

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 03/04/2015

**Next Review:** 08/01/2018

**COURSE TITLE:** Principles of Accounting I

**COMMON COURSE NUMBER:** ACG2001

**EFFECTIVE TERM:** Fall 2015

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab:

Clinic:

Other:

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** This course provides an introductory study of the fundamental principles of recording, summarizing and reporting the financial activities of proprietorships. Advisement note: Students achieving less than a grade of "C" will not be allowed to continue to ACG2011, Principles of Accounting II. A grade of less than "C" is not transferable to upper division.

### UNIT TITLES

1. Introduction
2. Accounting Principles and Practices
3. The Accounting Cycle
4. Completion of the Accounting Cycle
5. Accounting for a Merchandising Enterprise
6. Periodic Reporting for a Merchandising Enterprise
7. Deferrals and Accruals
8. Accounting Information Systems
9. Cash
10. Receivables and Temporary Investments
11. Inventories

### EVALUATION:

Evaluation may include but is not limited to the following:

Exams, Quizzes, Presentations, Portfolios, Discussions, Class Participation, Attendance, Projects, Co-ops, Practicum, Internships, Externships, and Research Reports.

### UNITS

#### Unit 1 Introduction

#### General Outcome

- 1.0 The students should be able to explain the nature and purpose of accounting.

Specific Learning Outcomes

- 1.1 Define accounting.
- 1.2 Describe the evolution of accounting.
- 1.3 Identify reasons for the study of accounting.
- 1.4 List various types of accounting activities.
- 1.5 Identify users of accounting information.
- 1.6 Describe the relationship of accounting to other fields of study.

**Unit 2 Accounting Principles and Practices**General Outcome

- 2.0 The students should be able to describe how generally accepted accounting principles have evolved to form the underlying basis for accounting practice.

Specific Learning Outcomes

- 2.1 Explain the meaning of the term generally accepted accounting principles.
- 2.2 Define assets, liabilities, and owner's equity.
- 2.3 Describe the causes of change in owners' equity, specifically:
  1. Owner investments
  2. Owner withdrawals
  3. Net income
  4. Net loss
- 2.4 Explain the effect of various transactions on the accounting equation.
- 2.5 Prepare a simple:
  1. Income Statement
  2. Statement of Owner's Equity
  3. Balance Sheet
- 2.6 Explain the importance of Ethics in business and accounting and the reason for the enactment of the SARBANES OXLEY Act.

**Unit 3 The Accounting Cycle**General Outcome

- 3.0 The students should be able to perform the following major steps in the accounting cycle: analyzing transactions, recording transactions, posting to accounts, and preparation of a trial balance.

Specific Learning Outcomes

- 3.1 Define a ledger.
- 3.2 Define a journal
- 3.3 Define an account.
- 3.4 Distinguish between a ledger and a journal.
- 3.5 Explain how business transactions are recorded using the double-entry accounting method.
- 3.6 List the general rules for debits and credits.
- 3.7 Journalize in general journal form and post transactions to a general ledger.
- 3.8 Prepare a trial balance.

**Unit 4 Completion of the Accounting Cycle**

General Outcome

- 4.0 The students should be able to perform the following steps in the accounting cycle: the preparation of financial statements and closing procedures.

Specific Learning Outcomes

- 4.1 Distinguish between the accrual basis and cash basis of accounting.  
 4.2 Prepare financial statements.  
 4.3 Journalize and post adjusting entries.  
 4.4 Journalize and post closing entries.  
 4.5 Prepare a post-closing trial balance.

**Unit 5 Accounting for a Merchandising Enterprise**General Outcome

- 5.0 The students should be able to describe the accounting for businesses that buy and sell merchandise.

Specific Learning Outcomes

- 5.1 Recognize the accounts needed for a merchandising business.  
 5.2 Differentiate between the income statement for a non-merchandising business and a merchandising business.  
 5.3 Compute Cost of Goods Sold.  
 5.4 Prepare journal entries to record inventory purchases and sales for a merchandising business.  
 5.5 Prepare journal entries for merchandise inventory adjustments at year-end.  
 5.6 Prepare journal entries under the perpetual inventory method for the purchase, sale, return and payment for inventory within the discount period and after.  
 5.7 Describe and compare the periodic inventory method and perpetual inventory method.  
 5.8 Compute cash discounts.  
 5.9 Distinguish between FOB shipping point and FOB destination.

**Unit 6 Periodic Reporting for a Merchandising Enterprise**General Outcome

- 6.0 The students should be able to prepare financial statements, adjusting entries, closing entries, and a post-closing trial balance for a merchandising enterprise.

Specific Learning Outcomes

- 6.1 Describe alternative formats and terminology for the financial statements of a merchandising enterprise.  
 6.2 Prepare financial statements for a merchandising enterprise.  
 6.3 Journalize adjusting and closing entries for a merchandising enterprise.

**Unit 7 Deferrals and Accruals**General Outcome

- 7.0 The students should be able to prepare adjusting entries for deferrals and accruals.

Specific Learning Outcomes

- 7.1 Explain why certain accounts require adjustments at the end of an accounting period.

- 7.2 Distinguish between deferral and accrual adjusting entries.
- 7.3 Journalize appropriate adjusting entries for the accrual of:
  - 1. Expenses
  - 2. Revenues
- 7.4 Journalize appropriate adjusting entries based on the initial recording of the item for deferral of:
  - 1. Expenses
  - 2. Revenues
- 7.5 Explain the time period, revenue-recognition principle and matching principle.

## **Unit 8 Accounting Information Systems**

### General Outcome

- 8.0 The students should be able to describe how an accounting system provides information to management for planning and controlling operations.

### Specific Learning Outcomes

- 8.1 Describe the broad principles of accounting systems.
- 8.2 Describe the use of special journals.
  - 1. Sales journal
  - 2. Purchases journal
  - 3. Cash receipts journal
  - 4. Cash payments journal
- 8.3 State the objectives of an internal control and accounting system design.
- 8.4 Describe the relationship between subsidiary ledgers and control accounts.

## **Unit 9 Cash**

### General Outcome

- 9.0 The students should be able to describe the concepts of internal control over cash; operations of a petty cash fund; use of a checking account; and procedures for monthly bank reconciliations.

### Specific Learning Outcomes

- 9.1 Detail the composition of cash, and how cash is presented on a balance sheet.
- 9.2 Explain various controls and procedures related to cash receipts and disbursements.
- 9.3 Prepare a bank reconciliation.
- 9.4 Journalize the cash adjusting entries needed as a consequence of bank reconciliations.
- 9.5 Prepare entries to establish and replenish a petty cash fund.

## **Unit 10 Receivables and Temporary Investments**

### General Outcome

- 10.0 The students should be able to describe the accounting for short-term investment and receivables.

### Specific Learning Outcomes

- 10.1 Distinguish between trade and non-trade receivables.
- 10.2 Distinguish between the direct write-off and allowances methods.
- 10.3 Prepare entries for uncollectible accounts using the direct write-off and allowance methods.

- 10.4 Differentiate between the income statement and balance sheet approaches to estimating bad debts.
- 10.5 Prepare entries used by a retailer to account for credit card sales.
- 10.6 Account for notes receivable.
  - 1. Interest-bearing notes
  - 2. Non-interest-bearing notes

## **Unit 11 Inventories**

### General Outcome

- 11.0 The students should be able to describe the basis for inventory valuation.

### Specific Learning Outcomes

- 11.1 Define merchandise inventory.
- 11.2 Calculate the ending inventory and cost of goods sold under a periodic system using the following inventory methods:
  - 1. Specific identification
  - 2. First-in First-out (FIFO)
  - 3. Last-in Last-out (LIFO)
  - 4. Weighted-Average
  - 5. Determine ownership of goods
- 11.3 Describe factors considered when selecting an inventory method and the effects of such a selection on financial statements.
- 11.4 Apply the lower-of-cost-or-market rule.
- 11.5 Explain the differences between the periodic and perpetual inventory systems.
- 11.6 Explain internal control issues and procedures for inventory.
- 11.7 Describe the impact of inventory errors on financial statements.
- 11.8 Under a perpetual inventory system, calculate ending inventory and cost of goods sold using FIFO and LIFO and weighted average inventory methods.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 03/12/2015

**Next Review:** 08/01/2019

**COURSE TITLE:** PRINCIPLES OF ACCOUNTING II

**COMMON COURSE NUMBER:** ACG2011

**EFFECTIVE TERM:** Fall 2015

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab:

Clinic:

Other:

### College Placement Testing Requirements

N/A

### Prerequisite

( ACG2001 with a minimum grade of C )

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** As the second course of the financial accounting series, this course concludes the study of financial accounting. Topics covered include plant assets, current liabilities, payroll, corporations, partnerships and cash flow statements. Advisement note: Students achieving less than a grade of "C" will not be allowed to continue on to ACG2071, Managerial Accounting. A grade of less than "C" is not transferable to upper division.

### UNIT TITLES

1. Plant Assets and Intangible Assets
2. Current Liabilities and Payroll
3. Forms of Business Organization
4. Stockholders' Equity, Earnings, and Dividends
5. Long-Term Liabilities and Investments in Bonds
6. Investments in Stocks
7. Statement of Cash Flows
8. Financial Statement Analysis

### EVALUATION:

Evaluation may include, but is not limited to the following:

Exams, Quizzes, Presentations, Portfolios, Discussions, Class Participation, Attendance, Projects, Co-ops, Practicum, Internships, Externships, and Research Reports.

### UNITS

#### Unit 1      **Plant Assets and Intangible Assets**

##### General Outcome

- 1.0      The student should be able to describe the accounting and reporting of plant and intangible assets and natural resources.

##### Specific Learning Outcomes

- 1.1 Prepare entries for cash and lump-sum purchases of property, plant and equipment.
- 1.2 Define "depreciation" as the term is used by accountants.
- 1.3 Identify factors that affect the determination of service life.
- 1.4 Compute depreciation by using the following methods:
  1. Straight-line
  2. Units-of activity
  3. Declining balance
- 1.5 Compute book value.
- 1.6 Journalize entries for disposal of property, plant and equipment assets for the following circumstances:
  1. Write-off
  2. Sale of the asset
  3. Trade-in of similar assets
- 1.7 Define "depletion" as the term is used by accountants.
- 1.8 Compute depletion for a given cost, residual value, and estimated output.
- 1.9 Journalize adjusting entries for the recording of:
  1. Depreciation
  2. Depletion
- 1.10 Identify and describe various types of intangible assets.
- 1.11 Calculate and record amortization of intangible assets

## **Unit 2 Current Liabilities and Payroll**

### General Outcome

- 2.0 The students should be able to describe the accounting for payrolls, short-term financing devices, and other current liabilities.

### Specific Learning Outcomes

- 2.1 Describe the occurrence and accounting for typical current liabilities.
- 2.2 Record in general journal form entries relating to notes payable.
- 2.3 Define contingent liabilities and discern when these should be recorded in the accounts, and when footnote disclosure is appropriate.
- 2.4 Record in general journal form transactions related to product warranties.
- 2.5 Describe payroll accounting.
- 2.6 Prepare general journal entries to accrue salaries and pay employees.
- 2.7 Prepare entries to accrue payroll-related taxes for employers.

## **Unit 3 Forms of Business Organization**

### General Outcome

- 3.0 The students should be able to describe and illustrate business organizational characteristics that have accounting implications.

### Specific Learning Outcomes

- 3.1 Describe the distinguishing characteristics of a sole proprietorship.
- 3.2 Describe the distinguishing characteristics of a partnership.
- 3.3 Prepare journal entries to record the investments of partners, the distribution of net income or loss to the partners, and the liquidation of the partnership.

- 3.4 Prepare journal entries to record the withdrawal, either voluntarily or by death, of a partner from the partnership.
- 3.5 Prepare journal entries to reflect the admission of a new partner to the partnership.
- 3.6 Describe a "corporation" and explain how corporate management is structured.
- 3.7 List the advantages and disadvantages of being organized as a corporation.
- 3.8 Describe the rights possessed by common stockholders.
- 3.9 List and explain the steps followed in organizing a new corporation
- 3.10 Prepare journal entries to record issuing common stock
- 3.11 Define treasury stock and prepare journal entries to record the acquisition and sale of treasury stock.
- 3.12 Describe the major basic rights of common stockholders and compare them to those of preferred stockholders.
- 3.13 Describe the characteristics of preferred stock
- 3.14 Prepare a journal entry to issue preferred stock.
- 3.15 Prepare the stockholders' equity section of the balance sheet.
- 3.16 Define par value, stated value, market value.
- 3.17 Distinguish between authorized, issued and outstanding shares.
- 3.18 Describe and illustrate the accounting for organizational costs.

#### **Unit 4 Stockholders' Equity, Earnings, and Dividends**

##### General Outcome

- 4.0 The students should be able to develop the accounting for stockholders' equity, earnings, and dividends.

##### Specific Learning Outcomes

- 4.1 Explain "retained earnings."
- 4.2 Describe and prepare entries to restrict retained earnings.
- 4.3 Describe and record prior period adjustments.
- 4.4 Prepare a statement of retained earnings.
- 4.5 Prepare journal entries to record cash dividends.
- 4.6 Allocate dividends between preferred and common stockholders.
- 4.7 Explain the effect of stock dividends and stock splits on the stockholders' equity section of the balance sheet.
- 4.8 Prepare a comprehensive stockholders' equity section of the balance sheet, including all information needed for fair disclosure.
- 4.9 Prepare a corporate income statement which includes income taxes, unusual items, and earnings per share.

#### **Unit 5 Long-Term Liabilities and Investments in Bonds**

##### General Outcome

- 5.0 The students should be able to develop the accounting for long-term obligations and investments in stocks and bonds.

