UNIVERSITY OF CALGARY

FACULTY OF SCIENCE
**Department of Mathematics and Statistics**

# APPLIED MATHEMATICS 491
# "NUMERICAL ANALAYSIS I"

**Calendar Description: H(3-1T)**
Interpolation and approximation, numerical integration, numerical methods for the solution of nonlinear equations, systems of linear equations and the eigenvalue problem.
**Prerequisite:** Mathematics 311, 381 or 349 and 353 or Applied Mathematics 309, and Computer Science 231 or 217; or consent of the Division.
**Note:** Not open to students with credit in Computer Science 491.

## *Syllabus*

| **Topics** | **Number of Hours** |
|---|---|
| Iterative solution of non-linear equation in one variable | 9 |
| Solution of linear systems: direct elimination, matrix factorization, iterative methods, matrix norms, convergence | 16 |
| Iterative solution of non-linear systems by fixed point iteration and Newton's method | 6 |
| The symmetric eigenvalue problem, Gershgorin's Theorem, the power method | 5 |
| **TOTAL HOURS** | **36** |

Software for carrying out computational experiments was available on the University's main-frame computer through the provision of a "laboratory" equipped with terminals.

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2001:08:21 Calendar Description change 2002:07:01
Prerequisite change: 2008:07:01
LPB:jml