

ITT Technical Institute
BU4610
Business Forecasting
Onsite Course

SYLLABUS

Credit hours: 4.5

Contact/Instructional hours: 45 (45 Theory Hours)

Prerequisite(s) and/or Corequisite(s):

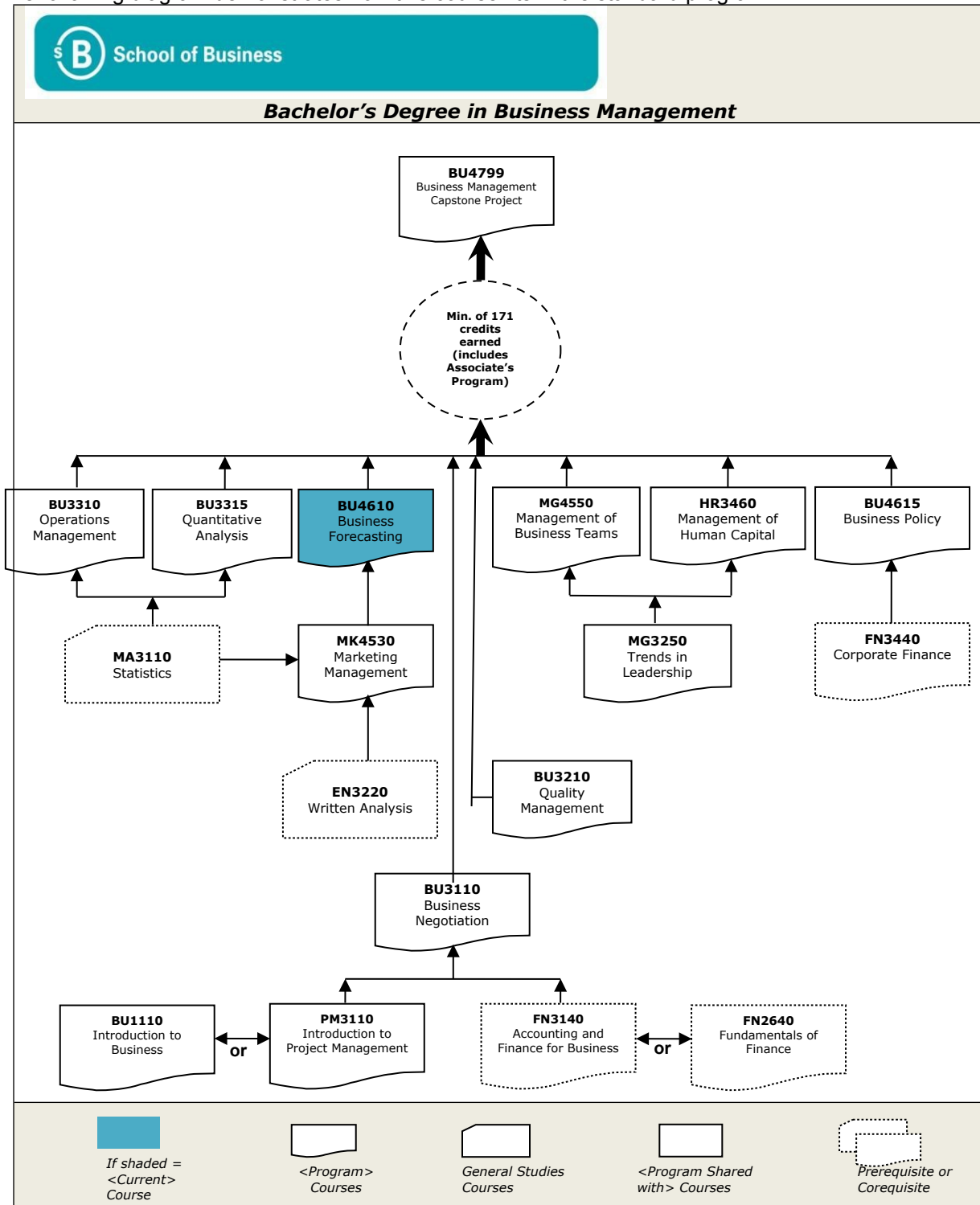
Prerequisites: MK4530 Marketing Management

Course Description:

This course involves topics in business valuation, risk and return, options and derivatives, and problem-solving skills that can be used to evaluate a business. Students study financial forecasting and the influence of corporate governance in valuing an enterprise.