##### Specific Learning Outcomes

- 5.1 Evaluate the alternatives for financing on a long-term basis.
- 5.2 Describe the differences among various types of bonds.
- 5.3 Record the entries associated with a bond issue sold at face value.



- 5.4 Explain the valuation of investments and financial statement presentation.
- 5.5 Record the entries for a bond issue sold at a discount and sold at a premium, using the straight-line amortization method.
- 5.6 Determine the items that impact the selling price of a bond.
- 5.7 Record the entries for the redemption of bonds.
- 5.8 Determine the carrying value of a bond.
- 5.9 Distinguish between a capital lease and an operating lease and record the entries associated with the capitalization of a lease.
- 5.10 Explain why a corporation would invest in the bonds of other corporations.
- 5.11 Account for investments in bonds:
  - 1. At acquisition
  - 2. While the corporation owns them
  - 3. At the time of sale

## **Unit 6 Investments in Stocks**

### General Outcome

- 6.0 The students should be able describe and illustrate the accounting for long-term investments in stocks.

### Specific Learning Outcomes

- 6.1 Explain how and why a business may make investments in stocks of other corporations.
- 6.2 Prepare journal entries to record invest-ments in stock by the cost method.
- 6.3 Prepare journal entries to record invest-ments in stock by the equity method.
- 6.4 Prepare journal entries to record the sale of investments in stocks.
- 6.5 Explain the reasons for issuing consolidated financial statements.

## **Unit 7 Statement of Cash Flows**

### General Outcome

- 7.0 The students should be able to prepare a Statement of Cash Flow by analyzing accounts and reporting the needed information to decision makers.

### Specific Learning Outcomes

- 7.1 Explain the purpose of the Statement of Cash Flow.
- 7.2 Explain the meaning of the terms "cash" and "cash equivalents."
- 7.3 List and describe the elements of the Statement of Cash Flow.
- 7.4 Distinguish between the Direct and Indirect methods of preparing a Statement of Cash Flow
- 7.5 Calculate cash flows from operating activities by the indirect method.
- 7.6 Calculate cash flows from investing activities.
- 7.7 Calculate cash flows from financing activities.
- 7.8 Prepare a Statement of Cash Flow.
- 7.9 Explain the nature of non-cash activities.

## **Unit 8 Financial Statement Analysis**

### General Outcome

- 8.0 The students should be able to analyze financial statements and determine solvency and profitability.

Specific Learning Outcomes

- 8.1 Analyze comparative financial statements.
- 8.2 Calculate trend percentages.
- 8.3 Prepare common-size financial statements.
- 8.4 Calculate ratios that analyze a company's earnings performance:
  1. Rate of return on total assets
  2. Rate of return on common stockholders' equity
  3. Earnings per share
  4. Price-earnings ratio
  5. Dividend yield rate
- 8.5 Calculate ratios that analyze a company's long-term debt-paying ability:
  1. Times interest earned
  2. Debt to total assets ratio
  3. Stockholders' equity to total assets ratio
- 8.6 Calculate ratios that analyze a company's short-term debt-paying ability:
  1. Working capital
  2. Current ratio
  3. Quick ratio
  4. Inventory turnover
  5. Accounts receivable turnover

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2008

**Next Review:** 08/01/2013

**COURSE TITLE:** MANAGERIAL ACCOUNTING

**COMMON COURSE NUMBER:** ACG2071

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** As the last course of the series, this course concludes the study of manufacturing accounting and managerial accounting. Topics covered include financial statement analysis, job order costing, the process cost system, cost behavior, cost-volume-profit analysis, budgeting, profit analysis, responsibility accounting, differential analysis, capital investment analysis and decision-making under uncertainty. Advisement note: Students achieving less than a grade of "C" may experience academic difficulty in higher level accounting courses. A grade of less than C is not transferable to upper division.

### UNIT TITLES

1. Process Cost System
2. Cost Behavior and Cost Estimation
3. Cost-Volume-Profit Analysis
4. Budgeting
5. Standard Cost Systems
6. Responsibility Accounting for Cost, Profit and Investment Centers
7. Nature of Managerial Accounting
8. Differential Analysis
9. Capital Investment Analysis
10. Job Order Cost System

### EVALUATION:

Evaluation may include but is not limited to the following:  
Exams, Quizzes, Presentations, Portfolios, Discussions, Class Participation, Attendance, Projects, Co-ops, Practicum, Internships, Externships, and Research Reports.

### UNITS

**Unit 1**      **Process Cost System**  
General Outcome

- 1.0 The students should be able to demonstrate and illustrate the accounting concepts and procedures used by manufacturing operations employing a process cost system.

Specific Learning Outcomes

- 1.1 Explain "process costing" and how it differs from job order costing.  
 1.2 Describe the basic concepts of a process cost accounting system.  
 1.3 Explain "equivalent whole units" and calculate them for a process.  
 1.4 Determine the number of units completed in a process and those that are still incomplete at the end of a period.  
 1.5 Prepare a production report that determines the costs per equivalent whole unit.  
 1.6 Describe the use of a cost of production report.  
 1.7 Allocate the production costs between the complete and incomplete units in the summary of a cost report.  
 1.8 Record the journal entries to account for the flow of production costs from one inventory account to another.

**Unit 2 Cost Behavior and Cost Estimation**

General Outcome

- 2.0 The students should be able to describe cost behavior and cost estimation methods essential for planning and controlling operations.

Specific Learning Outcomes

- 2.1 Distinguish between cost behavior and cost estimation.  
 2.2 Describe and illustrate:
  1. Variable costs
  2. Fixed costs
  3. Mixed costs
 2.3 Explain and illustrate the use of the high-low method to estimate total costs.

**Unit 3 Cost-Volume-Profit Analysis**

General Outcome

- 3.0 The students should be able to describe and apply cost-volume-profit analysis.

Specific Learning Outcomes

- 3.1 Describe the use of cost-volume-profit analysis in planning operations.  
 3.2 Differentiate among variable, fixed, and mixed costs.  
 3.3 Compute the break-even point for a firm:
  1. In dollars
  2. In product units
 3.4 Calculate the variable cost per unit, variable cost percentage, contribution margin per unit, and contribution margin percentage.  
 3.5 Use the income equation technique and the contribution margin technique to do cost-volume-profit analysis.  
 3.6 Draw a graph that shows the variables involved in cost-volume-profit analysis.

- 3.7 Describe and compute:
  - 1. Margin of safety
  - 2. Contribution margin ratio
  - 3. Compute target profit in units and sales dollars.
- 3.8 List the limitations of cost-volume-profit analysis.
- 3.9 List the assumptions of cost-volume-profit analysis.

#### **Unit 4 Budgeting**

##### General Outcome

- 4.0 The students should be able to explain the objectives of the budget process.

##### Specific Learning Outcomes

- 4.1 Describe the nature, objectives, and benefits of budgeting and the budget process.
- 4.2 Identify the components of a master budget.
- 4.3 Prepare a master budget for a manufacturing enterprise.
- 4.4 Prepare a performance report.
- 4.5 Describe how the flexible budget is used in a performance report to measure effectiveness and efficiency.
- 4.6 Prepare a flexible budget.

#### **Unit 5 Standard Cost Systems**

##### General Outcome

- 5.0 The students should be able to explain the use of standard costs in planning and controlling operations.

##### Specific Learning Outcomes

- 5.1 Describe how standard costs can be used to assist management in planning, controlling, and product costing.
- 5.2 Explain how standards are determined for each type of production cost.
- 5.3 Calculate the price, quantity, and total budget variances for direct materials and direct labor.
- 5.4 Calculate the volume and controllable budget variances for factory overhead.
- 5.5 Calculate the predetermined fixed factory overhead rate and the fixed overhead production volume variance.

#### **Unit 6 Responsibility Accounting for Cost, Profit and Investment Centers**

##### General Outcome

- 6.0 The students should be able to describe the function of managerial accounting and responsibility accounting.

##### Specific Learning Outcomes

- 6.1 Describe managerial accounting and differentiate from financial accounting.
- 6.2 Explain how management accounting assists management in the decision-making process.
- 6.3 Describe how an accountant assists management in planning, controlling, and product costing.
- 6.4 Differentiate between product costs and period costs.
- 6.5 Define direct and indirect costs.
- 6.6 Describe the nature of responsibility accounting.

- 6.7 Describe the nature of decentralized operations and the special accounting needs of management in such operations.
- 6.8 Describe and illustrate responsibility accounting for cost centers.
- 6.9 Describe and illustrate responsibility accounting for profit centers.
- 6.10 Describe and illustrate responsibility accounting for investment centers.
- 6.11 Calculate Return on Investment.

## **Unit 7 Nature of Managerial Accounting**

### General Outcome

- 7.0 The students should be able to describe the function of managerial accounting and responsibility accounting.

### Specific Learning Outcomes

- 7.1 Describe the basic functions of the management process and the role of accounting in this process.
- 7.2 Describe the basic characteristics of managerial accounting reports.
- 7.3 Describe the organization of the managerial accounting function within a business enterprise.
- 7.4 Distinguish between costs and expenses.
- 7.5 Describe and illustrate the three manufacturing costs: direct materials, direct labor, and factory overhead.
- 7.6 Describe and illustrate the statement of cost of goods manufactured.
- 7.7 Describe the basic cost classifications useful for planning and control:
  - 1. Variable costs and fixed costs
  - 2. Direct costs and indirect costs
  - 3. Controllable costs and non-controllable costs
  - 4. Differential costs
  - 5. Opportunity costs
  - 6. Sunk costs

## **Unit 8 Differential Analysis**

### General Outcome

- 8.0 The students should be able to identify relevant information and apply differential analysis techniques.

### Specific Learning Outcomes

- 8.1 List the necessary criteria that make information relevant to a decision involving two or more alternative courses of action.
- 8.2 Describe the nature of differential analysis and illustrate its application to decisions involving:
  - 1. Accepting business at a special price
  - 2. Discontinuing an unprofitable segment
  - 3. Making or buying
  - 4. Replacing equipment
  - 5. Processing or selling

## **Unit 9 Capital Investment Analysis**

### General Outcome

- 9.0 The students should be able to identify relevant information and apply capital investment analysis techniques.

Specific Learning Outcomes

- 9.1 Describe the nature of capital investment analysis.
- 9.2 Illustrate the evaluation of capital investment proposals by the following methods:
1. Average rate of return
  2. Cash payback
  3. Discounted cash flow
  4. Discounted internal rate of return
- 9.3 Describe and illustrate the capital rationing process.
- 9.4 Describe the use of a capital expenditures budget for planning and controlling capital investment expenditures.

**Unit 10 Job Order Cost System**

General Outcome

- 10.0 The students should be able to demonstrate and illustrate the concepts and procedures used in accounting for manufacturing operations employing a job order cost accounting system.

Specific Learning Outcomes

- 10.1 Prepare a statement for cost of goods manufactured.
- 10.2 Explain the characteristics of the job order costing system of accounting.
- 10.3 Explain the purpose of subsidiary ledgers and types of subsidiary ledgers needed for job order costing.
- 10.4 Determine the flow of costs through the production accounts and integrate this flow into the accounting records with journal entries and general ledger accounts.
- 10.5 Differentiate between actual and applied factory overhead.
- 10.6 Explain why applied factory overhead becomes part of the product cost.
- 10.7 Calculate the factory overhead rate and the factory overhead applied.
- 10.8 Explain the meaning of "overapplied or underapplied overhead," why each comes about, and how it is accounted for at year-end.

# BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2010

**Next Review:** 08/01/2015

**COURSE TITLE:** AMERICAN LITERATURE

**COMMON COURSE NUMBER:** AML2020

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

**CONTACT HOUR BREAKDOWN**

(per 16 week term)

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** Students will be introduced to works which represent the diverse literature emerging from America since 1900. Texts may be selected from major authors such as Hemingway, Faulkner, Frost, Hughes, Millay, Plath, Ellison, Baldwin, Oates, Angelou, and Roth. Upon successful completion of the course students will understand the significant concepts, contexts, movements, figures, and works of American literature in the 20th and 21st century.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 2a: Literature

AA/Bac-Area 7: Writing Requirement

AS Degree, meets Area(s):

AS-Area 2: Humanities/Fine Arts

AAS Degree, meets Area(s):

AAS-Area 2: Humanities/Fine Arts

AAS-Area 5: Program-Designated Courses

**UNIT TITLES**

1. Introduction to the Study of American Literature
2. American Literature from 1900 to 1945
3. American Literature from 1945 to 1970
4. American Literature since 1970
5. Writing about American Literature

**EVALUATION:**

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<b>Portfolio</b>	1.0; 2.0; 3.0; 4.0; 5.0
<b>Short Essay</b>	1.3; 5.0
<b>Research Project</b>	1.3; 5.0
<b>Group Projects</b>	1.2; 1.3; 2.0; 3.0; 4.0



<b>Discussion</b>	1.1; 1.2; 1.3; 1.4; 2.0; 3.0; 4.0
<b>Multiple Choice Tests</b>	1.1; 1.2; 1.3; 1.4; 2.1; 2.2; 3.1; 3.2; 4.1; 4.2
<b>Presentations</b>	1.2; 1.3; 1.4; 2.0; 3.0; 4.0;
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	1.1; 1.2; 1.3; 1.4; 2.1; 2.2; 3.1; 3.2; 4.1; 4.2
<b>Take Home Tests</b>	1.2; 1.3; 1.4; 2.0; 3.0; 4.0
<b>Summaries and Critiques</b>	1.2; 1.3; 1.4; 2.0; 3.0; 4.0; 5.1; 5.2; 5.3
<b>Reaction Papers</b>	1.3; 2.0; 3.0; 4.0; 5.1; 5.2; 5.3
<b>Surveys</b>	1.2; 1.3; 1.4; 2.1; 2.2; 3.1; 3.2; 3.1; 3.2; 4.1; 4.2;
<b>Performance</b>	
<b>Short Answer Tests</b>	1.1; 1.2; 1.3; 1.4; 2.1; 2.2; 2.3; 2.4; 2.6; 3.1; 3.2; 3.3; 3.4; 3.6; 4.1; 4.2; 4.3; 4.4; 4.6;
<b>Class Room Debates and Colloquia</b>	1.1; 1.2; 1.3; 1.4; 2.0; 3.0; 4.0
<b>Blog, Wikis, Webpages</b>	1.1; 1.2; 1.3; 1.4; 2.0; 3.0; 4.0
<b>Other</b>	

**GENERAL EDUCATION Competencies and Skills:**

<b>1. Read with critical comprehension.</b>	2.3 , 2.4 , 2.7 , 3.3 , 3.4 , 4.3 , 4.4
<b>2. Write clearly and coherently.</b>	5.1 , 5.2 , 5.3 , 5.5
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Information: 5.4 , 5.5 , 5.6 Cultural: 1.0 , 2.1 , 2.2 , 2.5 , 2.6 , 3.1 , 3.2 , 3.3 , 3.5 , 3.6 , 4.1 , 4.2 , 4.5 , 4.6
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	1.3 , 2.3 , 2.5 , 2.6 , 2.7 , 3.3 , 3.4 , 3.5 , 3.6 , 3.7 , 4.3 , 4.4 , 4.5 , 4.6 , 4.7
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	2.5 , 3.5 , 4.5
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	2.2 , 2.5 , 3.2 , 3.5 , 4.2 , 4.5
<b>8. Speak and listen effectively.</b>	

**UNITS**

**Unit 1 Introduction to the Study of American Literature**

General Outcome

- 1.0 The students shall learn literary concepts, techniques, movements, and figures as they pertain to American literature since 1900 and the contexts from which they emerge.

