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| **Title of the course:****Climate Changes and Environmental Health** | *NEPTUN-code:*RKKCC1ABNF | ***Weekly teaching hours:*** *l+cw+lw* 2+0+0 | ***Credit*:** 3***Exam type****:* tm |
| ***Course leader:***Prof. Dr. habil. Hosam Bayoumi Hamuda  | ***Position:*** Private university professor Associate professor | ***Required preliminary knowledge: -*** |
| ***Curriculum:*** |
| Student will be informed about Climate change and the related impacts that can also lead to job loss, force people to move, or lead to a loss of social support and community resources. The potential impacts of climate change are familiar about extreme weather events, droughts, flooding, and impacts on agriculture and infrastructure. But less about the impact of climate change on health and mental health. Natural disasters have harmful effects on health and mental health. Though most people will ultimately do well, many individuals impacted by extreme weather events and slower moving events such as droughts, experience a range of difficulties. Climate change has an impact on a large part of the population, in different geographical areas and with different types of threats to public health. However, the delay in studies on climate change and environmental health consequences is an important aspect. |
| **Detailed description of the subject, timetable** |
| **Weeks** | **Topics of lectures and practices** |
| 1. | **Lecture**: Introduction, Understanding the Connections between climate change and human and environmental healthPractical: |
| 2. | **Lecture**: Global [Centres for Environmental Health](https://www.cdc.gov/nceh/default.htm).Practical: |
| 3. | **Lecture**: Climate Change, Climate Mobility and Health.Practical: |
| 4. | **Lecture**: Impacts of Climate Change on Human Health and How Does Climate Change Affect Human Health.Practical: |
| 5. | **Lecture**. Climate Change and Essential Factors that Influence Human Health such as Plastic and Micro-plastic Pollution, etc. and the Potential Health Risks.Practical: |
| 6. | **Lecture**: Climate Change and Infectious diseases: Effects of Climate Change on Population Health between 2030 and 2050 from Conditions such as: Heat Stress, [Malnutrition](https://www.medicalnewstoday.com/articles/179316.php), [Diarrhoea](https://www.medicalnewstoday.com/articles/158634.php), and [Malaria](https://www.medicalnewstoday.com/articles/150670.php)Practical: |
| 7. | **Lecture**: Climate change and mental health and stress-related disorders.Practical: |
| 8. | **Lecture**: Stability, people who are socially Isolated, and those living in urban areas effect of extreme changes in temperature on: People, children, older adults, people with chronic health problems, people with less economics.Practical: |
| 9. | **Lecture**: Effects of an increase in extreme weather conditions pose a serious risk to health. Hot, dry conditions and droughts can cause dust storms, wildfires, a decrease in water supply and quality, reduced air quality, and food security.Practical: |
| 10. | **Lecture**. Precipitation Extremes: Heavy Rainfall, Flooding, and Droughts: Effect of Immediate Dangers of Flooding Include Drowning and Injury from Damaged Buildings, other Risks of Flooding Include: Exposure to Toxic Chemicals in Runoff, Displacement and Homelessness, which can Affect Physical and Mental Health, an Increase in Respiratory Diseases from Living in Damp Environments, and [Mold](https://www.medicalnewstoday.com/articles/288651.php), which can Reduce Indoor Air Quality.Practical: |
| 11. | **Lecture**: Climate Change and Environmental Health including: [Air Quality](https://www.cdc.gov/air/default.htm), [Biomonitoring](https://www.cdc.gov/biomonitoring/), [Carbon Monoxide Poisoning](https://www.cdc.gov/co/default.htm), [Chemical Weapons Elimination](https://www.cdc.gov/nceh/demil/), and [Childhood Lead Poisoning Prevention](https://www.cdc.gov/nceh/lead/).Practical: |
| 12. | **Lecture**: [Climate and Health](https://www.cdc.gov/climateandhealth/default.htm), [Emergency Response](https://www.cdc.gov/nceh/emergency.htm), [Environmental Health Science and Practice](https://www.cdc.gov/nceh/ehsp/default.html).Practical: |
| 13. | **Lecture**: [Environmental Health Services](https://www.cdc.gov/nceh/ehs/), [Environmental Public Health,](https://ephtracking.cdc.gov/) [Food Safety](https://www.cdc.gov/nceh/ehs/activities/food.html), [Health Studies](https://www.cdc.gov/nceh/hsb/), [Human Exposure to Environmental Chemicals](https://www.cdc.gov/exposurereport/).Practical: |
