

The objective of the course is to develop an advanced understanding of the theory of human thermal comfort.

Principles of heat transfer between the human body and the environment. Metabolic heat production, heat loss by conduction, convection, radiation and evaporation, vasomotor adjustment. Theories of thermal comfort - Rational/Climate chamber, field study, adaptive approach and evaluation. The physiology and psychophysics of thermal comfort and heat balance. Thermal balance as a method of defining thermal comfort.

The field study as an approach to defining the conditions for thermal comfort. The theory and practice of user surveys in comfort work and in building appraisal. Standards, guide lines and legislation for the indoor environment, Low energy adaptive buildings. Occupant interactions with building controls – windows, fans, blinds etc.

Organise and execute a comfort survey or post-occupancy building evaluation and analyse its results. Collection and analysis of energy use data from building records and on-site measurement and visualisation techniques. Collection of energy and comfort data and analysis using simulation and monitoring. Knowledge of the setting and use of thermal comfort standards for buildings.

Reference resources:

1. Fanger, PO (1970) Thermal Comfort. Danish Technical Press, Copenhagen.
2. Heschong, L (1979) Thermal delight in Architecture. MIT Press, Cambridge; London.
3. McIntyre, DA (1980) Indoor Climate. Applied Science Publishers.
5. Fergus Nicol, Michael Humphreys and Susan Roaf (2012) Adaptive Thermal Comfort: Principles and Practice, Routledge, London.
6. Nicol, JF (2011) Thermal Comfort a handbook for field studies toward an adaptive model. Earthscan, London.
7. Parsons, K (2003) Human thermal environments. Blackwell.

Senate

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