Specific Learning Outcomes

- 1.1 Identify literary concepts pertinent to American literature since 1900
- 1.2 Recognize significant literary movements since 1900 (ie: philosophical, intellectual, cultural, and aesthetic)

- 1.3 Distinguish significant similarities and differences among literary movements pertaining to American literature since 1900
- 1.4 Recognize key literary figures since 1900

## **Unit 2 American Literature from 1900 to 1945**

### General Outcome

- 2.0 The students shall read and discuss a diverse and representative sample of American literature (ie: poems, short stories, plays, or novels) published between 1900 and 1945 and interpret their impact on American literature. Authors may represent the movements of realism, regionalism, naturalism, or modernism and may include (among others): Anderson, Cather, Crane, Dreiser, Du Bois, Gilman, James, London, Pound, Sinclair, Stein, Twain, or Wharton.

### Specific Learning Outcomes

- 2.1 Identify major works of American literature between 1900 and 1945.
- 2.2 Identify a diverse and representative body of literary figures (authors, critics, etc.) associated with this time period or its literary movements
- 2.3 Analyze how works of American literature written between 1900 and 1945 relate to the conventions of a literary movement
- 2.4 Apply relevant literary concepts, techniques, and devices in interpreting representative sampling of American literature from this period
- 2.5 Assess the impact of literary contexts (political, social, cultural, etc) on a diverse array of American literature from this period. This may include discussion of changing social attitudes in regards to factors such as race, gender, ethnicity, and economic class, among others, in the shaping of individual and social identities.
- 2.6 Assess the relationship between literary works and their emergent, historic, or concurrent literary movements
- 2.7 Judge the relationship between works of American literature and the literary figures involved in their creation, dissemination, or criticism

## **Unit 3 American Literature from 1945 to 1970**

### General Outcome

- 3.0 The students shall read and discuss a diverse and representative sample of American literature (ie: poems, short stories, plays, or novels) published between 1945 and 1970 and interpret their impact on American literature. Authors may represent the movements of the beat generation; post-modernism; American regionalism; or Confessional, Black Mountain, New York, or African American poets and may include (among others): Ashbery, Bellow, Berryman, Brooks, Burroughs, Creeley, Ellison, Ginsberg, Heller, Hughes, Kerouac, Malamud, Miller, O'Connor, Olson, Plath, Roth, Salinger, Sexton, Updike, Vonnegut, Welty, Wouk, or Wright.

### Specific Learning Outcomes

- 3.1 Identify major works of American literature between 1945 and 1970.
- 3.2 Identify a diverse and representative body of literary figures (authors, critics, etc.) associated with this time period or its literary movements
- 3.3 Analyze how works of American literature written between 1945 and 1970 relate to the conventions of a literary movement
- 3.4 Apply relevant literary concepts, techniques, and devices in interpreting representative sampling of American literature from this period

- 3.5 Assess the impact of literary contexts (political, social, cultural, etc) on a diverse array of American literature from this period. This may include discussion of changing social attitudes in regards to factors such as race, gender, ethnicity, sexual orientation, and economic class, among others, in the shaping of individual and social identities.
- 3.6 Assess the relationship between literary works and their emergent, historic, or concurrent literary movements
- 3.7 Judge the relationship between works of American literature and the literary figures involved in their creation, dissemination, or criticism

#### **Unit 4 American Literature since 1970**

##### General Outcome

- 4.0 The students shall read and discuss a diverse and representative sample of American literature (ie: poems, short stories, plays, or novels) published after 1970 and interpret their impact on American literature. Authors may represent emerging movements; realism and experimentation; the anti-tradition; spoken word; and contemporary prose and poetry and may include (among others): Allison, Anzaldua, DeLillo, Erdrich, Harjo, Hogan, hooks, Kincaid, Mali, Morrison, Nguyen, Oates, Rodriguez, Walker, Wallace, or Williams.

##### Specific Learning Outcomes

- 4.1 Identify major works of American literature published after 1970.
- 4.2 Identify a diverse and representative body of literary figures (authors, critics, etc.) associated with this time period or its literary movements
- 4.3 Analyze how works of American literature written after 1970 relate to the conventions of a literary movement
- 4.4 Apply relevant literary concepts, techniques, and devices in interpreting representative sampling of American literature from this period
- 4.5 Assess the impact of literary contexts (political, social, cultural, etc) on a diverse array of American literature from this period. This may include discussion of changing social attitudes in regards to factors such as race, gender, ethnicity, sexual orientation, national origin, and economic class, among others, in the shaping of individual and social identities.
- 4.6 Assess the relationship between literary works and their emergent, historic, or concurrent literary movements
- 4.7 Judge the relationship between works of American literature and the literary figures involved in their creation, dissemination, or criticism

#### **Unit 5 Writing about American Literature**

##### General Outcome

- 5.0 The students shall be able to write a structured paper that incorporates research and engages in an analysis of the literary movement, author, or text(s) within American literature since 1900.

##### Specific Learning Outcomes

- 5.1 Compose a limited thesis statement that demonstrates a thoughtful interpretation based on textual evidence and informed response to scholarly criticism of the selected text(s), author, or movement
- 5.2 Create a properly structured essay that supports the student's original thesis statement
- 5.3 Demonstrate the appropriate use of Standard American English in adherence with the conventions of spelling, grammar, syntax, vocabulary, capitalization, and punctuation
- 5.4 Identify and locate appropriate research sources for legitimate academic use
- 5.5 Incorporate primary and secondary research sources appropriately

5.6 Cite primary and secondary research sources via in-text citations and a Works Cited Page using MLA Format

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2009

**Next Review:** 08/01/2014

**COURSE TITLE:** COMPUTER APPLICATIONS

**COMMON COURSE NUMBER:** CGS2100C

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 32

Lab: 16

Clinic:

Other:

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** This is an intermediate-level course in computer applications software. Students will gain knowledge and experience in the use and capabilities of word-processing, spreadsheet, database, and presentation graphics applications. Through case studies, students will learn to develop comprehensive solutions to various types of problems. Integration between applications will be emphasized.

### UNIT TITLES

1. Working on a Group Project
2. Document Formats, Columns, Charts, Special Effects, and Styles
3. Working with Tables, Graphics, and Objects
4. Mail Merge and Automating Mass Mailings
5. Advanced Spreadsheet Functions
6. Creating Spreadsheet Charts and Diagrams
7. Working with Spreadsheet Templates and File Formats
8. Using Spreadsheets' Database Capabilities
9. Building and Maintaining a Relational Database
10. Creating Databases and Tables
11. Sorting, Filtering, and Querying a Database
12. Creating Database Forms and Reports
13. Enhancing Presentations with Graphic Elements and Techniques
14. Creating Presentations for the Web
15. Integrating Applications

### EVALUATION:

### UNITS

#### Unit 1 Working on a Group Project

##### General Outcome

- 1.0 The student shall: be able to work on a Group Project

Specific Learning Outcomes

- 1.1 Review and Modify Document Properties
- 1.2 Use Comments in a Document
- 1.3 Track Changes in a Document
- 1.4 Circulate Documents for Review
- 1.5 Compare and Merge Documents

**Unit 2 Document Formats, Columns, Charts, Special Effects, and Styles**General Outcome

- 2.0 The student shall: be able to use Document Formats, Columns, Charts, Special Effects, and Styles

Specific Learning Outcomes

- 2.1 Create a Document Using a Template
- 2.2 Create an Outline
- 2.3 Create a Multi Column Document
- 2.4 Create a Chart from a Word Table
- 2.5 Format a Chart
- 2.6 Add Special Text Effects
- 2.7 Use existing Styles
- 2.8 Create and Modify New Styles

**Unit 3 Working with Tables, Graphics, and Objects**General Outcome

- 3.0 The student shall: be able to Work with Tables, Graphics, and Objects

Specific Learning Outcomes

- 3.1 Create and Apply a Custom Table Style
- 3.2 Modify Table Properties
- 3.3 Draw a Complex Table
- 3.4 Insert Objects in a Table
- 3.5 Modify an Image

**Unit 4 Mail Merge and Automating Mass Mailings**General Outcome

- 4.0 The student shall: be able to use Mail Merge and Automating Mass Mailings

Specific Learning Outcomes

- 4.1 Create Labels Using the Mail Merge Wizard
- 4.2 Create a Form Letter
- 4.3 Merge Letters with Records from the Data Source

**Unit 5 Advanced Spreadsheet Functions**General Outcome

5.0 The student shall: be able to use Advanced Spreadsheet Functions

Specific Learning Outcomes

- 5.1 Create Range Names
- 5.2 Use Range Names in a Formula
- 5.3 Create Statistical Functions
- 5.4 Create Date and Time Functions
- 5.5 Create Financial and Logical Functions

**Unit 6 Creating Spreadsheet Charts and Diagrams**

General Outcome

6.0 The student shall: be able to Create Spreadsheet Charts and Diagrams

Specific Learning Outcomes

- 6.1 Create and Modify a Column Chart
- 6.2 Create and Modify a Line Chart
- 6.3 Create and Modify a Pie Chart
- 6.4 Print Charts
- 6.5 Create a Diagram
- 6.6 Organize and Format Worksheets

**Unit 7 Working with Spreadsheet Templates and File Formats**

General Outcome

7.0 The student shall: be able to Work with Spreadsheet Templates and File Formats

Specific Learning Outcomes

- 7.1 Use Excel Templates
- 7.2 Enhance a Worksheet with AutoFormats and Styles
- 7.3 Prepare a Worksheet to Share with Others
- 7.4 Use Drawing Tools
- 7.5 Use the Research Feature

**Unit 8 Using Spreadsheets' Database Capabilities**

General Outcome

8.0 The student shall: be able to Use Spreadsheets' Database Capabilities

Specific Learning Outcomes

- 8.1 Import Data into Excel
- 8.2 Sort Data
- 8.3 Manage Data Using a Data Form
- 8.4 Use AutoFilter
- 8.5 Analyze Data with Excel Database Tools
- 8.6 Use Database Functions

**Unit 9 Building and Maintaining a Relational Database**

General Outcome

9.0 The student shall: be able to Build and Maintain a Relational Database

Specific Learning Outcomes

- 9.1 View Relationships in a Database
- 9.2 Establish Relationships between Tables
- 9.3 Identify and Correct Design Errors in Tables
- 9.4 Create a Query from Joined Tables
- 9.5 Protect and Maintain a Database

**Unit 10 Creating Databases and Tables**General Outcome

10.0 The student shall: be able to Create Databases and Tables

Specific Learning Outcomes

- 10.1 Create a New Database
- 10.2 Create a New Table
- 10.3 Add Records to a Table
- 10.4 Find and Edit Records in a Table
- 10.5 Modify the Table Design
- 10.6 Create Table Relationships

**Unit 11 Sorting, Filtering, and Querying a Database**General Outcome

11.0 The student shall: be able to Sort, Filter, and Query a Database

Specific Learning Outcomes

- 11.1 Sort Records
- 11.2 Filter Records
- 11.3 Create a Select Query
- 11.4 Edit an Existing Query
- 11.5 Sort Data in a Query
- 11.6 Specify Criteria in a Query
- 11.7 Use Compound Criteria

**Unit 12 Creating Database Forms and Reports**General Outcome

12.0 The student shall: be able to Create Database Forms and Reports

Specific Learning Outcomes

- 12.1 Create an Auto Form
- 12.2 Use a Form to Add and Delete Records
- 12.3 Create a Form using the Form Wizard
- 12.4 Modify a Form



- 12.5 Create an Auto Report
- 12.6 Create a Report Using the Report Wizard
- 12.7 Modify the Design of a Report
- 12.8 Print a Report

### **Unit 13 Enhancing Presentations with Graphic Elements and Techniques**

#### General Outcome

- 13.0 The student shall: be able to Enhance Presentations with Graphic Elements and Techniques

#### Specific Learning Outcomes

- 13.1 Draw and Format Lines
- 13.2 Create Basic Shapes and Text Boxes
- 13.3 Edit Format Drawing Objects
- 13.4 Create and Format Word Art
- 13.5 Insert Images
- 13.6 Enhance Objects with Visual Effects
- 13.7 Apply Custom Animation
- 13.8 Create Motion Paths

### **Unit 14 Creating Presentations for the Web**

#### General Outcome

- 14.0 The student shall: be able to Create Presentations for the Web

#### Specific Learning Outcomes

- 14.1 Create a Design Template
- 14.2 Enhance Presentations with Sound
- 14.3 Modify Presentations Using Research and Comparison Tools
- 14.4 Share Files with Other Users
- 14.5 Format a Presentation for the Web

### **Unit 15 Integrating Applications**

#### General Outcome

- 15.0 The student shall: be able to Integrate Applications

#### Specific Learning Outcomes

- 15.1 Import Data from Excel to Access
- 15.2 Link an Access Form to an Excel Worksheet
- 15.3 Add an Excel Chart to a Power Point Presentation
- 15.4 Add an Excel Chart to an Access Form and Access Report

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2010

**Next Review:** 08/01/2015

**COURSE TITLE:** INTRODUCTION TO CHEMISTRY

**COMMON COURSE NUMBER:** CHM1025

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** Selected topics from general chemistry. Topics covered include chemical measurements, atomic structure, periodic table, chemical bonding, inorganic compound nomenclature and formula writing, stoichiometry, gases, liquids, solids, solutions, acid-base chemistry, oxidation- reduction chemistry, energy, and nuclear" chemistry.

### MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 4b: Physical Sciences

AS Degree, meets Area(s):

AS-Area 4: Natural Sciences

AAS Degree, meets Area(s):

AAS-Area 4: Mathematics/Science

AAS-Area 5: Program-Designated Courses

### UNIT TITLES

1. Reading and Writing in Chemistry
2. Introduction and Measurement
3. Atomic Structure
4. Bonding and the Nature of Compounds
5. Stoichiometry
6. Energy and States of Matter
7. Introduction to Gases
8. Concentration and Properties of Solutions
9. Acids and Bases
10. Oxidation-Reduction
11. Nuclear Chemistry

### EVALUATION:

In the box to the right of the Methods of Assessment, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 4.0, 4.2 and 5.12) that apply.

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<b>Portfolio</b>	
<b>Short Essay</b>	1.1, 1.2, 1.3, 2.1, 4.12, 6.5, 7.5, 8.15, 9.10, 9.12, 9.13, 10.5, 11.8, 11.9, 11.10
<b>Research Project</b>	1.1, 1.2, 1.3, 1.4, 2.1, 4.12, 6.5, 7.5, 8.15, 9.10, 9.12, 9.13, 10.5, 11.8, 11.9, 11.10
<b>Group Projects</b>	1.1, 1.2, 1.3, 1.4, 2.1, 4.12, 6.5, 7.5, 8.15, 9.10, 9.12, 9.13, 10.5, 11.8, 11.9, 11.10
<b>Discussion</b>	2.1, 4.12, 6.5, 7.5, 8.15, 9.10, 9.12, 9.13, 10.5, 11.8, 11.9, 11.10
<b>Multiple Choice Tests</b>	2.2-2.7, 3.1-3.12, 4.1-4.12, 5.1-5.5, 6.1-6.9, 7.1-7.5, 8.1-8.15, 9.1-9.13, 10.1-10.5, 11.1-11.7
<b>Presentations</b>	1.1, 1.2, 1.3, 1.4, 2.1, 4.12, 6.5, 7.5, 8.15, 9.10, 9.12, 9.13, 10.5, 11.8, 11.9, 11.10
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	2.2-2.7, 3.1-3.12, 4.1-4.12, 5.1-5.5, 6.1-6.9, 7.1-7.5, 8.1-8.15, 9.1-9.13, 10.1-10.5, 11.1-11.7
<b>Take Home Tests</b>	1.3, 2.2-2.7, 3.1-3.12, 4.1-4.12, 5.1-5.5, 6.1-6.9, 7.1-7.5, 8.1-8.15, 9.1-9.13, 10.1-10.5, 11.1-11.
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	1.3, 2.2-2.7, 3.1-3.12, 4.1-4.12, 5.1-5.5, 6.1-6.9, 7.1-7.5, 8.1-8.15, 9.1-9.13, 10.1-10.5, 11.1-11.
<b>Class Room Debates and Colloquia</b>	1.2, 2.1, 4.12, 5.6, 6.5, 7.5, 8.15, 9.10, 9.12, 9.13, 10.5, 11.8, 11.9, 11.10
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	1.1 , 1.2 , 2.7 , 3.12 , 5.5 , 7.4 , 8.11
<b>2. Write clearly and coherently.</b>	1.1 , 1.2 , 1.3 , 3.11 , 4.1 , 4.5 , 4.6 , 4.8 , 8.9 , 9.3 , 9.5 , 9.11 , 9.12 , 11.3 , 11.4
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Technology: 1.4 Quantitative: 1.1 , 1.3 , 2.3 , 2.5 , 2.6 , 2.7 , 3.7 , 3.8 , 3.12 , 5.1 , 5.2 , 5.3 , 5.5 , 5.6 , 6.4 , 7.4 , 8.10 , 8.11 , 8.12 , 9.7 , 10.2 , 10.3 , 11.6 Scientific: 1.1 , 1.2 , 1.3 , 2.1 , 3.1 , 3.3 , 3.8 , 3.12 , 4.1 , 4.2 , 4.6 , 4.11 , 4.12 , 6.1 , 6.7 , 6.8 , 7.5 , 8.1 , 8.4 , 8.5 , 8.14 , 8.15 , 9.2 , 9.8 , 9.10 , 9.11 , 9.12 , 9.13 , 10.3 , 10.5 , 11.7 , 11.8 , 11.10 Environmental: 4.12 , 5.6 , 6.5 , 7.5 , 8.15 , 9.11 , 9.12 , 9.13 , 10.5 , 11.8 , 11.9
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	1.1 , 1.2 , 1.3 , 2.7 , 3.9 , 3.12 , 4.2 , 4.3 , 4.4 , 4.7 , 4.10 , 4.11 , 4.12 , 5.5 , 5.6 , 6.3 , 6.5 , 6.6 , 7.3 , 7.4 , 8.11 , 8.14 , 9.8 , 10.3

<b>5. Differentiate between ethical and unethical behavior.</b>	4.12 , 9.13
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	2.1 , 4.12 , 5.6 , 6.5 , 7.5 , 8.15 , 9.10 , 9.12 , 9.13 , 11.8 , 11.9 , 11.10
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

## UNITS

### Unit 1 Reading and Writing in Chemistry

#### General Outcome

- 1.0 The student shall be able to clearly communicate in writing information derived from course related readings about the major concepts and themes in the chemical sciences.

#### Specific Learning Outcomes

- 1.1 Demonstrate in writing the ability to analyze, evaluate, compare, and/or extract data relevant to chemistry from course related readings.
- 1.2 Evaluate the validity of information from a variety of sources, including but not limited to such sources as electronic, print sources, and data bases.
- 1.3 Demonstrate with the use of diagrams, drawings, outlines, concept maps, and/or other methods the connections among chemical concepts.
- 1.4 Demonstrate the ability to use the appropriate technology to carry out course requirements.

### Unit 2 Introduction and Measurement

#### General Outcome

- 2.0 The student shall be able to demonstrate knowledge of the nature of chemistry and demonstrate their understanding of the measurement systems used in chemistry by solving related problems

#### Specific Learning Outcomes

- 2.1 Define chemistry and evaluate its modern applications and impact on complex systems such as the environment, medicine, industry, and technology.
- 2.2 Differentiate and use the terms accuracy and precision.
- 2.3 Perform calculations using scientific notation and significant figures and analyze their answer for correctness.
- 2.4 Distinguish and apply the common metric/SI units for mass, length, volume, and energy; using the prefixes kilo, deci, centi, milli, and micro.
- 2.5 Perform conversions among metric units and between certain English and metric units using dimensional analysis and analyze their answers for correctness.
- 2.6 Interconvert temperatures among Celsius, Fahrenheit, and Kelvin scales.
- 2.7 Read with critical comprehension experimental data to solve problems involving density and specific gravity; analyze and interpret their answers for correctness.

### Unit 3 Atomic Structure

#### General Outcome

- 3.0 The student shall be able to describe the structure and components of atoms and apply these concepts to the information contained in the Periodic Table.

#### Specific Learning Outcomes

- 3.1 Differentiate between pure substances and mixtures, and correctly use specific terms such as atoms and elements, molecules and compounds, and homogeneous, and heterogeneous mixtures.
- 3.2 State the chemical symbols for common elements such as H, Li, Na, K, Mg, Ca, Sr, Ba, Al, C, Si, Sn, Pb, N, P, As, O, S, F, Cl, Br, I, He, Ne, Ar, Fe, Co, Ni, Cu, Zn, Ag, Au, Hg, U.
- 3.3 Differentiate between protons, electrons, and neutrons; particularly in regard to their relative masses, charges, and location.
- 3.4 Identify atomic numbers and atomic masses from the periodic table.
- 3.5 Use atomic numbers to establish the number of protons (and electrons) in the atom of a given element.
- 3.6 Describe isotopes and how mass numbers uniquely identify them.
- 3.7 Calculate atomic masses from isotopic masses and abundances.
- 3.8 Diagram the electron arrangement for the first 20 elements using principal energy levels.
- 3.9 Organize elements in the Periodic Table based on their chemical and physical properties, atomic numbers, and valence electrons.
- 3.10 Use the Periodic Table to identify periods, groups, representative elements, transition elements, metals, non-metals, alkali metals, alkaline earth metals, halogens, and noble gases.
- 3.11 Write electron dot formulas for the representative elements.
- 3.12 Read with critical comprehension the changing frequencies and wavelength in the electromagnetic spectrum. Apply that information to explain what occurs when an electron changes energy levels. Perform calculations involving frequency, wavelength, and energy.

### **Unit 4 Bonding and the Nature of Compounds**

#### General Outcome

- 4.0 The student shall be able to explain the main types of chemical bonds and how they are formed; predict and draw structures for simple ionic and covalent compounds, including those containing common polyatomic ions; and name and write their chemical formulas.

#### Specific Learning Outcomes

- 4.1 Differentiate between ionic and covalent bonds and compounds, and compare and contrast their properties.
- 4.2 Predict which combinations of elements tend to bond ionically and which tend to bond covalently.
- 4.3 Explain cation and anion formation by using the chemical properties of metals and non-metals.
- 4.4 Apply the concept of valence electrons and the octet rule to construct ions from atoms of representative elements.
- 4.5 Write the name, formula, and charge for mono- and polyatomic ions. At a minimum, the following ions should be covered: Li<sup>+</sup>, Na<sup>+</sup>, K<sup>+</sup>, Mg<sup>2+</sup>, Ca<sup>2+</sup>, Ba<sup>2+</sup>, Al<sup>3+</sup>, O<sup>2-</sup>, S<sup>2-</sup>, F<sup>-</sup>, Cl<sup>-</sup>, Br<sup>-</sup>, I<sup>-</sup>, Ag<sup>+</sup>, Zn<sup>2+</sup>, Cu<sup>+</sup>, Cu<sup>2+</sup>, Fe<sup>2+</sup>, Fe<sup>3+</sup>, NH<sub>4</sub><sup>+</sup>, H<sub>3</sub>O<sup>+</sup>, OH<sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, CO<sub>3</sub><sup>2-</sup>, HCO<sub>3</sub><sup>-</sup>, PO<sub>4</sub><sup>3-</sup>, HPO<sub>4</sub><sup>2-</sup>, H<sub>2</sub>PO<sub>4</sub><sup>-</sup>, NO<sub>3</sub><sup>-</sup> and NO<sub>2</sub><sup>-</sup>.
- 4.6 Construct the chemical formula for an ionic compound given its name, and write the name for an ionic compound given its chemical formula.
- 4.7 Apply the octet rule and/or electron pairing to explain covalent bonding.
- 4.8 Write Lewis structures for simple covalent compounds that contain single, double, and triple bonds.

- 4.9 Define electronegativity and interpret its trend within the Periodic Table.
- 4.10 Define polar covalent and non-polar covalent bonds, and use the Periodic Table to assess the type of bond formed between any two elements.
- 4.11 Define polar and non-polar molecules, and distinguish between simple examples of the two.
- 4.12 Evaluate the impact of different types of radiation (UV, IR, microwave) on covalent bonds. Apply this information to examine the impact of UV radiation in the oxygen/ozone cycle in the stratosphere (discuss chlorofluorocarbons and ozone hole) and the impact of IR radiation on greenhouse gases such as water and carbon dioxide (discuss global warming). Debate issues such as economics, rich vs. poor countries, jobs, politics, technology, and the ethics of balancing our interests against those of our grandchildren in addressing global problems such as the ozone hole and global warming.

## Unit 5 Stoichiometry

### General Outcome

- 5.0 The student shall be able to define and use the concept of the mole to balance chemical equations and to calculate specific quantities of reactants and/or products involved.-

### Specific Learning Outcomes

- 5.1 Calculate formula and molecular weights for ionic and covalent compounds.
- 5.2 Explain the concept of the mole and its relationship to atoms and molecules by applying Avogadro's number as a conversion factor.
- 5.3 Apply dimensional analysis to interconvert between the mass of a given substance and the corresponding number of moles.
- 5.4 Balance chemical equations utilizing the mole concept.
- 5.5 Given a balanced equation, read data with critical comprehension to construct a diagram that demonstrates the relationship between the number of moles and grams for various substances in a chemical equation. Use those relationships to calculate specific quantities of reactants and/or products involved.
- 5.6 Examine how much carbon dioxide is produced from the burning of a certain amount of gasoline (e.g. 1 gallon) by using a balanced equation for the combustion of octane as a reasonable approximation.

