

# University of Pretoria Yearbook 2019

## Advanced heat and mass transfer 780 (MHM 780)

<b>Qualification</b>	Postgraduate
<b>Faculty</b>	Faculty of Engineering, Built Environment and Information Technology
<b>Module credits</b>	16.00
<b>Programmes</b>	BEngHons Mechanical Engineering BScHons Applied Science Mechanics BScHons Applied Science Mechanics: Physical Asset Management
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	21 contact hours per semester
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Mechanical and Aeronautical Engineering
<b>Period of presentation</b>	Semester 1 or Semester 2

### Module content

Convection correlations: high speed flows, boundary layers, similarity, conservation equations, scale analysis. Thermal radiation: physics, exchange between surfaces, solar, directional characteristics, spectral characteristics, radiation through gasses. Convection, evaporation and boiling: film condensation, film evaporation, pool boiling, forced-convection boiling and condensation, flow regime maps, phase change at low pressures, heatpipes. Heat exchangers: types, regenerators, heat exchanger design. Mass transfer: Fick's Law, mass diffusion, mass convection, simultaneous heat and mass transfer, porous catalysts. High mass transfer rate theory. Mass exchangers.

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