Where Does This Course Belong?

The following diagram demonstrates how this course fits in the standard program:



NOTE: Refer to the catalog for the state-specific course and program information, if applicable.

Course Summary

Major Instructional Areas

1. Overview of Corporate Financial Management (CFM)
2. Methods of Valuation of Assets
3. Risk and Return
4. Capital Management
5. Forecasting of Human and Other Resources
6. Meeting Future Demands

Course Objectives

1. Project risk based on investment choices.
2. Forecast the need for human and other resources in the future.
3. Evaluate market environment and sales estimates into future periods.
4. Prepare for working capital and inventory needs with changing sales forecasts.
5. Demonstrate problem-solving skills in areas that require mathematical modeling.
6. Solve complex problems that compare and contrast different decisions.

Learning Materials and References

Required Resources

Complete Textbook Package	New to this Course	Carried over from Previous Course(s)	Required for Subsequent Course(s)
Hanke, J. E., & Wichern, D. (2009). <i>Business forecasting</i> (9th ed.). Upper Saddle River, NJ: Prentice Hall.	■		■

Recommended Resources

Books, Professional Journals

- American Mathematical Society Bookstore
<http://www.ams.org/cgi-bin/bookstore/bookpromo/journals>
- Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., & Martin, R. K. (2011). *An introduction to management science: Quantitative approaches to decision making* (13th ed.). Mason, OH: South-Western.
- Cooper, D., & Schindler, P. (2006). *Business research methods* (11th ed.). New York, NY: McGraw-Hill.
- Journal of the American Statistical Association

<http://www.amstat.org/publications/jasa.cfm>

- Journal of Time Series Analysis

[http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1467-9892](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1467-9892)

- Statistical Methodology: The Official Journal of the International Indian Statistical Association

<http://www.journals.elsevier.com/statistical-methodology/>

- Statistical Science Web: Main Journal List

<http://www.statsci.org/jourlist.html>

Go to this website for access to more than 50 peer-reviewed journals on quantitative analysis, linear analysis and treatment and exploration of course topics.

ITT Tech Virtual Library (accessed via Student Portal | <https://studentportal.itt-tech.edu>)

- Periodicals> EbscoHost Database
 - Drucker, P. F., Dyson, E., Handy, C., Saffo, P., & Senge, P. M. (1997). Looking ahead: Implications of the present. (Cover story). *Harvard Business Review*, 75(5), 18-32.
 - Saffo, P. (2007). Six rules for effective forecasting. (Cover story). *Harvard Business Review*, 85(7/8), 122-131.

NOTE: All links are subject to change without prior notice.

Information Search

Use the following keywords to search for additional online resources that may be used for supporting your work on the course assignments:

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- Business forecasting
- Forecasting techniques
- Statistical inference
- Descriptive statistics
- Probability theory
- Linear regression analysis
- Multivariate regression analysis
- Autocorrelation
- Time series components
- ARIMA
- Moving averages
- Smoothing
- Box-Jenkins
- Managing forecasting process
- Sensitivity analysis
- Contingency planning

Suggested Learning Approach

In this course, you will be studying individually and within a group of your peers. As you work on the course deliverables, you are encouraged to share ideas with your peers and instructor, work collaboratively on projects and team assignments, raise critical questions, and provide constructive feedback.

Use the following advice to receive maximum learning benefits from your participation in this course:

DO	DON'T
<ul style="list-style-type: none">▪ Do take a proactive learning approach.▪ Do share your thoughts on critical issues and potential problem solutions.▪ Do plan your course work in advance.▪ Do explore a variety of learning resources in addition to the textbook.▪ Do offer relevant examples from your experience.▪ Do make an effort to understand different points of view.▪ Do connect concepts explored in this course to real-life professional situations and your own experiences.	<ul style="list-style-type: none">▪ Don't assume there is only one correct answer to a question.▪ Don't be afraid to share your perspective on the issues analyzed in the course.▪ Don't be negative about the points of view that are different from yours.▪ Don't underestimate the impact of collaboration on your learning.▪ Don't limit your course experience to reading the textbook.▪ Don't postpone your work on the course deliverables – work on small assignment components every day.

