



# University of Pretoria Yearbook 2020

## Calculus 143 (WTW 143)

<b>Qualification</b>	Undergraduate
<b>Faculty</b>	Faculty of Natural and Agricultural Sciences
<b>Module credits</b>	8.00
<b>Programmes</b>	BEd Intermediate Phase Teaching BEd Senior Phase and Further Education and Training Teaching BSc Extended programme - Mathematical Sciences BSc Extended programme - Physical Sciences
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Economic and Management Sciences
<b>Prerequisites</b>	BSc Extended programme and BEd programmes: WTW 133 BCom Extended programme: Students with WST 133 concurrently with WTW 143: WTW 133. Students with STK 133 concurrently with WTW 143: at least 65% for WTW 133.
<b>Contact time</b>	1 tutorial per week, 3 lectures per week, Foundation Course
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Mathematics and Applied Mathematics
<b>Period of presentation</b>	Semester 2

### Module content

Functions: exponential and logarithmic functions, natural exponential and logarithmic functions, exponential and logarithmic laws, exponential and logarithmic equations, compound interest. Limits: concept of a limit, finding limits numerically and graphically, finding limits algebraically, limit laws without proofs, squeeze theorem without proof, one-sided limits, infinite limits, limits at infinity, vertical, horizontal and slant asymptotes, substitution rule, continuity, laws for continuity without proofs. Differentiation: average and instantaneous change, definition of derivative, differentiation rules without proofs, derivatives of polynomials, chain rule for differentiation, derivatives of trigonometric, exponential and logarithmic functions, applications of differentiation: extreme values, critical numbers, monotone functions, first derivative test, optimisation.

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