(— ; 3-0-0)　　　　　　　**Mathematics with a Historical Perspective**　　　　　MATH-381*

This course is suitable for all students in a MATH Honours programme. It is one of the courses in the department's Teaching Focus.

Required textbook: *Journey Through Genius – The Great Theorems of Mathematics* by William Dunham, John Wiley & Sons, 1990.

Prerequisites: MATH 120, or 121, or 126; MATH 110 or 111 or 112*; ready access to high school mathematics.

Instructor: Prof. M. Orzech, 210 Jeffery Hall, 533-2436, orzechm@mast.queensu.ca

Evaluation: Homework, and class activities (including quizzes)　30%
　　　　　　　Report (joint)　　　　　　　　　　　　　　　　30%
　　　　　　　Final exam (model provided)　　　　　　　　　40%

Course Description:

The progress of this course will be guided by the text, *Journey Through Genius* by W. Dunham. The book has twelve chapters. The nth week of classes will generally be based on the nth chapter, but class activities and presentations will introduce other material connected mathematically or historically to Dunham's exposition. I will expected you to read each chapter prior to the week when it will be treated, and to attend classes and participate in activities.

The formal course prerequisites include courses in single-variable differential and integral calculus and in linear algebra, and ability to recall high school mathematics. Calculus will be called upon more than linear algebra. The latter prerequisite is there to ensure two things: an interest in mathematics, and prior exposure to mathematical areas and modes of thought consistent with the mathematical scope and intellectual character of a third year mathematics course: Proof will be an important element of the course, as will a range of mathematical knowledge sufficient to make some of the general and abstract perspectives encounterd personally meaningful. Since Dunham's book is written for a non-specialists, a good deal of the course work will depend on high-school mathematics, and you will need to be able to access that material, and interpret it with a more sophisticated and flexible perspective than in high school.

The course structure will recognize that this is a course in the Teaching Focus of the MATH MAJ programme. The requirement of a report done as an independent study is one aspect of this recognition. Other aspects of this recognition include: class activities and student involvement will complement the lecture-based presentations; pedagogical issues will sometimes be made explicit, particularly as they are tied to historical development of mathematics; about one class a week will be free of lecturing by me, and will be devoted to short presentations (by you), on questions I will prepare about mathematical issues that sometimes perplex students. You will work with a partner on the questions for presentation.

The report will be an outgrowth of reading you will do in a "reading circle" involving three or four students. The starting focus for this activity will be a book chosen with my approval. I have selected a group of books, most from my personal collection, which you and prospective partners will be able to peruse and choose from. In the last class of Week 1 there will be time dedicated to further information and discussion about the project.

There will be an electronic mailing list for the course, MATH381-L@lists.queensu.ca. Sending mail to this address will distribute it to the whole class. The list will be available for students to post questions or comments related to any aspect of the course. There is a WebCT course site which features an electronic bulletin board, a facility for keeping track of your marks, and areas for distribution of course material (homework, handouts, interesting links related to the course, etc.).