Queen Mary Summer School
SUM701S Environment and Health
Wolfson Institute

Course outline

Level: 7
Credits: 15 (Queen Mary credits)
Course leader: Dr Stavroula Kanoni
Assessment: In-class presentation (50%) and test (50%)

Course description:

This summer school will provide clear understanding of the different types of environmental exposures that are related with pathogenic mechanisms of human diseases. The first section will review the natural environment (land, water, air, energy) and its impact on health indicators as well as nutritional content of food and nutraceuticals. The second section will focus on the built environment (housing, urban vs. rural landscapes, transport, work) and the relation of our living conditions with health outcomes. The third section will review the effects of the psychosocial environment (mental health, stress, socialization, financial status) on the public health. The fourth section will expand on the microenvironment features (microbiome) and the epigenetic effects (gene-by-environment interactions) that modulate disease mechanisms. The final section of the course will focus on the combined and synergistic impact of all different types of the environment on health indicators. It will also showcase the added value of multidisciplinary approaches to evaluate the combined impact of environment on health and disease.

Learning outcomes:

On completion of the module, students can expect to be able to:

- Understand the fundamental principles of the environmental effects on human health.
- Evaluate the different types of environmental exposures.
- Appraise and interpret the role of the environment as a key factor of pathogenic mechanisms of human disease.
- Display skills in summarizing and disseminating results in oral and written communication.
- Demonstrate skills in critical appraisal and analysis of the scientific literature and the ability to judge and interpret methods and results.
- Integrate information from a variety of sources to construct a coherent presentation on a scientific topic.
- Acquire fundamental knowledge in the area of environment and health.
- Engage and communicate effectively with diverse communities including the lay public and professionals involved in research and clinical practise.
- Adapt the principles of environmental health and critical evidence-based discovery to new and unfamiliar settings.

Approximate cost:

All reading material is provided digitally so you are not required to purchase any books.

Assessments:

The course assessments are not compulsory, however, if you wish to transfer credit for this course to your home university it is essential to complete the assignments.

In-class presentation (50%) and test (50%)

Preparation:

Before you arrive on campus, it is advised that you familiarise yourself with the course content before it begins. You will be given instructions for accessing our Virtual Learning Environment (QMplus) before you arrive on campus.

Teaching:

The course is taught in two two-hour sessions per day (10.00 - 12.00 and 13.00 - 15.00), held Monday to Thursday each week. The morning session will predominantly be comprised of a lecture, while afternoon sessions will involve discussion and activities based on the material covered in the morning session.

Course content:

Section One: A review of the natural environment (land, water, air, energy) and its impact on health indicators and nutritional content of food.
Section Two: Built environments (housing, urban vs rural landscapes, transport and work) and the correlation of living conditions with health outcomes.
Section Three: Psychosocial environments (mental health, stress, socialisation, financial status) on public health.
Section Four: Microenvironment features (microbiome) and the epigenetic effects of modulate disease mechanisms
Section Five: Multidisciplinary approaches and combined and synergistic impact of environmental health indicators.

Reading List:

1. The Exposome: A New Paradigm for the Environment and Health 2nd Edition, Academic Press, 2020
2. GBD 2017 Risk Factor Collaborators. Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2018 Nov 10;392(10159):1923-1994. doi: 10.1016/S0140-6736(18)32225-6. Epub 2018 Nov 8. Erratum in: Lancet. 2019 Jan 12;393(10167):132. Erratum in: Lancet. 2019 Jun 22;393(10190):e44. PMID: 30496105; PMCID: PMC6227755.

Please note that the information provided may be subject to change.