## Unit 6 Energy and States of Matter

### General Outcome

- 6.0 The students shall be able to define energy and use specific heats to calculate the amount of energy produced by a given substance. Students shall also be able to describe and compare the three states of matter, detail the transitions among them, and the energy involved in these transitions.

### Specific Learning Outcomes

- 6.1 Differentiate between a chemical and a physical change.
- 6.2 Describe and compare the three states of matter.
- 6.3 Recognize the following changes of state: melting, freezing, boiling, condensation, sublimation, and deposition.
- 6.4 Define energy and the common energy units (calories, kilocalories, joules).
- 6.5 Explain how different substances can absorb different amounts of energy; yet increase their temperature by the same number of degrees. Apply that concept to define specific heat.

- 6.6 Use specific heats to calculate the amount of energy produced by a given substance in a calorimetry experiment.
- 6.7 Discuss the efficiency (calories per gram) in the combustion reaction of various oxygenated and non-oxygenated fossil fuels.
- 6.8 Illustrate endothermic and exothermic reactions, and recognize when energy is absorbed or released.

## **Unit 7 Introduction to Gases**

### General Outcome

- 7.0 The students shall be able to explain the properties of gases and perform pressure, volume, and temperature calculations based on the gas laws.

### Specific Learning Outcomes

- 7.1 Define pressure and the units commonly used to measure it.
- 7.2 Define vapor pressure; explain its relationship to temperature, evaporation, boiling point, and atmospheric pressure.
- 7.3 Examine the relationship between pressure, volume, and temperature. Use those relations to construct the gas laws: Boyle's, Charles's, Gay-Lussac's and the Combined Gas Law.
- 7.4 Read with critical comprehension experimental data to solve problems involving the gas laws; analyze and interpret their answers for correctness.
- 7.5 Discuss major air pollutants (sulfur and nitrogen oxides, carbon monoxide, ozone, etc.) and their primary sources.

## **Unit 8 Concentration and Properties of Solutions**

### General Outcome

- 8.0 The students shall be able to define terms that are pertinent to solutions; describe the process of solution formation; write equations for precipitation reactions that occur in aqueous solutions; do calculations that are based on concentration; and compare and contrast diffusion and osmosis.

### Specific Learning Outcomes

- 8.1 Characterize and differentiate between suspensions, colloids, and true solutions.
- 8.2 Define solution, solute, and solvent.
- 8.3 Explain the difference between a polar and a non-polar solvent.
- 8.4 Describe hydrogen bonding and illustrate some of the many examples of hydrogen bonding in nature: interactions among water molecules (water droplets, insects walking on water), base-pair recognition in DNA, protein folding, docking of specific substrates to enzymes, etc.
- 8.5 Describe the process of solution formation, with emphasis on solutes that are electrolytes dissolving in water.
- 8.6 Define heat of solution and examine examples of endothermic and exothermic dissolution.
- 8.7 List ways that can be used to increase the rate of dissolution.
- 8.8 Define solubility and discuss general solubility rules.
- 8.9 Write equations (in molecular, total ionic, and net ionic form) for precipitation reactions that occur in aqueous solution.
- 8.10 Define concentration; describe and calculate different units of concentration (percent by volume, percent by mass, ppm, ppb, and molarity).
- 8.11 Read with critical comprehension experimental data and apply each unit of concentration as a conversion factor to interconvert between the mass (moles) of solute and the mass (volume) of solution. Analyze and interpret their answers for correctness.

- 8.12 Describe the process of dilution, and solve problems involving dilutions.
- 8.13 Define diffusion, osmosis, concentration gradient, and semipermeable membranes.
- 8.14 Explain osmotic pressure and its relationship to hypertonic, hypotonic, and isotonic solutions. Analyze how a cell can undergo hemolysis or crenation in solutions with different osmotic pressures.
- 8.15 Define and describe some common water quality concerns such as water hardness, contamination with heavy metals, solubility of gases with varying temperatures, and eutrophication.

## Unit 9 Acids and Bases

### General Outcome

- 9.0 The students shall be able to define and describe acids and bases; write equations for acid-base neutralization reactions; perform fundamental calculations that involve pH; and understand the nature of buffers.

### Specific Learning Outcomes

- 9.1 Characterize common properties of acids and bases.
- 9.2 Understand the Arrhenius and Brønsted-Lowry definitions of acids and bases. Give common examples that illustrate these definitions.
- 9.3 List and write formulas for some strong and weak acids (HCl, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, H<sub>3</sub>PO<sub>4</sub>, HC<sub>2</sub>H<sub>3</sub>O<sub>2</sub>, H<sub>2</sub>CO<sub>3</sub>) and bases (NaOH, KOH, NH<sub>3</sub>), including acid and basic anhydrides (CO<sub>2</sub>, SO<sub>3</sub>, NO<sub>2</sub>, CaO, Na<sub>2</sub>O); write equations for the ionization/dissociation reaction of these common acids and bases in water.
- 9.4 Describe an electrolyte and differentiate between strong, weak, and non-electrolytes. Illustrate how common strong and weak acids and bases act as electrolytes in solution.
- 9.5 Define salts and write equations (in molecular, total ionic, and net ionic form) for simple neutralization reactions.
- 9.6 Describe the self-ionization of water and the relationship of [H<sub>3</sub>O<sup>+</sup>] and [OH<sup>-</sup>] in an aqueous solution using the K<sub>w</sub> expression. Use that expression to calculate [H<sub>3</sub>O<sup>+</sup>] from [OH<sup>-</sup>] and vice versa.
- 9.7 Define pH and calculate pH for aqueous solutions of strong acids and strong bases.
- 9.8 Examine how pH changes as [H<sub>3</sub>O<sup>+</sup>] changes; and define acidic, basic, and neutral solutions relative to the pH scale.
- 9.9 Describe a titration and perform simple titration calculations.
- 9.10 Explain how a buffer works and give some simple examples of buffers. Discuss alkalinity and its role as a buffer in various bodies of water.
- 9.11 Illustrate the equilibrium of CO<sub>2</sub>, H<sub>2</sub>CO<sub>3</sub>, and HCO<sub>3</sub><sup>-</sup> in water by writing the appropriate chemical equation. Use this equilibrium to explain why CO<sub>2</sub> in the atmosphere can make rain slightly acidic.
- 9.12 Examine how other gases (SO<sub>x</sub>, NO<sub>x</sub>) can also dissolve in water to generate acid rain. Write equations to show how these acid anhydrides are transformed into the corresponding acids in water.
- 9.13 Identify the main producers of these gases and describe some of the effects of acid rain on human-made materials, lakes and streams, forests, visibility, and human health. Discuss the ethics of producing gases that will cause acid rain in other states and/or countries.

## Unit 10 Oxidation-Reduction



General Outcome

- 10.0 The students shall be able to assign oxidation numbers to each element in a chemical compound, identify oxidation-reduction reactions, and perform fundamental calculations

Specific Learning Outcomes

- 10.1 Calculate oxidation numbers for each atom in an ion or molecule.
- 10.2 Define the terms oxidation and reduction, and identify whether an equation represents an oxidation-reduction (redox) reaction.
- 10.3 Identify the elements being oxidized and reduced in a reaction; determine how many electrons are involved; and write half-reactions representing the oxidation and reduction steps respectively.
- 10.4 Define and identify the oxidizing agent and the reducing agent in a redox reaction.
- 10.5 Recognize fundamental reactions in living systems and their environment (photosynthesis; aerobic and anaerobic respiration; nitrogen cycle) as redox reactions.

**Unit 11 Nuclear Chemistry**General Outcome

- 11.0 The students shall be able to demonstrate knowledge of the fundamental principles of nuclear structure and nuclear changes.

Specific Learning Outcomes

- 11.1 Distinguish between nuclear changes and ordinary chemical changes.
- 11.2 Define and use the terms: radiation, radioactivity, nuclide, isotope.
- 11.3 Define and write nuclide symbols for common types of subatomic particles.
- 11.4 Write and balance nuclear equations.
- 11.5 List the methods used to detect and measure radiation.
- 11.6 Define half-life and perform calculations involving half-life.
- 11.7 Define and recognize equations that represent nuclear fission and fusion.
- 11.8 Discuss how fission produces energy, and how nuclear reactors produce electricity.
- 11.9 Analyze the risks and benefits of nuclear power.
- 11.10 Describe and recognize other uses of radioactive nuclides, such as imaging and cancer treatment.

## BROWARD COLLEGE COURSE OUTLINE

Last Review: 08/01/2010

Next Review: 08/01/2015

**COURSE TITLE:** INTRODUCTION TO CHEMISTRY LABORATORY**COMMON COURSE NUMBER:** CHM1025L**EFFECTIVE TERM:****CREDIT HOURS:** 1**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture: 0

Lab: 32

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** Laboratory experiments to accompany CHM1025.**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 4c: Science Laboratory

**UNIT TITLES**

1. Laboratory and Safety Rules
2. Reading and Writing in the Chemistry Laboratory
3. Laboratory Calculations
4. Laboratory Skills

**EVALUATION:**

In the box to the right of the Methods of Assessment, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 4.0, 4.2 and 5.12) that apply

<b>Portfolio</b>	
<b>Short Essay</b>	
<b>Research Project</b>	
<b>Group Projects</b>	2.1, 2.2, 2.3, 4.3, 4.4, 4.7, 4.8
<b>Discussion</b>	
<b>Multiple Choice Tests</b>	1.1, 1.2, 1.3, 1.4, 2.2, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8
<b>Presentations</b>	
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	1.1, 1.2, 1.3, 1.4, 2.2, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8

<b>Take Home Tests</b>	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.4, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6,
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.4, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6,
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	
<b>Submission of written lab reports</b>	

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	1.4 , 2.1 , 2.2 , 4.1
<b>2. Write clearly and coherently.</b>	2.1 , 2.3 , 3.1 , 3.5 , 4.1 , 4.9
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Technology: 2.2 , 2.4 , 4.3 , 4.5 Quantitative: 2.1 , 2.3 , 3.1 , 3.2 , 3.4 , 3.5 , 3.6 , 3.7 Scientific: 2.1 , 2.3 , 3.5 , 3.7 , 4.4 , 4.5 , 4.6 , 4.7 , 4.8 , 4.9
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	2.1 , 2.2 , 2.3 , 3.1 , 3.2 , 3.3 , 3.4 , 3.5 , 3.6 , 3.7 , 4.1 , 4.7 , 4.8 , 4.9
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	1.2 , 1.4 , 4.4
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

## UNITS

### Unit 1 Laboratory and Safety Rules

#### General Outcome

- 1.0 The students shall be able to: (1) conduct a chemistry experiment using proper safety procedures, (2) recognize and respond appropriately to potentially hazardous situations, and (3) recognize the necessity of safe laboratory practices.

#### Specific Learning Outcomes

- 1.1 List the safety rules as provided by the instructor.
- 1.2 Explain the importance of the safety rules to maintain a safe environment for students and faculty.
- 1.3 Locate and describe the use of safety equipment such as fire extinguishers, fire blanket(s), eye wash station, safety shower, first aid kit, spill clean-up kites, utility shutoff valves, etc.

- 1.4 Conduct scheduled experiments in accordance with the listed safety rules.

## **Unit 2 Reading and Writing in the Chemistry Laboratory**

### General Outcome

- 2.0 The student shall be able to clearly communicate in writing information derived from course related readings about the major concepts and themes in the chemical laboratory

### Specific Learning Outcomes

- 2.1 Demonstrate in writing the ability to analyze, evaluate, compare, and/or extract data relevant to each chemistry experiment.
- 2.2 Evaluate the validity of information obtained in the laboratory by comparing it to information obtained from electronic, print sources, and/or data bases.
- 2.3 Demonstrate with the use of diagrams, drawings, outlines, concept maps, and/or other methods the connections among chemical concepts.
- 2.4 Demonstrate the ability to use the appropriate technology to carry out course requirements.

## **Unit 3 Laboratory Calculations**

### General Outcome

- 3.0 The students shall be able to apply appropriate mathematical tools to accurately determine calculated results from experimental data.

### Specific Learning Outcomes

- 3.1 Set up problems and perform calculations related to the chemical concepts in this laboratory: measurements, spectroscopy, calorimetry, stoichiometry, solution concentration, electrolytes, acid/base chemistry, gas laws, and redox chemistry.
- 3.2 Apply the rules for the use of significant figures and rounding values as they apply to laboratory data.
- 3.3 Demonstrate by proper use the relationship between accuracy and precision.
- 3.4 Average laboratory data correctly
- 3.5 Construct graphs, graph laboratory data, and evaluate the results.
- 3.6 Calculate a percentage yield and percentage error from experimental data.
- 3.7 Evaluate the results of a laboratory calculation in terms of reasonableness.

## **Unit 4 Laboratory Skills**

### General Outcome

- 4.0 The students shall be able to demonstrate laboratory skills in the performance of an experiment

### Specific Learning Outcomes

- 4.1 Discuss the theoretical background for each experiment by reading the material provided and answering assigned open-ended questions and/or solving related problems before each lab.
- 4.2 Identify common laboratory glassware, select the appropriate glassware for a procedure, and use it properly and safely to perform a given laboratory task.
- 4.3 Properly assemble laboratory apparatus as required for the experiments performed in this laboratory based on the following topics: measurements, spectroscopy, calorimetry, stoichiometry, solution chemistry, acid/base chemistry, gas laws, and redox chemistry.

