

(—; 3-0-0)

## Multivariate Calculus

MATH-223\*

This course is intended for mathematics and statistics honours students other than mathematics majors or mathematics-physics medials.

**Textbook:** *Assembled Notes*

**Prerequisite:** MATH-110 *or* 111 and 221\* *or* 280\*.

**Instructor:** D. Offin

**Evaluation:** 60% class:  $\left\{ \begin{array}{l} 20\% \text{ homework} \\ 20\% \text{ tests} \\ 20\% \text{ essay/projects} \end{array} \right.$

40% final exam

OR: 20% class + 80% final exam if this results in a higher mark.

### Outline:

Taylor's theorem in  $n$  variables

Inverse and Implicit Functions

Vector valued functions, Jacobian matrix

More Inverse and Implicit Functions

Change of variable in multiple integrals, Chain Rule

Constrained max/min, Lagrange multipliers

Newton's Method, Fixed Points and Linearization

Taylor's Series

Sequences: bounded, monotone, geometric

Infinite series, comparison and integral tests

Ratio and root tests, absolute and conditional convergence

Power series, differentiation and integration

Estimation of Sums