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# University of Pretoria Yearbook 2021

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## Civil engineering measurement techniques 321 (SBZ 321)

<b>Qualification</b>	Undergraduate
<b>Faculty</b>	<a href="#">Faculty of Engineering, Built Environment and Information Technology</a>
<b>Module credits</b>	8.00
<b>NQF Level</b>	07
<b>Programmes</b>	<a href="#">BEng Civil Engineering</a> <a href="#">BEng Civil Engineering ENGAGE</a>
<b>Prerequisites</b>	(SWK 210)
<b>Contact time</b>	1 practical per week, 1 tutorial per week, 2 lectures 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

Measurement instruments and measurement techniques used in engineering applications. Theory of the Wheatstone bridge and the application of strain gauges to measurement instruments. Accuracy, precision, resolution, hysteresis and linearity. Mechanical, hydraulic and electrical measurement instruments including load cells, pressure sensors, displacement transducers, vibration sensors, stress cells and inclinometers. Use of Arduino micro controller to read, log and plot sensor data. Elementary site survey and levelling. Coordinate systems and global positioning systems. Civil engineering monitoring programmes including planning, execution, data interpretation and reporting.

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