- 4.4 Select, dispense, measure, properly use, dilute, and dispose of laboratory chemicals safely and properly.
- 4.5 Operate specific pieces of laboratory equipment including balances, Bunsen burners, burets, pipettes, thermometers, barometers, etc.
- 4.6 Perform specific laboratory procedures including determining melting point and boiling point, titrations, filtrations, crystallizations, etc.
- 4.7 Distinguish between objective observation and subjective interpretation.
- 4.8 Perform chemical and physical tests to identify an unknown compound by drawing logical conclusions from observed data.
- 4.9 Complete required laboratory reports including proper representation of data, analysis of data, and discussion of results.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2010

**Next Review:** 08/01/2015

**COURSE TITLE:** GENERAL CHEMISTRY 1

**COMMON COURSE NUMBER:** CHM1045

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** This is the first course in a two semester sequence, CHM 1045 and CHM 1046. This sequence includes two laboratories: CHM 1045L to be taken concurrently with CHM 1045 and CHM 1046L to be taken with CHM 1046. This sequence is for students who have already had high school chemistry. Topics covered include: chemical measurements, stoichiometry, atomic structure periodic table, chemical bonding, inorganic compounds, nomenclature, formula writing, gases, liquids, solids, solutions acid-base chemistry and ionic reactions and some descriptive chemistry of non-metals. To enroll, it is strongly recommended that students have had previous chemistry at the high school or college level. If a student has not had prior experience in a chemistry course the CHM 1040/CHM 1041/CHM 1046 sequence is highly recommended.

### MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 4b: Physical Sciences

AS Degree, meets Area(s):

AS-Area 4: Natural Sciences

AAS Degree, meets Area(s):

AAS-Area 4: Mathematics/Science

AAS-Area 5: Program-Designated Courses

### UNIT TITLES

1. Reading and Writing in Chemistry
2. Introduction and Measurement
3. Atomic Structure and Periodicity
4. Bonding
5. Inorganic Formula Writing and Nomenclature
6. Stoichiometry
7. Gases
8. Liquids and Solids
9. Solutions
10. Acid, Bases and Salts
11. Oxidation-Reduction
12. Descriptive Chemistry: Non-Metals

**EVALUATION:**

In the box to the right of the Methods of Assessment, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 4.0, 4.2 and 5.12) that apply.

<b>Portfolio</b>	
<b>Short Essay</b>	1.0, 2.1, 2.2, 3.1, 3.5, 7.5
<b>Research Project</b>	1.0, 2.1, 2.2, 3.1, 3.5, 7.5, 12.2, 12.3
<b>Group Projects</b>	1.0, 2.1, 2.2, 3.1, 3.5, 7.5, 12.2, 12.3
<b>Discussion</b>	1.3, 1.4, 2.1, 2.2, 3.5, 7.5
<b>Multiple Choice Tests</b>	2.3 – 2.10, 3.2 – 3.11, 4.1 – 4.3, 5.0, 6.1, 6.2, 8.1, 8.5, 9.1, 10.1, 10.2, 11.1, 11.4, 12.1
<b>Presentations</b>	1.0, 2.1, 2.2, 4.8, 7.5,
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	2.3-2.10, 3.2 – 3.11, 4.4, 4.5, 4.6, 5.0, 6.0, 7.1 – 7.4, 8.1, 8.2, 8.4 – 8.7, 9.0, 10.3 – 10.5, 11.
<b>Take Home Tests</b>	1.0, 2.1, 2.2, 2.10, 3.1, 3.4 – 3.11, 4.4 – 4.8, 5.0, 6.2 – 6.9, 7.0, 8.0, 9.1 – 9.3, 9.5, 10.2 – 10
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	1.0, 2.1, 2.2, 3.1, 3.5, 3.11, 4.1, 4.4 – 4.8, 5.0, 6.2 – 6.9, 7.0, 8.1 – 8.6, 9.1 – 9.4, 10.2, 1
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	

**GENERAL EDUCATION Competencies and Skills:**

<b>1. Read with critical comprehension.</b>	1.1 , 1.2 , 1.3 , 1.4 , 2.4 , 2.10 , 3.10 , 6.5 , 7.1 , 9.5
<b>2. Write clearly and coherently.</b>	1.1 , 1.3 , 2.6 , 3.7 , 3.8 , 4.1 , 4.3 , 4.4 , 5.2 , 5.3 , 6.6 , 6.7 , 10.4 , 11.2 , 12.3
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Quantitative: 2.6 , 2.8 , 2.9 , 2.10 , 3.3 , 3.4 , 3.5 , 3.7 , 6.3 , 6.4 , 6.5 , 6.7 , 6.8 , 6.9 , 7.2 , 7.4 , 8.0 , 9.1 , 9.2 , 9.3 , 9.4 , 10.1 , 10.2 , 10.3 , 10.4 , 11.1 , 11.4 , 12.0 Scientific: 2.0 , 3.0 , 4.0 , 5.0 , 6.0 , 7.0 , 8.0 , 9.0 , 10.0 , 11.0 Environmental: 7.5
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	2.2 , 2.10 , 3.7 , 4.2 , 4.6 , 5.1 , 6.3 , 6.5 , 6.7 , 6.8 , 7.1 , 7.3 , 9.5 , 10.5 , 11.3 , 11.4
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	2.1 , 2.2 , 7.5

<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
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<b>8. Speak and listen effectively.</b>	
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## UNITS

### Unit 1 Reading and Writing in Chemistry

#### General Outcome

- 1.0 The student shall be able to clearly communicate in writing information derived from course related readings about the major concepts and themes in the chemical sciences.

#### Specific Learning Outcomes

- 1.1 Demonstrate in writing the ability to analyze, evaluate, compare, and/or extract data relevant to chemistry from course related readings.
- 1.2 Evaluate the validity of information from a variety of sources, including but not limited to such sources as electronic, print sources, and data bases.
- 1.3 Demonstrate with the use of equations, diagrams, drawings, concept maps, and/or other methods the connections among chemical concepts.
- 1.4 Demonstrate the ability to use the appropriate technology to carry out course requirements.

### Unit 2 Introduction and Measurement

#### General Outcome

- 2.0 The student shall be able to demonstrate knowledge of the nature of chemistry; its classification, properties, types of changes of matter, and scientific measurements.

#### Specific Learning Outcomes

- 2.1 Define chemistry and evaluate its modern applications and impact on complex systems such as the environment, medicine, industry, and technology.
- 2.2 Distinguish among factual data, laws, theories, and hypotheses in the scientific method to create knowledge and solve problems that benefit humanity and its environment.
- 2.3 Differentiate between pure substances and mixtures, and correctly use specific terms such as elements, compounds, atoms, molecules, homogeneous, heterogeneous, phases and solutions.
- 2.4 Interpret chemical symbols and formulas, in order to determine the information they convey.
- 2.5 Differentiate between chemical and physical properties and changes, and between intensive and extensive properties.
- 2.6 Perform calculations using scientific notation and significant figures and to analyze their answers for correctness.
- 2.7 Distinguish and apply the common metric/SI units for mass, length, volume, and energy and the prefixes from tera- through pico-.
- 2.8 Perform conversions among metric units and between certain English and metric units using dimensional analysis and analyze their answers for correctness.
- 2.9 Interconvert temperatures among Celsius, Fahrenheit, and Kelvin scales.



- 2.10 Read with critical comprehension experimental data to solve problems involving density and specific gravity; analyze and interpret their answers for correctness.

### Unit 3 Atomic Structure and Periodicity

#### General Outcome

- 3.0 The student shall be able to describe the structure and components of atoms and apply these concepts to the information contained in the Periodic Table, as well as construct knowledge of present day models from classical experiments.

#### Specific Learning Outcomes

- 3.1 Analyze the historical development of the atomic concept leading to the modern view of the atom.
- 3.2 Differentiate the fundamental sub-atomic particles and their properties.
- 3.3 Apply the mass number and atomic number to determine the number of protons, neutrons and electrons in a given nuclide.
- 3.4 Explain the basis of the atomic mass system and calculate atomic masses from isotopic masses and abundances.
- 3.5 Identify the regions of the electromagnetic spectrum and perform calculations involving frequency, wavelength and energy.
- 3.6 Interpret the four quantum numbers and relate them to the electronic structure of the atom.
- 3.7 Formulate and write electronic configurations utilizing Pauli's Exclusion Principle, the Aufbau Principle, and Hund's Rule.
- 3.8 Write valence electron configurations and use orbital diagrams to predict paramagnetism, diamagnetism, and bonding behavior.
- 3.9 Employing the Periodic Law, analyze the Periodic Table to interpret terms such as period, group, representative or main group elements, and transition and inner transition elements.
- 3.10 Categorize elements in the Periodic Table as metals, non-metals, or metalloids, and compare and contrast the general properties of these classifications.
- 3.11 Use the Periodic Table to predict trends in ionization energies, electron affinities, electronegativities, and atomic and ionic sizes.

### Unit 4 Bonding

#### General Outcome

- 4.0 The student shall be able to explain concepts of ionic and covalent bonding, including the ability to predict formulas, molecular shapes and infer properties due to shape, such as polarity.

#### Specific Learning Outcomes

- 4.1 Differentiate between ionic and covalent bonding modes, and compare and contrast the properties of ionic and covalent substances.
- 4.2 Predict which combinations of elements tend to bond ionically and which tend to bond covalently.
- 4.3 Use the concept of valence electrons and the octet rule to construct ions and molecules from atoms. Write Lewis structures for those ions and molecules.
- 4.4 Write resonance contributing forms and calculate formal charges.

- 4.5 Apply the valence shell electron pair repulsion theory (VSEPR) to predict shapes of molecules from molecular formulas.
- 4.6 Predict the presence and direction of dipoles in covalent molecules.
- 4.7 Apply the valence bond theory to account for hybrid orbitals, multiple bond formation, and molecular geometry as predicted by VSEPR.
- 4.8 (Optional) Apply the molecular orbital theory to write MO configurations for molecules and to calculate bond order.

## **Unit 5 Inorganic Formula Writing and Nomenclature**

### General Outcome

- 5.0 The student shall be able to write formulas and name common ionic and covalent substances.

### Specific Learning Outcomes

- 5.1 Determine charges of ions from ionic formulas.
- 5.2 Write the name, formula, and charge for mono- and polyatomic ions. At a minimum, the following ions should be covered:  $\text{Li}^+$ ,  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Mg}^{2+}$ ,  $\text{Ca}^{2+}$ ,  $\text{Ba}^{2+}$ ,  $\text{Al}^{3+}$ ,  $\text{O}_2^-$ ,  $\text{S}_2^{2-}$ ,  $\text{F}^-$ ,  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$ ,  $\text{Ag}^+$ ,  $\text{Zn}^{2+}$ ,  $\text{Cu}^+$ ,  $\text{Cu}^{2+}$ ,  $\text{Fe}^{2+}$ ,  $\text{Fe}^{3+}$ ,  $\text{NH}_4^+$ ,  $\text{H}_3\text{O}^+$ ,  $\text{OH}^-$ ,  $\text{SO}_4^{2-}$ ,  $\text{CO}_3^{2-}$ ,  $\text{HCO}_3^-$ ,  $\text{PO}_4^{3-}$ ,  $\text{HPO}_4^{2-}$ ,  $\text{H}_2\text{PO}_4^-$ , and  $\text{NO}_3^-$ .
- 5.3 Compose the formula and write the name for simple ionic and covalent compounds.

## **Unit 6 Stoichiometry**

### General Outcome

- 6.0 The student shall utilize the concept of the mole to evaluate numerical relationships involving formulas and balanced equations.

### Specific Learning Outcomes

- 6.1 Illustrate the relationship between Avogadro's number and formula weights (molar mass) of elements and compounds.
- 6.2 Identify the seven elements that exist as diatomic molecules in their elemental state.
- 6.3 Apply dimensional analysis to interconvert between the mass of a given substance and the corresponding number of moles.
- 6.4 Calculate the percent composition of a compound from its formula.
- 6.5 Read with critical comprehension quantitative analytical data required to calculate the empirical and molecular formula of a compound.
- 6.6 Balance chemical equations utilizing the mole concept.
- 6.7 Given a balanced equation construct a diagram to demonstrate the relationship between the number of moles and grams for various substances in a chemical equation. Use those relationships to calculate specific quantities of reactants and/or products involved.
- 6.8 Evaluate the limiting reagent in a given chemical reaction based on previous stoichiometric calculations involving that reaction.
- 6.9 Calculate the theoretical yield in a chemical reaction. Determine the percentage yield of a chemical reaction based on quantitative experimental data.

## **Unit 7 Gases**

General Outcome

- 7.0 The students shall be able to compare properties and behavior of gases and perform calculations using the gas laws.

Specific Learning Outcomes

- 7.1 Read experimental data in order to solve problems that involve the application of the gas laws, using the appropriate units.
- 7.2 Differentiate between ideal and non-ideal gas behavior through the application of the ideal gas law and the Van der Waals equation.
- 7.3 Evaluate experimental parameters and complete stoichiometric calculations that involve volumes of gaseous reactants and products.
- 7.4 Analyze the kinetic-molecular theory to construct the gas laws and the general properties of gases, liquids and solids.
- 7.5 Evaluate the chemistry of the atmosphere. The evaluation can include the composition of the atmosphere, common pollutants, their sources, and environmental effects, as well as the impact of human endeavors on this complex system.

**Unit 8 Liquids and Solids**General Outcome

- 8.0 The students shall be able to construct and describe the properties of the liquid and solid states.

