



# University of Pretoria Yearbook 2023

## Strength of materials II 211 (SWK 211)

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| <b>Qualification</b>          | Undergraduate   |
| <b>Faculty</b>                | <a href="#">Faculty of Engineering, Built Environment and Information Technology</a>        |
| <b>Module credits</b>         | 16.00   |
| <b>NQF Level</b>              | 06  |
| <b>Programmes</b>             | <a href="#">BEng (Civil Engineering)</a><br><a href="#">BEng (Civil Engineering) ENGAGE</a> |
| <b>Prerequisites</b>          | SWK 122   |
| <b>Contact time</b>           | 1 practical per week, 2 lectures per week, 3 tutorials per week                             |
| <b>Language of tuition</b>    | Module is presented in English  |
| <b>Department</b>             | Civil Engineering   |
| <b>Period of presentation</b> | 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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