

# University of Pretoria Yearbook 2021

## Calculus 143 (WTW 143)

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| <b>Qualification</b>          | Undergraduate   |
| <b>Faculty</b>                | <a href="#">Faculty of Natural and Agricultural Sciences</a>  |
| <b>Module credits</b>         | 8.00  |
| <b>NQF Level</b>              | 05  |
| <b>Programmes</b>             | <a href="#">BEd Intermediate Phase Teaching</a><br><a href="#">BSc extended programme - Mathematical Sciences</a><br><a href="#">BSc extended programme - Physical Sciences</a> |
| <b>Service modules</b>        | Faculty of Engineering, Built Environment and Information Technology<br>Faculty of Education<br>Faculty of Economic and Management Sciences                                     |
| <b>Prerequisites</b>          | BSc Extended programme and BEd programmes: WTW 135. BCom Extended programme students who wish to transfer to BCom Econometrics only: WTW 135                                    |
| <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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