

University of Pretoria Yearbook 2022

Strength of materials II 211 (SWK 211)

Qualification Undergraduate

Faculty Faculty of Engineering, Built Environment and Information Technology

Module credits 16.00

NQF Level 06

Programmes BEng (Civil Engineering)

BEng (Civil Engineering) ENGAGE

Prerequisites SWK 122

Contact time 1 practical per week, 2 lectures per week, 3 tutorials per week

Language of tuition Module is presented in English

Department Civil Engineering

Period of presentation Semester 1

Module content

Centroids: centroids of lines, surfaces and volumes. Second moment of area, parallel axis theorem, products of inertia, moment of inertia around inclined axes. Fluid statics: resultant forces and their points of application on flat and curve surfaces. Constraints and statical determinacy. Shear forces and bending moments in beams. Deflection of beams: derivation and integration of differential equations. Friction: friction on surfaces, wedges and screws. Vibration: free undamped vibration, free damped vibration, forced undamped vibration, forced damped vibration, natural frequency and resonance. Cables: distributed loads, parabolic and uniform cables.

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