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Graduate Programs—NEW COURSE PROPOSAL

DEPARTMENT NAME: MATHEMATICAL SCIENCES	COLLEGE OF: CHARLES E. SCHMIDT COLLEGE OF SCIENCE
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RECOMMENDED COURSE IDENTIFICATION: PREFIX _____ MGF _____ COURSE NUMBER 6516 _____ LAB CODE (L or C) _____ (TO OBTAIN A COURSE NUMBER, CONTACT ERUDOLPH@FAU.EDU) COMPLETE COURSE TITLE MATHEMATICS AND TECHNOLOGY	EFFECTIVE DATE (first term course will be offered) _____
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CREDITS: 3	TEXTBOOK INFORMATION: C. ROUSSEAU AND Y SAINT-AUBIN, MATHEMATICS AND TECHNOLOGY, SPRINGER 2008, ISBN-13: 978-0-387-69215-9
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GRADING (SELECT ONLY ONE GRADING OPTION): REGULAR PASS/FAIL _____ SATISFACTORY/UNSATISFACTORY _____

COURSE DESCRIPTION, NO MORE THAN 3 LINES:
 Technology has the potential to enhance the understanding and emphasize in the interconnectedness of mathematics. This class will explore applications of different classes of computer software. The student will learn how appropriate technology can be used to present, explore and build mathematical intuition.

PREREQUISITES W/MINIMUM GRADE: * PERMISSION OF THE INSTRUCTOR	COREQUISITES: NONE	OTHER REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL):
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PREREQUISITES, COREQUISITES & REGISTRATION CONTROLS SHOWN ABOVE WILL BE ENFORCED FOR ALL COURSE SECTIONS.
 *DEFAULT MINIMUM GRADE IS D-.

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE:
 PH. D IN MATHEMATICS

Other departments, colleges that might be affected by the new course must be consulted. List entities that have been consulted and attach written comments from each.

Richard Voss, rvoss@fau.edu, (561) 297-3358 _____
 Faculty Contact, Email, Complete Phone Number

SIGNATURES

SUPPORTING MATERIALS

Approved by: Department Chair: _____ College Curriculum Chair: _____ College Dean: _____ UGPC Chair: _____ Dean of the Graduate College: _____	Date: _____ _____ _____ _____	Syllabus —must include all details as shown in the UGPC Guidelines. Written Consent —required from all departments affected. Go to: http://graduate.fau.edu/gpc/ to download this form and guidelines to fill out the form.
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Email this form and syllabus to diamond@fau.edu and eqirjo@fau.edu one week **before** the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website by committee members prior to the meeting.
 FAUnewerseGrad—Revised January 2010

Course Syllabus for Mathematics and Technology

1. Course title/number, number of credit hours

Mathematics and Technology, MGF 6516, 3 credit hours

2. Course prerequisites

- a. Permission of the instructor

3. Course logistics

- a. Term – Spring 2011
- b. Notation if online course – N/A
- c. Class location and time (if classroom-based course) – To be determined

4. Instructor contact information

- a. Instructor's name – Richard Voss
- b. Office address – Science & Engineering Bldg, SE43, Room 210
- c. Office hours – To be determined
- d. Contact telephone number – office (561) 297-3358, fax (561) 297-2436
- e. E-mail address – rvoss@fau.edu

5. TA contact information (if applicable)

N/A

6. Course description

Technology has the potential to enhance the understanding and emphasize in the interconnectedness of mathematics. This class will explore applications of different classes of computer software. The student will learn how appropriate technology can be used to present, explore and build mathematical intuition.

7. Course objectives/student learning outcomes

Technology has the potential to enhance the understanding and emphasize the interconnectedness of mathematics. This class will explore application of different classes of computer software: Dynamical Geometry Software (DGS), Computer Algebra Systems (CAS) and Spreadsheets to various mathematical disciplines. Students will learn the appropriate use of technology in building mathematical intuition and suggesting conjectures for formal proofs. Hands-on examples from various mathematics disciplines will allow students to gain proficiency in the use of dynamical geometry software, computer algebra systems and spreadsheets.

- Master the understanding how and where technology can be used most effectively to build mathematical intuition and provide conjectures for formal proofs.
- Develop proof-writing skills and communication of mathematical ideas using technology.
- Apply the technological tools for demonstration and exploration of mathematical concepts.

8. Course evaluation method

There will be graded work in the classroom accounting for 30% of the student's cumulative performance, in class presentation, accounting for 30% of the student's cumulative performance, and a journal that accounts for 40% of the cumulative performance. The overall grade in the course is derived from the cumulative performance according to the following table.

9. Course grading scale (optional)

Cumulative Performance	Grade
90% - 100%	A
80% - 89%	B
70% - 79%	C
60% - 69%	D
0% - 59%	F

10. Policy on makeup tests, late work, and incompletes

If a student cannot attend an exam or hand in a homework project on time due to circumstances beyond their control then the instructor may assign appropriate make-up work. Students will not be penalized for absences due to participation in University-approved activities, including athletic or scholastics teams, musical and theatrical performances, and debate activities. These students will be allowed to make up missed work without any reduction in the student's final course grade. Reasonable accommodation will also be made for students participating in a religious observance. Also, note that grades of Incomplete ("I") are reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances. A grade of "I" will only be given under certain conditions and in accordance with the academic policies and regulations put forward in FAU's University Catalog. The student must show exceptional circumstances why requirements cannot be met. A request for an incomplete grade has to be made in writing with supporting documentation, where appropriate.

11. Special course requirements (if applicable)

N/A

12. Classroom etiquette policy (if applicable)

University policy on the use of electronic devices states: "In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions."

13. Disability policy statement

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodation due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) -- in Boca Raton, SU 133 (561-297-3880); in Davie, MOD 1 (954-236-1222); in Jupiter, SR 117 (561-799-8585); or at the Treasure Coast, CO 128 (772-873-3305) – and follow all OSD procedures.

14. Honor Code policy statement

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at http://www.fau.edu/regulations/chapter4/4.001_Honor_Code.pdf.

15. Required texts/readings

C. Rousseau and Y Saint-Aubin, *Mathematics and Technology*, Springer 2008, ISBN-13: 978-0-387-69215-9

16. Supplementary/recommended readings

- a. R. Courant and H. Robbins, *What is mathematics?* Oxford University Press, 1996. ISBN-13: 978-0195105193.
- b. A. Oldknow and R. Taylor, *Teaching Mathematics Using ICT (Information & Communications Technology)*, 2nd edition, Continuum 2004. ISBN-13: 978-0826470591.

17. Course topical outline

- Introduction to the spreadsheet in mathematics (2 weeks)
- Basic applications of spreadsheets in mathematic (2 weeks)
- Graphs of functions and their transformations (2 weeks)
- Introduction to Dynamical Geometry Software (2 weeks)
- Geometrical constructions and transformation (1 week)
- Graphs and representations of plane curves (2 weeks)
- Connections to science concepts and experimentation (1 week)
- Introduction to Computer Algebra Software and mathematics (2 weeks)
- Mathematical proof and technology (2 weeks)