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# University of Pretoria Yearbook 2020

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## Materials science 313 (NMC 313)

**Qualification** Undergraduate

**Faculty** [Faculty of Engineering, Built Environment and Information Technology](#)

**Module content** Binary and ternary phase diagrams. Diffusion in alloys (steady-state and nonsteady-state, solid solutions, grain boundaries, homogenisation). Solidification (pure metals and alloys; ingots, castings and welds; segregation, porosity and eutectic solidification). Metallographic and analytical techniques (diffraction, electron microscopy). Precipitation and solid-solution strengthening (principles, and applications to aluminium, magnesium, copper and nickel-base alloys).

**Module credits** 16.00

**Programmes** [BEng Metallurgical Engineering](#)

[BEng Metallurgical Engineering ENGAGE](#)

**Prerequisites** (NMC 223)

**Contact time** 3 lectures per week, 3 practicals per week

**Language of tuition** Module is presented in English

**Department** Materials Science and Metallurgical Engineering

**Period of presentation** Semester 1

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