| 14. | **Lecture**: [Laboratory Quality Assurance](https://www.cdc.gov/labstandards/), [Mold](https://www.cdc.gov/mold/default.htm), [Natural Disasters](https://www.cdc.gov/disasters/index.html), [Nutritional Indicators](https://www.cdc.gov/nutritionreport/), [Radiation and Health](https://www.cdc.gov/nceh/radiation/default.htm), [Research (e.g., Biomonitoring, Genetics, Laboratory Quality Assurance)](https://www.cdc.gov/nceh/dls/programs_research.html), [Safe Water](https://www.cdc.gov/nceh/ehs/activities/water.html), and [Vessel Sanitation](https://www.cdc.gov/nceh/vsp/).Practical: |
| **Mid-term requirements** |
| **Participation in occupations:**Participation in lectures is obligated. Students should not absent more than 30% of the course. If more, the course result will be disable |
| **Mid-terms, protocols, reports, etc.:**Solving homework and writing essays, etc., taking 2 written exams. The failed written exam will be made up in the 14th week, and the HKR will be made up during the exam period. |
| **The method of obtaining a** signature **/ mid-term mark:****The method of obtaining a mid-term mark:****Mid-term mark conditions**: a sufficient level of performance of the 2 written examinations, solving the homework and write the essay. In case of mid-semester mark fail (1), correction opportunities are available according to the Student Requirement System (HKR).Signature conditions: a sufficient level of performance of the 2 written examinations, solving the homework and write the assay as well as the practical final report of the practical lessons. In case of written examination mark fail (1), correction opportunities (the replacement examination are available according at the 14th week according to the Student Requirement System (HKR).**Important dates:**1. 1st written examination: 8th of April 2025
2. 2nd written examination: 13th of May 2025
* Supplement date of the essay and solving the homework: 30th of April 2025
* Date of replacement the written examination(s): 22nd of May 2025

Requirements to pass the course: Two written exams +Solve the Homework and write an essay.Term marks: 85-100%: excellent (5), 75-84%: good (4), 65-74%: satisfactory (3), 50-64%: pass (2), 0-49%: fail (1). |
| **Professional competencies:** |
| The subject demonstrates a broad knowledge and understanding of the fundamental principles of biotechnology and the importance of microorganisms in the development, exploitation and commercialisation of biological processes. Evaluate a range of techniques and strategies used in the biotechnology industries. Work in multi-disciplinary and multi-skilled teams to solve biotechnological problems. The primary aim of this subject is to help the students to learn biotechnology with classical and modern approaches and take them from basic information to complex topics. There is a total of 14 lectures in this subject covering topics ranging from an introduction to biotechnology, genes to genomics, protein to proteomics, recombinant DNA technology, microbial biotechnology, agricultural biotechnology, animal biotechnology, environmental biotechnology, medical biotechnology, nanobiotechnology, product development in biotechnology, industrial biotechnology, forensic science, regenerative medicine, biosimialars, synthetic biology, biomedical engineering, computational biology, ethics in biotechnology. |
| **Literature*:*** |
| * Lecture’s notice and PPT
* Anthony McMichael (2017): Climate Change and the Health of Nations. Famines, Fevers, and the Fate of Populations. Oxford University Press Inc.
* Sharon Friel (2019): Climate Change and the People’s Health. Oxford University Press, 232 pages
* Rais Akhtar (2020): Extreme Weather Events and Human Health. Springer Publishing, 412 pages
* Rosenzweig Cynthia & Hillel Daniel (2015): Handbook of Climate Change And Agroecosystems. Imperial College Press
* Jay Lemery, MD, and Paul Auerbach, MD. (2017): The Impact of Climate Change on Human Health. Rowman and Littlefield, 180 pages
* Rais Aktar and Cosimo Palagiano (2018): Climate Change and Air Pollution: The Impact on Human Health in Developed and Developing Countries. Springer Publishing, 430 pages
* Action Madeleine C. Thomson and Simon J. Mason (2019): Climate Information for Public Health. Routledge/Earthscan, 244 pages
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| **Comments**:The subject is subject to an annual instructor review, which considers the effectiveness of knowledge transfer, and the information derived from the evaluation of opinions given by students and graduates. Based on the evaluation, development actions related to the subject can be initiated, the areas of which are- the methodology of knowledge transfer, - the content of the curriculum, - the interdependence of lectures and exercises. We conduct an annual evaluation of the changes and their results, make a record of this, and make the proven elements part of the subject program according to the schedule organized by the subject manager. |