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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 _____ MAA _____ COURSE NUMBER 6235 _____ LAB CODE (L or C) _____ (TO OBTAIN A COURSE NUMBER, CONTACT ERUDOLPH@FAU.EDU) COMPLETE COURSE TITLE APPLIED TIME SERIES ANALYSIS	EFFECTIVE DATE (first term course will be offered) _____
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CREDITS: 3	TEXTBOOK INFORMATION: TIME SERIES ANALYSIS WITH APPLICATIONS IN R BY JONATHAN D. CRYER AND KUNG-SIK CHAN, 2ND. ED. SPRINGER, 2008
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GRADING (SELECT ONLY ONE GRADING OPTION): REGULAR PASS/FAIL _____ SATISFACTORY/UNSATISFACTORY _____

COURSE DESCRIPTION, NO MORE THAN 3 LINES:
 THIS COURSE INTRODUCES FUNDAMENTAL CONCEPTS AND SOME COMMON MODELS FOR TIME SERIES DATA. TOPICS INCLUDE STATIONARITY, AUTOCOVARANCE FUNCTION AND SPECTRUM; INTEGRAL REPRESENTATION OF A STATIONARY TIME SERIES AND INTERPRETATION; ARMA, ARIMA AND GARCH MODELS; ESTIMATION AND FORECASTING; MULTIVARIATE TIME SERIES; USING R FOR THE ANALYSIS OF TIME SERIES; AND APPLICATIONS OF TIME SERIES.

PREREQUISITES W/MINIMUM GRADE:* STA 4234 APPLIED STATISTICS 1 (MINIMUM GRADE C) AND STA 6208 REGRESSION ANALYSIS (MINIMUM GRADE C)	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.

Lianfen Qian, lqian@fau.edu, (561) 297-2486 _____
 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.

Course Syllabus for Applied Time Series Analysis

1. Course title/number, number of credit hours

Applied Time Series Analysis, MAA 6235, 3 credit hours

2. Course prerequisites

STA 4234 Applied Statistics 1 (Minimum Grade C)

and

STA 6208 Regression Analysis (Minimum Grade C)

3. Course logistics

a. Term – Fall 2010

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 – Dr. Lianfen Qian

b. Office address – Science & Engineering Bldg, SE43, Room 244

c. Office hours – To be determined

d. Contact telephone number – office (561) 297-2486, fax (561) 297-2436

e. E-mail address – lqian@fau.edu

5. TA contact information (if applicable)

N/A

6. Course description

This course introduces fundamental concepts and some common models for time series data. Topics include stationarity, autocovariance function and spectrum; integral representation of a stationary time series and interpretation; ARMA, ARIMA and GARCH models; estimation and forecasting; multivariate time series; using R for the analysis of time series; and applications of time series.

7. Course objectives/student learning outcomes

Students who complete the course should be able to conduct classical time series model analysis using R, to interpret and report on their findings in writing and orally.

8. Course evaluation method

There will be graded homework assignments accounting for 35% of the student's cumulative performance, a midterm exam, accounting for 35% of the student's cumulative performance, and a final exam that accounts for 30% 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
>94%	A
>90% - 94%	A-
>87% - 90%	B+
>83% - 87%	B
>80% - 83%	B-
>75% - 80%	C+
>65% - 75%	C
>60% - 65%	C-
>57% - 60%	D+
>53% - 57%	D
>50% - 53%	D-
<50%	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

Time Series Analysis with Applications in R by Jonathan D. Cryer and Kung-Sik Chan, 2nd. Ed. Springer, 2008

16. Supplementary/recommended readings

- a. *The Analysis of Time Series: An Introduction*, 6th edition (2003), by Chris Chatfield. Chapman & Hall/CRC
- b. *Time Series Analysis and its Applications: With R examples*, 2nd edition (2006), by Shumway and Stoffer. Springer.
- c. *Introductory Statistics with R*, 2nd edition (2008), by Peter Dalgaard.

17. Course topical outline

- Introduction and History of Time Series (ca. 2 weeks)
- Characteristics of Time Series (ca. 2 weeks)
- Stationary Time Series (ca. 2 weeks)
- Trends (ca. 2 weeks)
- ARIMA and GARCH Models (ca. 3 weeks)
- Estimation and Forecasting (ca. 3 weeks)
- Multivariate Time Series (ca. 2 weeks)