social and personal competence
The module will enable students to connect and learn in am multidisciplinary manner and to zoom out and reflect on the bigger picture of their work and the consequences their individual contribution has on societal improvement. Further, the group work will mimic the real-life working environment in an international organization harnessing different cultural and technical knowledge to successfully complete a task.

Applicability in this and other Programs
This course is relevant to ESE and GPH students with an interest in zooming out and understanding how their subject is connected to other SDGs and specifically the health sphere.

Learning Content

1. Explore the link between SDG 7 and 3 to understand the interconnectedness of all the SDGs
2. Understand the (health) impact the lack of energy or the lack of access to clean energy has on populations around the world and the health sector
3. Learn about basic concepts in public health
4. Understand the link between climate change, improved energy supply, health care provision, and global mortality indicators
5. Utilise global standards (ISO) and guidelines (World Health Organisation) to develop experimental plans to simulate indoor pollution from different fuels and their impact on individual health
6. Conduct practical experiments simulating a "cooking hut" at ECRI and analysing relevant data

Teaching Methods
The module will be broken out into one-half of lectures on basic concepts, while the other half will aim to illustrate pollution in practical sessions. During the theoretical part, lectures, as well as group work, will be used for knowledge transfer. The practical part will be comprised of experimental planning, establishing a "cooking hut" at ECRI, and measuring relevant indicators (based on ISO and WHO) related to changing fuel sources.

GPH-: ELECTIVE: ENTREPRENEURSHIP & DIGITAL PRODUCT DEVELOPMENT

Module code	GPH-
Module coordination	Prof. Dr. Dominik Böhler
Course number and name	GPH- Entrepreneurship & Digital Product Development
Course Lecturer	Prof. Dr. Dominik Böhler
Semester	2
Duration of the module	1 semester
Module frequency	Yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Project
Weight	5/90
Language of Instruction	English

Module Objective

Building Digital Health Products and Business Models requires detailed understanding of both user and medical needs. Developing a personal vision and a product concept based within complex healthcare systems is challenging. Students in this course learn the basic tools for developing digital products and product teams. Herein they will lead an agile product development team developing a functional digital health application based on real customer and user needs.
After completing the module, the students will have achieved the following learning objectives:
Professional competence:

- Understanding Product Management as a role
- Developing skills necessary to manage an agile team
- Designing and Testing Business Models

Methodological expertise:

- Applying agile project work in a practical context
- Applying tools and methods from the business design toolbox

Personal competence:

- Experiencing leading and coaching a cross-functional team
- Managing across cultures and disciplinary boundaries

Social competence:

- Understanding how to solve conflict in diverse teams
- Presenting and pitching a personal product vision

Applicability in this and other Programs

Entrance Requirements

Learning Content

Students will join a cross-functional team developing a digital health product. They will work in the role of a product manager, who is designing and developing the product vision. This includes building and aligning a team across a specific product vision and managing the testing process with real users and customers in a hypothesis-driven framework. The teams will follow a 2-week sprint pattern in their agile development process. During a mid-term and final presentation, the project work will be graded.

1. Entrepreneurial Mindset
2. Methods and Tools for Business Design
    a. Lean Startup Methodology
    b. Design Thinking
    c. Business Model Generation
3. Sales Strategy and Process in Healthcare
4. Financial Modelling
5. Investment Strategy and Investor Relations for Startups
6. Building Exciting Organizations

Teaching Methods

Combination of lectures, seminars, project work, supervised problem based learning and student presentations.

Remarks

Recommended Literature

- Lewrick, Michael, et al. *Das Design Thinking Playbook : Mit traditionellen, aktuellen und zukünftigen Erfolgsfaktoren*, Versus, 2017. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=4852944.
- Bland, David, and Alexander Osterwalder. *Testing Business Ideas*, John Wiley & Sons, Incorporated, 2019. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=5974984.
- Osterwalder, Alexander, et al. *Value Proposition Design : How to Create Products and Services Customers Want*, John Wiley & Sons, Incorporated, 2014. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=1887760.
- Aulet, Bill. *Disciplined Entrepreneurship Workbook*, John Wiley & Sons, Incorporated, 2017. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=4826750.

GPH-: ELECTIVE: PROJECT MANAGEMENT

Module code	GPH-
Module coordination	Prof. Dr. Sabine Dittrich
Course number and name	GPH- Project Management
Course Lecturer	Prof. Dr. Sabine Dittrich
Semester	2
Duration of the module	1 semester
Module frequency	Yearly
Course type	Elective
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	4
ECTS	5
Workload	Time of attendance: 60 hours self-study: 90 hours Total: 150 hours
Type of Examination	Portfolio Exam
Weight	5/90
Language of Instruction	English

Module Objective

Project management is a key skill when developing, establishing, implementing, monitoring, and managing a project in any field. In global public health specifically, projects can range from local implementation of new protocols/guidelines or tools to clinical or laboratory research studies. Mirroring the variety of projects, project managers can also come from many backgrounds and can be found at various levels of the health infrastructure. Developing a project and its components and the strategic expertise that is required can define the outcome and feasibility of implementing a project or program. Further, often global public health projects are funded by international donors requiring well-defined plans for the implementation, monitoring, and close-out to ensure accountability and allow clear communication and reporting back to all stakeholders regarding timelines, expected risks, budget, and governance.
The module will explore the different aspects of Project Management and connect general principles to GPH projects and examples.