Specific Learning Outcomes

- 8.1 Compare and contrast the various intermolecular attractions in liquids and solids and describe their relative strengths.
- 8.2 Assess molecular packing or intermolecular attractions to demonstrate the general properties of liquids and solids.
- 8.3 Describe the energy associated with changes in state.
- 8.4 Differentiate the relationships among temperature, vapor pressure and boiling point.
- 8.5 Distinguish between amorphous and crystalline solids.
- 8.6 Evaluate the characteristics of molecular, covalent, ionic and metallic solids.
- 8.7 Interpret phase diagrams.

**Unit 9 Solutions**General Outcome

- 9.0 The students shall be able to analyze and evaluate qualitative and quantitative concepts involving solutions.

Specific Learning Outcomes

- 9.1 Compare the properties of suspensions, colloidal dispersions, and true solutions.
- 9.2 Describe the processes involved in the formation of solutions.
- 9.3 Examine and describe the energy changes that are involved in the solution process.

- 9.4 Assess the effects of changes in temperature and pressure on solubility.
- 9.5 Read and comprehend experimental data to facilitate the solving of quantitative problems dealing with concentrations of solutions and colligative properties.

**Unit 10 Acid, Bases and Salts**General Outcome

- 10.0 The students shall be able to compare and contrast the properties, definitions and reactions of acids, bases and salts.

Specific Learning Outcomes

- 10.1
- 10.2 Differentiate between the terms strong, weak, and non-electrolytes.
- 10.3 Compare and contrast the concepts of the Arrhenius, Bronsted-Lowry and Lewis definitions of acids, bases and their reactions.
- 10.4 Evaluate solubility rules to determine if a specific compound is soluble in water.
- 10.5 Propose the products of double displacement reactions and write balanced ionic equations.
- 10.6 Diagram the acid/base titration process and perform calculations related to titrations using experimental data.

**Unit 11 Oxidation-Reduction**General Outcome

- 11.0 The students shall be able to identify and evaluate information regarding oxidation-reduction chemical reactions.

Specific Learning Outcomes

- 11.1 Recognize equations as oxidation-reduction and identify oxidizing and reducing agents in the equations.
- 11.2 Write balanced oxidation-reduction chemical equations.
- 11.3 Determine experimental parameters, such as concentration, from quantitative experimental data of oxidation-reduction titrations.
- 11.4 Analyze the activity series and propose the outcome of single displacement reactions based on this information.

**Unit 12 Descriptive Chemistry: Non-Metals**General Outcome

- 12.0 The students shall be able to compare and contrast the common non-metallic elements and their chemistry.

Specific Learning Outcomes

- 12.1 Analyze the periodic table of elements and distinguish which are elements classified as non-metals.
- 12.2 Discuss the relative abundance and major forms of occurrence for important non-metals.

- 12.3 Illustrate the properties and write out the major reactions of the major non-metallic elements.

## BROWARD COLLEGE COURSE OUTLINE

Last Review: 08/01/2010

Next Review: 08/01/2015

**COURSE TITLE:** GENERAL CHEMISTRY I LAB**COMMON COURSE NUMBER:** CHM1045L**EFFECTIVE TERM:****CREDIT HOURS:** 1**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture: 0

Lab: 48

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** Laboratory experiments to accompany CHM1041 or CHM1045. Placement by Testing Department or

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 4c: Science Laboratory

**UNIT TITLES**

1. Laboratory and Safety Rules
2. Reading and Writing in the Chemistry Laboratory
3. Laboratory Calculations
4. Laboratory Skills

**EVALUATION:**

In the box to the right of the Methods of Assessment, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 4.0, 4.2 and 5.12) that apply.

<b>Portfolio</b>	
<b>Short Essay</b>	
<b>Research Project</b>	
<b>Group Projects</b>	2.1, 2.2, 2.3, 4.3, 4.4, 4.7, 4.8
<b>Discussion</b>	
<b>Multiple Choice Tests</b>	1.1, 1.2, 1.3, 1.4, 2.2, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8
<b>Presentations</b>	
<b>Service Learning Projects</b>	

<b>Pop Quizzes</b>	1.1, 1.2, 1.3, 1.4, 2.2, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8
<b>Take Home Tests</b>	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.4, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6,
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.4, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6,
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	
<b>Submission of written lab reports</b>	

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	1.4 , 2.1 , 2.2 , 4.1
<b>2. Write clearly and coherently.</b>	2.1 , 2.3 , 3.1 , 3.5 , 4.1 , 4.9
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Technology: 2.2 , 2.4 , 4.3 , 4.5 Quantitative: 2.1 , 2.3 , 3.1 , 3.2 , 3.4 , 3.5 , 3.6 , 3.7 Scientific: 2.1 , 2.3 , 3.5 , 3.7 , 4.4 , 4.5 , 4.6 , 4.7 , 4.8 , 4.9
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	2.1 , 2.2 , 2.3 , 3.1 , 3.2 , 3.3 , 3.4 , 3.5 , 3.6 , 3.7 , 4.1 , 4.7 , 4.8 , 4.9
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	1.2 , 1.4 , 4.4
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

## UNITS

### Unit 1 Laboratory and Safety Rules

#### General Outcome

- 1.0 The students shall be able to: (1) conduct a chemistry experiment using proper safety procedures, (2) recognize and respond appropriately to potentially hazardous situations, and (3) recognize the necessity of safe laboratory practices.

#### Specific Learning Outcomes

- 1.1 List the safety rules as provided by the instructor.  
1.2 Explain the importance of the safety rules to maintain a safe environment for students and faculty.

- 1.3 Locate and describe the use of safety equipment such as fire extinguishers, fire blanket(s), eye wash station, safety shower, first aid kit, spill clean-up kites, utility shutoff valves, etc.
- 1.4 Conduct scheduled experiments in accordance with the listed safety rules.

## **Unit 2 Reading and Writing in the Chemistry Laboratory**

### General Outcome

- 2.0 The student shall be able to clearly communicate in writing information derived from course related readings about the major concepts and themes in the chemical laboratory.

### Specific Learning Outcomes

- 2.1 Demonstrate in writing the ability to analyze, evaluate, compare, and/or extract data relevant to each chemistry experiment.
- 2.2 Evaluate the validity of information obtained in the laboratory by comparing it to information obtained from electronic, print sources, and/or data bases.
- 2.3 Demonstrate with the use of diagrams, drawings, outlines, concept maps, and/or other methods the connections among chemical concepts.
- 2.4 Demonstrate the ability to use the appropriate technology to carry out course requirements.

## **Unit 3 Laboratory Calculations**

### General Outcome

- 3.0 The students shall be able to apply appropriate mathematical tools to accurately determine calculated results from experimental data.

### Specific Learning Outcomes

- 3.1 Set up problems and perform calculations related to the chemical concepts in this laboratory: measurements, physical properties, stoichiometry, gas laws, solution chemistry, colligative properties, acid/base chemistry, electrolytes, oxidation/reduction chemistry, and spectroscopy.
- 3.2 Apply the rules for the use of significant figures and rounding values as they apply to laboratory data.
- 3.3 Demonstrate by proper use the relationship between accuracy and precision.
- 3.4 Average laboratory data correctly
- 3.5 Construct graphs, graph laboratory data, and evaluate the results.
- 3.6 Calculate a percentage yield and percentage error from experimental data.
- 3.7 Evaluate the results of a laboratory calculation in terms of reasonableness.

## **Unit 4 Laboratory Skills**

### General Outcome

- 4.0 The students shall be able to demonstrate laboratory skills in the performance of an experiment

### Specific Learning Outcomes

- 4.1 Discuss the theoretical background for each experiment by reading the material provided and answering assigned open-ended questions and/or solving related problems before each lab.
- 4.2 Identify common laboratory glassware, select the appropriate glassware for a procedure, and use it properly and safely to perform a given laboratory task.



- 4.3 Properly assemble laboratory apparatus as required for the experiments performed in this laboratory based on the following topics: measurements, physical properties, stoichiometry, gases, solution chemistry, colligative properties, acid/base chemistry, electrolytes, oxidation/reduction chemistry, and spectroscopy.
- 4.4 Select, dispense, measure, properly use, dilute, and dispose of laboratory chemicals safely and properly.
- 4.5 Operate specific pieces of laboratory equipment including balances, Bunsen burners, burets, pipettes, thermometers, barometers, spectrometers, pH meters, etc.
- 4.6 Perform specific laboratory procedures including determining melting point and boiling point, titrations, filtrations, crystallizations, etc.
- 4.7 Distinguish between objective observation and subjective interpretation.
- 4.8 Perform chemical and physical tests to identify an unknown compound by drawing logical conclusions from observed data.
- 4.9 Complete required laboratory reports including proper representation of data, analysis of data, and discussion of results.

## BROWARD COLLEGE COURSE OUTLINE

Last Review: 08/01/2010

Next Review: 08/01/2015

**COURSE TITLE:** PRINCIPLES OF MACROECONOMICS**COMMON COURSE NUMBER:** ECO2013**EFFECTIVE TERM:****CREDIT HOURS:** 3**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** An introductory course in macroeconomic principles covering basic economic problems and concepts. Topics discussed and analyzed include basic economic problems of unemployment and inflation. Students will recognize the role of households, businesses and governments in the market economy and in their own lives. This is a writing credit course.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 3b: Social/Behavioral Sciences

AA/Bac-Area 7: Writing Requirement

AS Degree, meets Area(s):

AS-Area 3: Social/Behavioral Sciences

AAS Degree, meets Area(s):

AAS-Area 3: Social/Behavioral Sciences

AAS-Area 5: Program-Designated Courses

**UNIT TITLES**

1. Basic Economic Concepts
2. Measurement of Economic Performance
3. National Income and Price Determination
4. Financial Sector
5. Inflation, Unemployment, and Stabilization Policies
6. Economic Growth and Productivity
7. Writing for Economics
8. Collaborative Application of Economic Principles

**EVALUATION:**

-

<b>Portfolio</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0
<b>Short Essay</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0
<b>Research Project</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

<b>Group Projects</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0
<b>Discussion</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0 (online), 8.0
<b>Multiple Choice Tests</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0
<b>Presentations</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 8.0
<b>Service Learning Projects</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 8.0
<b>Pop Quizzes</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0
<b>Take Home Tests</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0
<b>Summaries and Critiques</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 8.0
<b>Reaction Papers</b>	
<b>Surveys</b>	7.0, 8.0
<b>Performance</b>	
<b>Short Answer Tests</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0
<b>Class Room Debates and Colloquia</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 8.0
<b>Blog, Wikis, Webpages</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0
<b>Other</b>	

#### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	1.0 , 7.2 , 8.2
<b>2. Write clearly and coherently.</b>	7.0
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Information: 7.0 , 8.0 Workplace: 8.0 Quantitative: 1.3 , 1.4 , 1.6 , 1.7 , 2.2 , 2.3 , 2.4 , 2.5 , 2.7 , 3.3 , 3.4 , 4.8 , 5.0 , 6.0
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	1.3 , 1.4 , 2.4 , 2.5 , 3.5 , 4.7 , 5.5 , 6.4 , 7.0 , 8.0
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	1.2 , 1.5 , 1.7 , 1.9 , 1.10 , 2.1 , 2.5 , 4.9 , 5.1 , 5.5 , 6.0 , 8.1
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

#### UNITS

##### Unit 1 Basic Economic Concepts

###### General Outcome

- 1.0 Define the basic economic concepts and explain the role of government in modern mixed economy and will learn and apply the language and terminology of economics to the world around us.

###### Specific Learning Outcomes

- 1.1 Differentiate between laymen's use of economic terms and economic concepts.

- 1.2 Distinguish between macroeconomics and microeconomics.
- 1.3 Explain scarcity, choice and opportunity costs.
- 1.4 Analyze production possibility curve and methods for economic growth.
- 1.5 Distinguish between comparative advantage, absolute advantage, specialization, and exchange.
- 1.6 Analyze impact of technology on the economy.
- 1.7 Differentiate between points on a demand and supply curve vs the determinants of demand and supply.
- 1.8 Describe macroeconomic issues:
  - 1.8.1 Business Cycle
  - 1.8.2 Unemployment
  - 1.8.3 Inflation
  - 1.8.4 Growth
- 1.9 Differentiate between the economic and non-economic functions of government.
- 1.10 Explain the concept of spillovers, their impact on resource allocation, and the corrective actions needed.

## **Unit 2 Measurement of Economic Performance**

### General Outcome

- 2.0 Analyze the national income accounts; the inflation and adjustment; and unemployment.

### Specific Learning Outcomes

- 2.1 Examine the model of circular flow and products that contain four sectors
  - 2.1.1 Households
  - 2.1.2 Businesses
  - 2.1.3 Government
  - 2.1.4 International
- 2.2 Explain how the GDP is measured and identify its components.
- 2.3 Distinguish between real GDP and nominal GDP.
- 2.4 Explain inflation; how it is measured; and the costs of inflation.
  - 2.4.1 Examine CPI.
  - 2.4.2 Examine GDP deflator.
- 2.5 Evaluate the nature and causes of unemployment.
  - 2.5.1 Evaluate the costs of unemployment.
  - 2.5.2 Evaluate how unemployment is measured.
  - 2.5.3 Evaluate criticisms associated with the measurement of unemployment rate and the factors that affect it.
- 2.6 Categorize types of unemployment.
- 2.7 Define the natural rate of unemployment.

## **Unit 3 National Income and Price Determination**

### General Outcome

- 3.0 Explain the aggregate demand and supply model; and explain the macroeconomic equilibrium.

### Specific Learning Outcomes

- 3.1 Examine the determinants of aggregate demand and aggregate supply.
- 3.2 Interpret the multiplier and crowding-out effects.
- 3.3 Analyze the different views about the shape of AS in the short and long run.

