University of Pretoria Yearbook 2020

Physical metallurgy 700 (NFM 700)

Qualification	Postgraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	30.00
Programmes	BEngHons Metallurgical Engineering
	BScHons Applied Science Metallurgy
Prerequisites	No prerequisites.
Contact time	48 contact hours per semester
Language of tuition	Module is presented in English
Department	Materials Science and Metallurgical Engineering
Period of presentation	Semester 1 or Semester 2

Module content

The module deals with the basic understanding of phase transformations in alloys, and its relationship with microstructure and mechanical properties of alloys. Included are transformation processes such as solidification; nucleation, growth and coarsening of precipitates; the use of carbides and intermetallic compounds in steels; static and dynamic re-crystallisation; grain growth and the use of grain boundary engineering; the martensite, bainite and pearlite transformations; thermomechanical processing and some elements of quantitative metallography. The course is practice orientated; the current best fundamental understanding of these transformation processes covered, and its role in engineering application demonstrated. The course is fully documented on CD-ROM from the latest literature and is largely intended for that research student who is embarking on a physical metallurgical research project.