Course Outline

<p>Unit 1: INTRODUCTION TO FORECASTING AND BASIC STATISTICS REVIEW</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Forecast the need for human and other resources in the future. • Define the nature and purpose of forecasting. • Demonstrate an understanding of basic statistical concepts through discussion and Q&A. • Practicing solving problems in relevant software. • Prepare to apply statistical techniques in the following units. • Understand and define terms related to forecasting and basic statistics. • Recognize, select, and apply key formulas. 			<p>Out-of-class work: 4 hours</p>
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
<ul style="list-style-type: none"> • Hanke & Wichern, Chapter 1 (pp. 1-9) • Hanke & Wichern, Chapter 2 (pp. 15-45) 	Assignment	Unit 1 Assignment 1: Introduction to Forecasting and Basic Statistics Review	2%

<p>Unit 2: DATA PATTERNS AND FORECASTING TECHNIQUES INTRODUCTION</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Find specific, relevant, timely, reliable, and accurate data. • Define terms. • Explore time series data patterns. • Choose a forecasting technique. • Measure forecast error. • Determine the adequacy of a forecasting technique. • Interpret figures, charts, and tables. • Apply computer software solutions. 			<p>Out-of-class work: 7 hours</p>
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
<ul style="list-style-type: none"> • Hanke & Wichern, Chapter 3 (pp. 62-87) 	Assignment	Unit 2 Assignment 1: Data Patterns and Forecasting Techniques Introduction	2%
	Quiz	Unit 2 Quiz 1	2.5%

Unit 3: MOVING AVERAGES

Upon completion of this unit, students are expected to:

- Identify good strategies for evaluating forecasting methods.
- Demonstrate forecasting based on averaging.
- Use exponential smoothing methods to determine the current level and adjust for trends.
- Define terms.
- Recognize, select, and apply key formulas.

Out-of-class work:
7 hours

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
<ul style="list-style-type: none"> • Hanke & Wichern, Chapter 4 (pp. 107-136) 	Assignment	Unit 3 Assignment 1: Moving Averages	2%
	Quiz	Unit 3 Quiz 2	2.5%

Unit 4: TIME SERIES ANALYSIS

Upon completion of this unit, students are expected to:

- Identify component factors that influence each of the values in a series.
- Interpret trends and trend lines and curves.
- Explain seasonal indexes; calculate seasonally adjusted data.
- Forecast seasonal time series using decomposition and reversed decomposition techniques.
- Define terms.
- Recognize, select, and apply key formulas.

Out-of-class work:
7 hours

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
<ul style="list-style-type: none"> • Hanke & Wichern, Chapter 5 (pp. 165-192) 	Assignment	Unit 4 Assignment 1: Time Series Analysis	2%
	Quiz	Unit 4 Quiz 3	2.5%
	Project	Project Part 1: Team Analysis (ePortfolio)	10%

Unit 5: SIMPLE LINEAR REGRESSION

Upon completion of this unit, students are expected to:

- Recognize, select, and apply key formulas.
- Interpret figures, charts, and tables.
- Apply least squares method regression of a two-variable linear relationship.
- Explain utility of line of best fit.
- Understand, define, and discuss terms related to simple linear regression and use it in an example. Consider application in several different business scenarios.
- Define and calculate standard error of the estimate concept.
- Synthesize forecasting with fitted regression line.
- Define and calculate decomposition of variance.
- Explain variability relative to the coefficient of determination.
- Use hypothesis testing to determine the true relationship between X and Y.
- Calculate regression and interpret calculations on computer software.

