



ISPUP

INSTITUTO DE SAÚDE PÚBLICA
DA UNIVERSIDADE DO PORTO

INTENSIVE COURSE

Indoor Air Quality and Public Health

26 to 28 January 2022

Intensive course

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The Institute of Public Health of the University of Porto is organizing the intensive course on the theme:

Indoor Air Quality and Public Health

The course is aimed at students and professionals in the areas of Medicine, Public Health, Occupational Health, Environmental Engineering, among other health professionals.

Lear how to build a link between the clinical assessment and environmental sampling. At the end of the course, the participant is expected to:

1. Be able to identify symptoms and diseases associated with exposure in the built environment;
2. Know the legal limits for the physical-chemical parameters of indoor air quality (IAQ);
3. Understand how to assess IAQ comfort

parameters, as well as to quantify the concentrations of particulate matter, radon, volatile organic compounds, nitrogen dioxide and ozone;

4. Become familiar with IAQ measurement reports and know how to identify non-compliant parameters;
5. Understand how the characteristics of buildings to be evaluated and which human behaviors can negatively influence the IAQ;
6. Prepare a risk report based on an assessment of the built environment (case simulation).

Course director:

João Cavaleiro Rufo (PhD in Occupational Safety and Health);

Methodology:

Classroom course with human interaction moments.

ECTS:

Not applicable.

Participant selection:

Course limited to 40 participants. First come, first served selection.

Certification:

A certificate of participation will be issued to participants who attend at least 90% of the

course.

Registration Fee:

General 150€; UP and ISPUP students 75€.

Deadline for registration:

January 7, 2022.

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Context

The world is in constant urbanization, causing changes in our lifestyle, behavior and health. According to the United Nations, three-thirds of the world's population will live in urban areas by 2050, being in less contact with nature and its biodiversity, and more exposed to environmental pollutants [1]. This urban lifestyle exposure has been associated with an increased prevalence of inflammatory diseases, including allergic diseases and asthma, or associated symptomatology [2, 3, 4]. Within urban settings, the built environment is the one where human beings are most exposed, spending about 90% of their time. These spaces, from homes to the workplace, from healthcare facilities to public swimming pools, represent periods of prolonged exposure and are decisive in the development of diseases [5-7]. For this reason, studying the built environment and all its characteristics that may be associated with the health of occupants is of special relevance for disease prevention. As inhalation is one of the main means of exposure to these determinants, studying the indoor air quality (IAQ) of these buildings, as well as understanding the risks of their parameters and behavior associated with each emission, is of special importance in the assessment of the built environment. However, there is a gap in academic curricular units that has prevented the training of professionals, whether in health, civil and environmental engineering, or architecture, capable of responding to this social challenge. For this reason, we created the Indoor Air Quality and Public Health intensive course (now in its third edition), focused on the interconnection between the built environment, surrounding areas and the health of its occupants, with a special focus on IAQ and biodiversity. The course's objectives are in accordance with the objectives defined by the United Nations General Assembly for 2030, in the document "Transforming our world: the 2030 Agenda for Sustainable Development", namely in point 3 - "Ensure healthy lives and promote well-being for all ages" – and point 11 – "Make cities and human settlements inclusive, safe, resilient and sustainable". The course content was also chosen and structured to ensure that students understand which behaviors and characteristics of buildings can influence indoor air quality and, consequently, the symptoms and illnesses associated with these parameters.

References

1. World Health Organization. Bulletin of the World Health Organization, Urbanization and health. 2010
2. Seto KC, Fragkias M, Guneralp B, Reilly MK. A meta-analysis of global urban land expansion. *PLoS One* 2011; 6(8): e23777.
3. Paciência I, Moreira A. Human health: is it who you are or where you live? *The Lancet Planetary Health* 2017; 1(7): e263-e264.
4. Rufo JC, Paciência I, Ribeiro AI. Green Environments and Allergic Diseases in Children: a Scoping Review. *Current Epidemiology Reports* 2019; 6(4): 442-448.
5. Cavaleiro Rufo J, Madureira J, Paciência I, Aguiar L, Pereira C, Silva D, Padrao P, Moreira P, Delgado L, Annesi-Maesano I, Oliveira Fernandes E, Teixeira JP, Moreira A. Indoor fungal diversity in primary schools may differently influence allergic sensitization and asthma in children. *Pediatric allergy and immunology : official publication of the European Society of Pediatric Allergy and Immunology* 2017; 28(4): 332-339.
6. Paciência I, Cavaleiro Rufo J, Silva D, Martins C, Mendes F, Farraia M, Delgado L, de Oliveira Fernandes E, Padrao P, Moreira P, Severo M, Barros H, Moreira A. Exposure to indoor endocrine-disrupting chemicals and childhood asthma and obesity. *Allergy* 2019; 74(7): 1277-1291.
7. Cavaleiro Rufo J, Paciência I, Silva D, Martins C, Madureira J, Oliveira Fernandes Ed, Padrão P, Moreira P, Delgado L, Moreira A. Swimming pool exposure is associated with autonomic changes and increased airway reactivity to a beta-2 agonist in school aged children: A cross-sectional survey. *PLOS ONE* 2018; 13(3): e0193848.

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PROGRAMMA

09.00	Reception
09.15	Course overview
09.45	Lecture 1 – Exposures in the built environment (Part I) Basic concepts, temperature, relative humidity, CO ₂ and CO, particulate matter, training exercises.
11.00	<i>Coffee Break</i>
11.15	Lecture 1 – Exposures in the built environment (Part II) Ozone, nitrogen dioxide, radon, volatile organic compounds, training exercises.
13.00	<i>Lunch Break</i>
14.00	Lecture 2 – Microbiological parameters in the built environment Bacteria and fungi in IAQ, associated diseases, training exercises.
16.00	Lecture 3 – Green spaces and biodiversity Difference between inductive and protective effects in green spaces, how to assess the biodiversity of an urban space, the importance of species richness
17.00	<i>End of first section</i>
09.00	Lecture 4 – Clinical cases Interactive lectures and debating real-life scenarios
11.00	<i>Coffee Break</i>
11.15	Lecture 5 – Building Characteristics and occupant behaviour in IAQ Basic concepts, checklist filling and training exercises.
13.00	<i>Lunch Break</i>
14.00	Professionals sharing their expertise The day-to-day challenges of an occupational health specialist The built environment from the perspective of an indoor air quality auditor
15.00	Simulation of a built environment audit
17.00	<i>End of second section</i>
09.00	Revision of concepts Theoretical section
11.00	<i>Coffee Break</i>
11.15	Revision of concepts Hands-on section
13.00	<i>End of the course</i>

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