UNIVERSITY COLLEGE of the FRASER VALLEY

PAC FORM #2 (Page 1)

COURSE IMPLEMENTATION DATE:	September 1994
COURSE REVISED IMPLEMENTATION DATE:	September 1995
COURSE TO BE REVIEWED:	September 1999
(Four years after implementation date)	(MONTH YEAR format)

OFFICIAL COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department and the material will vary - see course syllabus available from instructor

FACULTY/DEPARTMENT: **MATHEMATICS**

MATH 390		**3**
COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS

TIME SERIES & FORECASTING
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

The course is an introduction to the basic ideas on time series analysis and to the Box-Jenkins ARIMA family of models in particular. Observations are assumed discrete and uniformly spaced. Spectral methods are discussed without mathematical depth. The emphasis of the course will be on practical implementation of the methods. Students will have access to software implementing these models, e.g. MINITAB and BMDP. Students will be expected to collate a time series of their own choice, appropriately analyse, report, and construct forecasts for it.

PREREQUISITES: **Math 270, 302**
COREQUISITES:

SYNONYMOUS COURSE(S)
(a) Replaces: ____________
(Course #)
(b) Cannot take: ____________ for further credit.
(Course #)

SERVICE COURSE TO:
(Department/Program)
(Department/Program)

TOTAL HOURS PER TERM: **75**
STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:	**30**	Hrs
Field Experience:		Hrs
Student Directed Learning:		Hrs
Other (Specify):		Hrs

TRAINING DAY-BASED INSTRUCTION
LENGTH OF COURSE:
HOURS PER DAY:

MAXIMUM ENROLLMENT:
EXPECTED FREQUENCY OF COURSE OFFERINGS:

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☐ No

AUTHORIZATION SIGNATURES:

Course Designer(s): ____________ Math Curriculum Committee

Chairperson: ____________ *(Curriculum Committee)*

Department Head: ____________ Barry Garner

Dean: ____________ J.D. Tunstall

PAC Approval in Principle Date:

PAC Final Approval Date: November 2, 1994

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

The course is designed to enable students to:

1. Become acquainted with the theoretical and practical difficulties associated with correlated observations, and the standard procedures for analysis of such data;
2. Become familiar with ARIMA models and how to use appropriate software to fit these models to data;
3. Understand the relation of widely used empirical techniques to the mathematical ARIMA models and spectral methods;
4. Be able to construct probabilistic forecasts from time series data.

METHODS:

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

Credit can be awarded for this course through PLAR (Please check :) ☐ Yes ☐ No

METHODS OF OBTAINING PLAR:

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

TEXT: TBA

Basic References:

1. Time series analysis, forecasting and control. G.E.P. Box and G.W. Jenkins. (Prentice-Hall, Inc. revised edition 1976)
2. Quantitative forecasting methods. N.R. Farnum and L.W. Stanton. (PWS-KENT Publishing Company, Boston, 1989)

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Project	10%
Assignments	20%
In-class tests	30%
Final Examination	40%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

First notions: Methods for forecasting, differencing, regression, moving averages, Fourier methods, Schuster's periodogram, updating, Holt-Winters' exponentially weighted moving averages, seasonality.

Stationarity: the autocorrelation function, the spectral density function, estimates, variances, smoothing.

Linear random shock models: the autoregressive moving average models, the Yule-Walker equations, admissibility and invertibility, differencing.

Minimum mean square error forecasts: stochastic model building and identification, diagnostic checking, monitoring forecasts.

Seasonal forecasting: simple models.

Linear transfer function models: the cross-correlation function, simple models relating two series.