MATH 447-002: Applied Time Series Analysis
Spring 2019 Course Syllabus

NJIT Academic Integrity Code: All Students should be aware that the Department of Mathematical Sciences takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

COURSE INFORMATION

Course Description: An introduction to applied univariate time series analysis. Topics include regression techniques for modeling trends, smoothing techniques (moving average smoothing, exponential smoothing), autocorrelation, partial auto-correlation, moving average, and autoregressive representation of series, Box-Jenkins models, forecasting, model selection, estimation, and diagnostic checking, Fourier analysis, and spectral theory for stationary processes. Effective From: Fall 2010.

Number of Credits: 3

Prerequisites: Math 341 with a grade of C or better or Math 333 with a grade of C or better.

Course-Section and Instructors

Course-Section	Instructor
Math 447-002	Professor A. Wang

Office Hours for All Math Instructors: Spring 2019 Office Hours and Emails

Required Textbook:

Title	*Time Series Analysis: With Applications in R*
Author	Cryer and Chan
Edition	2nd
Publisher	Springer
ISBN #	978-0387759586

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Monday, April 8, 2019**. It will be strictly enforced.

POLICIES

DMS Course Policies: All DMS students must familiarize themselves with, and adhere to, the Department of

Mathematical Sciences Course Policies, in addition to official university-wide policies. DMS takes these policies very seriously and enforces them strictly.

Grading Policy: The final grade in this course will be determined as follows:

Homework and Quizzes	30%
Midterm Exam	30%
Final Exam	40%

Your final letter grade will be based on the following tentative curve.

A	90 - 100	C	68 - 74
B+	85 - 89	D	50 - 67
B	80 - 84	F	0 - 49
C+	75 - 79		

Attendance Policy: Attendance at all classes will be recorded and is **mandatory**. Please make sure you read and fully understand the Math Department's Attendance Policy. This policy will be strictly enforced. AttendanceNote

Homework Policy: Homework problems will be assigned in class.

Exams: There will be two midterm exams held in class during the semester and one comprehensive final exam. Exams are held on the following days:

Midterm Exam	TBA
Final Exam Period	May 10 - 16, 2019

The final exam will test your knowledge of all the course material taught in the entire course. Make sure you read and fully understand the Math Department's Examination Policy. This policy will be strictly enforced.

Makeup Exam Policy: There will be **NO MAKE-UP QUIZZES OR EXAMS** during the semester. In the event an exam is not taken under rare circumstances where the student has a legitimate reason for missing the exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for missing the exam, e.g., a doctor's note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The student must also notify the Math Department Office/Instructor that the exam will be missed.

Cellular Phones: All cellular phones and other electronic devices must be switched off during all class times.

ADDITIONAL RESOURCES

Math Tutoring Center: Located in the Central King Building, Lower Level, Rm. G11 (See: Spring 2019 Hours)

Further Assistance: For further questions, students should contact their instructor. All instructors have regular office hours during the week. These office hours are listed on the Math Department's webpage for Instructor Office Hours and Emails.

All students must familiarize themselves with and adhere to the Department of Mathematical Sciences Course Policies, in addition to official university-wide policies. The Department of Mathematical Sciences takes these policies very seriously and enforces them strictly.

Accommodation of Disabilities: Disability Support Services (DSS) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please contact Chantonette Lyles, Associate Director of Disability Support Services at 973-596-5417 or via email at lyles@njit.edu. The office is located in Fenster Hall Room 260. A Letter of Accommodation Eligibility from the Disability Support Services office authorizing your accommodations will be required.

For further information regarding self identification, the submission of medical documentation and additional support services provided please visit the Disability Support Services (DSS) website at:

- http://www5.njit.edu/studentsuccess/disability-support-services/

Important Dates (See: Spring 2019 Academic Calendar, Registrar)

Date	Day	Event
January 22, 2019	T	First Day of Classes
February 1, 2019	F	Last Day to Add/Drop Classes
March 17 - 24, 2019	Su - Su	Spring Recess - No Classes, NJIT Open
April 8, 2019	M	Last Day to Withdraw
April 19, 2019	F	Good Friday - No Classes, NJIT Closed
May 7, 2019	T	Friday Classes Meet/ Last Day of Classes
May 8 & 9, 2019	W & R	Reading Days
May 10 - 16, 2019	F - R	Final Exam Period

Course Outline

Date	Lecture	Chapter	Topic
WEEK 1 01/22-01/24	1,2	Chapter 1	Introduction and Chapter 2 Fundamental Concepts (I)
WEEK 2 01/29-01/31	3,4	Chapter 2	Chapter 2 Fundamental Concepts (I)
WEEK 3 02/05-02/07	5,6	Chapter 2	Chapter 2 Fundamental Concepts (II)
WEEK 4 02/12-02/14	7,8	Chapter 3	Trends (I)
WEEK 5 2/19-2/21	9,10	Chapter 3	Trends (II)
WEEK 6 02/26-02/28	11,12	Chapter 4	Models for Stationary Time Series (I)
WEEK 7 03/05-03/07	13,14	Chapter 4	Models for Stationary Time Series (II)
WEEK 8 03/12-03/14	15,16	Chapter 5	Models for Nonstationary Time Series
WEEK 9 03/19-03/21	SPRING BREAK NO CLASSES		

WEEK 10 03/26-03/28	17,18	Chapter 6 Model Specification (I)	
WEEK 11 04/2-04/4	19,20	Chapter 6	Model Specification (II)
WEEK 12 04/09-04/11	21,22	Chapter 7	Parameter Estimation (I)
WEEK 13 04/16-04/18	23,24	Chapter 7	Parameter Estimation (II)
WEEK 14 04/23-04/25	25,26	Chapter 8	Model Diagnostic
WEEK 15 04/30	27	Chapter 9	Forecasting
WEEK 16 05/2	**REVIEW FOR FINAL EXAM**		