Out-of-class work:
8 hours

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
<ul style="list-style-type: none"> • Hanke & Wichern, Chapter 6 (pp. 222-253) 	Assignment	Unit 5 Assignment 1: Simple Linear Regression Case Analysis	2%
	Quiz	Unit 5 Quiz 4	2.5%

Unit 6: MULTIPLE REGRESSION ANALYSIS

Upon completion of this unit, students are expected to:

- Calculate regression and interpret calculations on computer software.
- Apply multiple regression to predict dependent variables.
- Distinguish between correlation and multiple regression and pertinent calculated outcomes.
- Determine and interpret regression coefficients.
- Infer from multiple regression outcomes based on computer calculations.
- Apply the dummy variable concept when a qualitative factor is an influence.
- Create and interpret figures, charts, and tables.
- Understand and define terms related to multiple regression and regression techniques.
- Recognize, select, and apply key formulas.

Out-of-class work:
11 hours

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
<ul style="list-style-type: none"> • Hanke & Wichern, Chapter 7 (pp. 281-312) 	Assignment	Unit 6 Assignment 1: Fantasy Baseball	2%
	Exam	Midterm	15%

Unit 7: REGRESSION WITH TIME SERIES DATA

Upon completion of this unit, students are expected to:

- Recognize, select, and apply key formulas.
- Recognize autocorrelation in time series data.
- Estimate the autocorrelation coefficient by calculating the Durbin-Watson statistic.
- Solve autocorrelation problems.
- Explain the concept of nonconstant variability, which is heteroscedasticity, and apply in an example.
- Determine and plot residuals; analyze outcomes.
- Apply regression to forecast seasonal data.
- Understand and define terms related to regression and time series data; apply to real-life business scenarios.

Out-of-class work:
11 hours

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
<ul style="list-style-type: none"> • Hanke & Wichern, Chapter 8 (pp. 339-398) 	Assignment	Unit 7 Assignment 1: Company of Your Choice	2%
	Quiz	Unit 7 Quiz 5	2.5%

Unit 8: THE ARIMA METHODOLOGY

Upon completion of this unit, students are expected to:

- Understand and define terms related to forecasting and basic statistics.
- Recognize, select, and apply key formulas.
- Interpret figures, charts, and tables.
- Recognize and select models that forecast on historical patterns in the data.
- Explain the pertinence of the Box-Jenkins methodology of forecasting by applying it in a business scenario; discuss outcomes.
- Examine components of model building strategy.
- Identify and evaluate important elements of the ARIMA model.
- Understand and define terms related to the ARIMA methodology.

Out-of-class work:
9 hours

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
<ul style="list-style-type: none"> • Hanke & Wichern, Chapter 9 (pp. 399-445) 	Assignment	Unit 8 Assignment 1: Case Studies	2%
	Quiz	Unit 8 Quiz 6	2.5%

Unit 9: JUDGMENTAL FORECASTING AND ADJUSTMENTS

Upon completion of this unit, students are expected to:

- Demonstrate an understanding of important elements of judgmental forecasting.
- Identify and select useful tools in making judgments about the future.
- Apply preliminary and revised probabilities using Bayes' theorem.
- Draw a decision tree diagram.
- Demonstrate an understanding of neural networks as a tool to forecast through computer calculation and application to real-life business scenarios.
- Compare and contrast judgment-forecasting situations where statistical methods are not practical.

Out-of-class work:
9 hours

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
<ul style="list-style-type: none"> • Hanke & Wichern, Chapter 10 (pp. 483-496) 	Assignment	Unit 9 Assignment 1: Case Studies	2%
	Quiz	Unit 9 Quiz 7	2.5%
	Project	Project Part 2: Team PowerPoint Presentation	10%

Unit 10: MANAGING THE FORECASTING PROCESS

Upon completion of this unit, students are expected to:

- Evaluate both strategic and operational levels of forecasting.
- Evaluate the value of time series decomposition, regression analysis, Box-Jenkins, and other models.
- Define effective, ongoing forecasting effort.
- Compare and apply major forecasting models.
- Consider forecasting from the "what if" position; what would you expect under certain conditions?
- Assess forecasting steps, responsibility, costs, and information systems.
- Evaluate factors for decision-making processes and interface with management.
- Predict the future of forecasting from practical and scientific points of view.

