

Department of Mathematical Sciences  
Semester course syllabus – Summer 2002  
Course prefix/Title Math 520 Functions and Equations  
Credit – 3 hrs  
Instructor – Richard Grassl  
Office – Candelaria 2032 – extension 1-2541

#### Catalog Description:

Polynomial equations including DeMoivre's Theorem, the Fundamental Theorem of Algebra, methods of root extraction (e.g. Newton's method) multiplicities, symmetric functions, determinants.

Prerequisite – Graduate standing, or permission of instructor.

#### Course Objective:

1. Learn new mathematical content and connections between various fields of mathematics.
2. Be able to effectively teach this content at the appropriate level.
3. Draw conclusions about effective use of technology in teaching and learning mathematics.
4. Develop materials that could be used to effectively motivate gifted students.
5. Observe and critique various teaching styles and pedagogical methods for delivering content.

#### Course Requirements:

1. Each student should maintain a homework notebook containing written out solutions to most of the text problems. Students may work together to achieve a deeper understanding of the various approaches to problems.
2. Each student will be required to present [via overhead, on board, verbally, ...] problem solutions on a nearly daily basis.
3. There will be one in class exam, and several take home assignments.

Grading: A letter grade will be assigned based on the following.

- Presentations – 25%
- In class exam – 25%
- Take home – 25%
- Homework notebook – 25%

Text: Instructors notes along with sections from:

- Algebra Through Problem Solving – Hillman and Alexanderson
- Introduction to the Theory of Equations – Conkwright
- A Modern Course on the Theory of Equations – David Dobbs
- Abstract Algebra – Hillman and Alexanderson
- Theory of Equations – Uspensky

#### Special note:

This course combines a traditional in class setting with a flexible distance component. The opportunity to reflect on problems and projects over a longer time period, communicating via e-mail [Fall 2002] with the instructor and other participants and consulting with a Theory of Equations Website will provide an alternative learning environment.