

University of Pretoria Yearbook 2019

Materials science 313 (NMC 313)

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| Qualification | Undergraduate |
| Faculty | Faculty of Engineering, Built Environment and Information Technology |
| 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 |

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).

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