Out-of-class work:
6 hours

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
<ul style="list-style-type: none"> • Hanke & Wichern, Chapter 11 (pp. 503-512) 	Assignment	Unit 10 Assignment 1: Case Studies	2%
	Quiz	Unit 10 Quiz 8	2.5%

Unit 11: TEAM PROJECT PRESENTATION AND FINAL EXAM

Upon completion of this unit, students are expected to:

- Solve complex problems that compare and contrast different decisions.
- Collaborate on a team to analyze, solve, select, and defend an optimal solution for an assigned case study problem.
- Present and defend the team's case study problem solution in the classroom environment.

Out-of-class work:
12 hours

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
• None	Exam	Final Exam	20%
	Project	Project Part 2: Team PowerPoint - Presentation	5%

Note: Your instructor may add a few learning activities that will change the grade allocation for each assignment in a category. The overall category percentages will not change.

Evaluation and Grading

Evaluation Criteria

The graded assignments will be evaluated using the following weighted categories:

Category	Weight
Assignment	20%
Quiz	20%
Exam	35%
Project	25%
TOTAL	100%

Grade Conversion

The final grades will be calculated from the percentages earned in the course, as follows:

Grade	Percentage	Credit
A	90–100%	4.0
B+	85–89%	3.5
B	80–84%	3.0
C+	75–79%	2.5
C	70–74%	2.0
D+	65–69%	1.5
D	60–64%	1.0
F	<60%	0.0

Academic Integrity

All students must comply with the policies that regulate all forms of academic dishonesty or academic misconduct, including plagiarism, self-plagiarism, fabrication, deception, cheating, and sabotage. For more information on the academic honesty policies, refer to the Student Handbook and the Course Catalog.

Out of Class Work

Unit Number	Title of Activity (for work completed OUTSIDE of class)	Type of Activity	Estimated Time of Activity (minutes)
1	Chapters 1 and 2	Reading	130
1	Unit 1 Assignment 1	Assignment	120
2	Chapter 3	Reading	100
2	Review Unit 1 material, class prep	Prep	120
2	Unit 2 Assignment 1	Assignment	120
2	Unit 2 Quiz 1	Quiz Prep	90
3	Chapter 4	Reading	110
3	Review Unit 2 material, class prep	Prep	120
3	Unit 3 Assignment 1	Assignment	120
3	Unit 3 Quiz 2	Quiz Prep	90
4	Chapter 5	Reading	100
4	Review Unit 3 material, class prep	Prep	120
4	Unit 4 Assignment 1	Assignment	120
4	Unit 4 Quiz 3	Quiz Prep	90
5	Chapter 6	Reading	120
5	Review Unit 4 material, class prep	Prep	120
5	Unit 5 Assignment 1	Assignment	120
5	Unit 5 Quiz 4	Quiz Prep	90
6	Chapter 7	Reading	120
6	Review Unit 5 material, class prep	Prep	120
6	Unit 6 Assignment 1	Assignment	120
6	Unit 6 Midterm Exam	Exam Prep	300
7	Chapter 8	Reading	320
7	Review Unit 6 material, class prep	Prep	120
7	Unit 7 Assignment 1	Assignment	120
7	Unit 7 Quiz 5	Quiz Prep	90
8	Chapter 9	Reading	180
8	Review Unit 7 material, class prep	Prep	120
8	Unit 8 Assignment 1	Assignment	120
8	Unit 8 Quiz 6	Quiz Prep	90
9	Chapter 10	Reading	50
9	Review Unit 8 material, class prep	Prep	120
9	Unit 9 Assignment 1	Assignment	120
9	Unit 9 Project Part 1	Project	180
9	Unit 9 Quiz 7	Quiz Prep	90
Unit Number	Title of Activity (for work completed OUTSIDE of class)	Type of Activity	Estimated Time of

			Activity (minutes)
10	Chapter 11	Reading	30
10	Review Unit 9 material, class prep	Prep	120
10	Unit 10 Assignment 1	Assignment	120
10	Unit 10 Quiz 8	Quiz Prep	90
11	Review Unit 10 material, class prep	Prep	120
11	Unit 11 Final Exam	Exam Prep	300
11	Unit 11 Project Part 2	Project	180

(End of Syllabus)