Professional competence:
Students

- Describe project phases and project management methods
- Explain strategies of implementing and managing projects in an international context
- Describe the different roles in project managment
- Understand the different tools used to implement and manage projects
- Apply basic project management skills to a public health project

Methodological expertise:
Students

- Plan and structure project work and evaluate work in progress
- Employ tools to manage projects and monitor progress
- Document roles and responsibilities
- Assess risks to projects by utilising appropriate risk/impact matrices

Social and Personal competence:
The module will enable students to connect and learn in a multidisciplinary manner by connecting how important all roles and stakeholders are for the success of a project. Further, the group work will mimic the real-life working environment in an international organization harnessing different cultural and technical knowledge to complete a example task.

Applicability in this and other Programs:

This course is relevant to all students planning to work in a international environment, implementing multi-stakeholder projects.

Learning Content

1. Working in collaboration with others in a multicultural international environment
2. Procedures and phases of project management
3. Working efficiently, planning, scheduling and monitoring
4. Risk analysis and management
5. A methodical and systematic approach to the handling of complex tasks
6. Understand how PM and Monitoring and Evaluation connect
7. Writing technical project reports
8. Oral presentation of the work and discussion of the results

Teaching Methods

Seminaristic teaching/team work / self-reliant working/homework. Students are closely cooperating to carry out a small research project as a teamwork, training their competencies acquired during their studies, and in during the course of the module, in a self-responsible and self-guided manner, fulfilling to specific tasks of the small projects.

Recommended Literature

Kerzner Harold, Project Management: A Systems Approach to Planning, Scheduling and Controlling; 11th Ed., Wiley 2013

GPH-18 MASTER MODULE

Module code	GPH-13
Module coordination	Prof. Dr. Sabine Dittrich
Course number and name	GPH-18 Master Module
Semester	3
Duration of the module	1 semester
Module frequency	Yearly
Course type	required course
Niveau	Postgraduate – MSc
Semester periods per week (SWS)	0
ECTS	30
Workload	Time of attendance: 180min/week self-study: 900 hours
Type of Examination	master thesis (MA) presentation (Präs)15 - 45 min.
Weight	30/120
Language of Instruction	English

Module Objective

This module aims to introduce the student the the process of research and the different steps needed to identify, develop, and conduct a research project as well as the basic steps of reporting research. Ultimately this project culminates in the submission of a master thesis which is intended to determine whether the students have acquired the thorough specialist knowledge necessary for the transition to work, can work on problems in a the required depth and scientific methodology and generate relevant research to advance public health research.

The master's thesis is intended to show that the candidate is capable of independently completing a practical task in its technical details as well as in interdisciplinary contexts according to scientific and practical aspects within a specified period.

Student can

- choose a thesis topic justified for his/her professional development and justify the choice from different perspectives
- identify an adequate data collection and analysis method
- select the appropriate sample and justify the populations chosen
- make appropriate use of appropriate literature and cite them as needed
- produce a clearly defined, logical and professional report
- present and discuss a project at different stages of progress with their peers and incorporate constructive criticism
- assess projects and provide constructive criticism to help shape and advance projects

Applicability in this and other Programs

Global Public Health Students or other master's programs.

Entrance Requirements

all other modules

Learning Content

- independent preparation of the thesis
- guidance related to the different stages of the thesis
    - finding topics for master theses
    - types of scientific work
    - problem analysis, definition and structuring
    - Research Methods
    - Finding relevant literature and data
    - Quantitative analysis vs qualitative analysis
    - Citation and plagiarism
    - Objective and unbiased approaches
    - Nature and components of a scientific paper
    - Scientific Writing Skills
    - Limitations of one's own analysis capabilities
- results / output of the thesis
- presentation of the work at the seminar/mini-conference

Teaching Methods

Seminar and lectures as well as a mini-conference and workshops.

Recommended Literature

- Research Methods – a step by step guide for beginners; Ranjit Kumara; ISBN 10: 1526449900
- Boland, Angela. Doing a systematic review : a student's guide. 2nd edition. London: SAGE, 2017.
- Booth, Andrew. Systematic approaches to a successful literature review. Second edition. Los Angeles: Sage, 2016.
- Gopen, George D., und Judith A. Swan. „The Science of Scientific Writing". American Scientist 78, Nr. 6 (1990): 550–58.
- Nelson, Heidi D. Systematic reviews to answer health care questions. Philadelphia: Wolters Kluwer Health, 2014.