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# University of Pretoria Yearbook 2018

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## Functions of several variables and vector calculus 251 (MAT 251)

<b>Qualification</b>	Undergraduate
<b>Faculty</b>	<a href="#">Faculty of Natural and Agricultural Sciences</a>
<b>Module credits</b>	20.00
<b>Prerequisites</b>	MAT 152
<b>Contact time</b>	2 discussion classes per week, 4 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Mathematics and Applied Mathematics
<b>Period of presentation</b>	Semester 1

### Module content

Parametric equations, vector functions, space curves and arc lengths. Quadric surfaces, calculus of multivariable functions, partial derivatives, directional derivatives. Extrema and Lagrange multipliers. Multiple integrals, polar, cylindrical and spherical coordinates. Line integrals and the theorem of Green.  
Vector calculus: Surface integrals and the theorems of Gauss and Stokes

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