- 3.4 Discuss sticky-price and sticky-wage models and their implication for AS curve.
- 3.5 Evaluate the impact of economic fluctuations on the economy's real output and price level in both the short and long run.

#### **Unit 4 Financial Sector**

##### General Outcome

- 4.0 Examine money, banking and financial markets; and analyze central bank and controls of the money supply.

##### Specific Learning Outcomes

- 4.1 Define the four functions of money.
- 4.2 Explain what is meant by transaction and asset demand for money.
- 4.3 Illustrate the fractional cash reserve system used in the U.S.
- 4.4 Explain how money is created.
- 4.5 Compare the tools of the Federal Reserve System.
- 4.6 Define what is meant by easy money and tight money supply policies.
- 4.7 Evaluate the comparative effectiveness of monetary and fiscal policy alternatives.
- 4.8 Compare real vs. nominal interest rates.
- 4.9 Demonstrate how the money market operates.

#### **Unit 5 Inflation, Unemployment, and Stabilization Policies**

##### General Outcome

- 5.0 Analyze fiscal and monetary policies; and explain inflation and unemployment.

##### Specific Learning Outcomes

- 5.1 Compare and contrast economic theories: Keynesian, Monetarism, Rational Expectations, and Supply Side Economics (and the Laffer Curve).
- 5.2 Discuss the historical perspective of inflation and unemployment in relation to Phillips Curve and stagflation.
- 5.3 Analyze fiscal and monetary policies from the demand-side effects.
- 5.4 Analyze fiscal and monetary policies from the supply-side effects.
- 5.5 Evaluate the impact of government deficits and debt.
- 5.6 Differentiate between demand-pull and cost-push inflation.

#### **Unit 6 Economic Growth and Productivity**

##### General Outcome

- 6.0 Examine how long run economic growth occurs; and describe the role of productivity in output and the standard of living.

##### Specific Learning Outcomes

- 6.1
- 6.2 Analyze the role of investment in human capital formation.
- 6.3 Analyze the role of investment in physical capital formation.
- 6.4 Demonstrate the role of investment in research and development, and technological progress.
- 6.5 Illustrate how public policies influence the long-run economic growth of economy.

**Unit 7 Writing for Economics**General Outcome

- 7.0 Read, research and submit written assignments that require analysis and evaluation of economic topics.

Specific Learning Outcomes

- 7.1
- 7.2 Compose written work on economic topics, by way of short essays, research papers, take home tests, short answer tests, online threaded discussions, portfolios, group presentations, critiques, blogs, web pages, service learning projects, or other methods as identified by the instructor.
- 7.3 Conduct research from viable and creditable sources such as and not limited to economic journals, periodicals, books, data bases, and web sites.
- 7.4 Analyze and evaluate the principle of economic topics in a written format.
- 7.5 Compare and differentiate among economic concepts in their written work.

**Unit 8 Collaborative Application of Economic Principles**General Outcome

- 8.0 Participate in a collaborative activity that will require research, analysis and evaluation of a current topic in economics.

Specific Learning Outcomes

- 8.1
- 8.2 Apply problem-solving techniques in a collaborative format, such as and not limited to group projects, in-class and online discussions, presentations, service learning projects, research papers, and classroom debates.
- 8.3 Assemble collaborative research from newspaper articles, current events magazines, videos, newscasts, web sites, and other media sources in order to evaluate a current topic in economics.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 07/08/2014

**Next Review:** 08/01/2016

**COURSE TITLE:** PRINCIPLES OF MICROECONOMICS

**COMMON COURSE NUMBER:** ECO2023

**EFFECTIVE TERM:** Fall 2014

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab:

Clinic:

Other:

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** An introductory course stressing microeconomic theories. Topics studied include the theory and application of supply and demand elasticity; theory of consumer demand, utility; production and cost theory including law of diminishing returns; the firm's profit-maximizing behaviors under market models ranging from pure competition to pure monopoly; the theory of income distribution; comparative advantage, trade policies exchange rates, balance of payments, and other international issues. This is a writing credit course. Prerequisite: Completion of prep reading obligation.

### UNIT TITLES

1. Basic Economic Concepts
2. Theory and Application of Demand and Supply Elasticity
3. Theory of Consumer Behavior
4. Theory of the Firm
5. Distribution of income: The pricing of the productive factors
6. International Economics

### EVALUATION:

Exams, essay questions, group projects, and presentations.

### UNITS

#### Unit 1      **Basic Economic Concepts**

##### General Outcome

- 1.0    **Define the basic economic concepts; learn and apply the language and terminology of economics; and explain the role of government in a modern mixed economy.**

##### Specific Learning Outcomes

- 1.1    **Differentiate between the layman's use of economic terms and economic concepts.**
- 1.2    **Distinguish between macroeconomics and microeconomics.**

- 1.3 Explain scarcity, choice, and opportunity cost.
- 1.4 Analyze the impact of technology on physical capital formation, productivity, and allocation of resources.
- 1.5 Apply the concept of market equilibrium through demand and supply, and the impact of price ceilings (and floors) on the allocation of resources.
- 1.6 Differentiate between points on a demand and supply curve and the determinants of demand and supply.
- 1.7 Differentiate between the economic and non-economic functions of government.

## Unit 2 Theory and Application of Demand and Supply Elasticity

### General Outcome

- 2.0 Calculate elasticity and apply the concept in various demand and supply situations.

### Specific Learning Outcomes

- 2.1 Define the concepts of price elasticity of demand and supply, and illustrate with suitable diagrams.
- 2.2 Calculate the co-efficient of elasticity in various demand and supply situations.
- 2.3 Explain the total revenue effect of price changes under conditions of:
  - 2.3.1 Elastic demand or supply
  - 2.3.2 Inelastic demand or supply
  - 2.4.3 Unit-elastic demand or supply
- 2.4 Identify properties of goods and services which affect the elasticity of demand and supply.
- 2.5 Discuss the significance of elasticity in levying excise taxes on specific goods.
- 2.6 Explain the application of demand elasticity concepts to changes in income (income elasticity) and the prices of other goods (cross-price elasticity).

## Unit 3 Theory of Consumer Behavior

### General Outcome

- 3.0 Apply the analytical basis of consumer behavior in using services and goods.

### Specific Learning Outcomes

- 3.1 Describe three hypotheses to explain the Law of Demand.
- 3.2 Explain the concepts of utility, total utility, and marginal utility.
- 3.3 Define the Law of Diminishing Marginal Utility and illustrate with specific examples.
- 3.4 Explain and illustrate utility maximizing, with a limited budget constraint, using utility theory.
- 3.5 Derive the consumer's demand curve for various goods and services using utility theory.
- 3.6 Discuss the merits and shortcomings of utility analysis.
- 3.7 Optionally, explain the use of indifference curve analysis as an alternative (or supplement) to utility theory.

## Unit 4 Theory of the Firm

### General Outcome

- 4.0 Determine the theoretical optimum behavior of the firm as it seeks to maximize total profit in various market models ranging across the competitive spectrum, from pure competition to pure monopoly.



Specific Learning Outcomes

- 4.1 Differentiate between explicit and implicit costs and how these relate to normal profit vs. economic profit.
- 4.2 Define and illustrate the Law of Diminishing Returns in production.
- 4.3 Describe and illustrate graphically the firm's family of short-run cost curves.
- 4.4 Describe and illustrate graphically the firm's long-run cost, including economies and diseconomies of scale.
- 4.5 Describe and illustrate graphically the firm's profit-maximizing behavior, in particular  $MR=MC$ , under the following market conditions:
  - 4.5.1 Pure (Perfect) competition
  - 4.5.2 Pure monopoly
  - 4.5.3 Monopolistic competition
  - 4.5.4 Oligopoly

**Unit 5** Distribution of income: The pricing of the productive factorsGeneral Outcome

- 5.0 Write clearly and coherently in describing basic production theory, the marginal productivity theory of income distribution, and the relationship of the latter to theories of rent, wages, interest, and profit.

Specific Learning Outcomes

- 5.1 Define the condition that must be satisfied if a firm is a least-cost position.
- 5.2 Define the condition that must be satisfied if a firm is in a profit-maximizing position.
- 5.3 Describe, in general, what is meant by the theory of distribution.
- 5.4 Define derived demand and economic rent and explain the importance of interest rates.
- 5.5 Explain the influence of the substitution-effect and income-effect upon the labor supply curve.
- 5.6 Discuss current dynamic forces impacting labor markets. These could include, but are not limited to unions, monopsony, healthcare, individual labor supply curve, or wage differentials.

**Unit 6** International EconomicsGeneral Outcome

- 6.0 Describe the theories and problems of international trade, in developed and developing economics, as well as the history and present status of the international payment system.

Specific Learning Outcomes

- 6.1 Explain and illustrate graphically the concepts of comparative advantage and absolute advantage, using numerical examples and production-possibilities curves (comparative advantage)
- 6.2 Identify and discuss the chief arguments for and against protectionist trade barriers.
- 6.3 Explain how international exchange rates are determined.
- 6.4 List and explain the three main divisions within the balance of international payments.
- 6.5 Describe the post-World War II Bretton Woods international payment system and its demise in the 1970s.
- 6.6 Describe and discuss the present system of managed floating exchange rates and possible future developments.

**6.7 Compare developed and developing countries, illustrating the evolving nature of these definitions.**

## BROWARD COLLEGE COURSE OUTLINE

Last Review: 08/01/2010

Next Review: 08/01/2015

**COURSE TITLE:** COMPOSITION I**COMMON COURSE NUMBER:** ENC1101**EFFECTIVE TERM:****CREDIT HOURS:** 3**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

**College Placement Testing Requirements**

Passing Placement Tests score(s) in the following area(s) is/are required:

- English
- Reading

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** A university parallel course in which the student writes expository themes in various modes. Research methods and library skills are introduced and a documented paper is required. Each student is encouraged to use the writing lab to strengthen writing skills. Placement in ENC 1101 is determined by both standard and departmental assessment tests. A student must earn a grade of C or higher to meet the requirements of the Gordon rule.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 1a: Composition

AA/Bac-Area 7: Writing Requirement

AS Degree, meets Area(s):

AS-Area 1: Communications

AAS Degree, meets Area(s):

AAS-Area 1: Communications

AAS-Area 5: Program-Designated Courses

**UNIT TITLES**

1. Reading Critically
2. Essay Development
3. Conventions of Standard American English
4. Research Skills

**EVALUATION:**

-

<b>Portfolio</b>	2.0, 4.0
<b>Short Essay</b>	2.0, 3.0
<b>Research Project</b>	4.0

<b>Group Projects</b>	
<b>Discussion</b>	1.3, 1.4
<b>Multiple Choice Tests</b>	3.0
<b>Presentations</b>	1.2, 1.4, 4.0
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	3.0
<b>Take Home Tests</b>	
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	1.3, 1.4
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	

#### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	1.1 , 1.2 , 4.2 , 4.3 , 4.4
<b>2. Write clearly and coherently.</b>	2.1 , 2.4 , 2.5 , 2.6 , 2.7 , 3.6 , 4.5 , 4.6 , 4.7 , 4.8
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Information: 1.4 , 4.2 Cultural: 1.3
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	2.7 , 2.9 , 2.10 , 4.3 , 4.4 , 4.8
<b>5. Differentiate between ethical and unethical behavior.</b>	4.8
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	3.1
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	1.3 , 3.1
<b>8. Speak and listen effectively.</b>	

#### UNITS

##### Unit 1 Reading Critically

###### General Outcome

- 1.0 Evaluate assigned readings with a view to their artistic merits, content, logical progression, and thoroughness of citations (if any). The students shall be able to find the main idea of the assigned reading, recognize and evaluate the supporting details and comment on the effectiveness of the writer's overall writing technique.

###### Specific Learning Outcomes

- 1.1 **Read with critical comprehension.** The students will be able to distinguish the different writing techniques the author has used in the reading assignments for this unit and be able to critique their effectiveness. The students will also be able to comment on the writing's content and purpose and analyze their effectiveness both in writing assignments and classroom discussions.
- 1.2 **Analyze the readings critically, creatively, and reflectively.** Students will be able to offer their own ideas on the readings and apply what they have learned in critiquing the readings to their own writing in a manner that is both reasonable and shows originality on their part.
- 1.3 **Demonstrate and apply cultural literacy in discussions on the readings.** Students will be able to demonstrate an understanding and appreciation for artistry in language and writing methods. Students will be able to compare, contrast, and discuss how one's culture can affect one's point of view as well as one's frame of reference. Students will be able to discuss the cultural milieu from which they derive their own language and writing and its effect on their writing. They will be able to distinguish and critique this in their own writing.
- 1.4 **Demonstrate mastery of information literacy by locating critical sources to evaluate the accuracy and validity of the assigned readings, to compare varying viewpoints, and arrive at their own positions on the subjects in their writing and class discussions.** Students will be able to question whether the information supports the writer's thesis, reveals a certain bias, can be checked against other sources, and when the information was produced.

## **Unit 2 Essay Development**

### General Outcome

- 2.0 **Compose units of discourse and provide ideas and information suitable to the audience and purpose.**

### Specific Learning Outcomes

- 2.1 **Write an effective paragraph, recognizing its importance as the foundation of a clear and coherent essay.**
  - 2.1.1 **Formulate an effective topic sentence.**
  - 2.1.2 **Organize details of the paragraph according to purpose.**
    - 2.1.2.1 **Order of Importance**
      - 2.1.2.1.2 **Ascending**
      - 2.1.2.1.3 **Descending**
    - 2.1.2.2 **Chronological Order**
    - 2.1.2.3 **Sequential Order**
    - 2.1.2.4 **Spatial Order**
  - 2.1.3 **Use transitional devices effectively.**
  - 2.1.4 **Write unified, coherent prose.**
- 2.2 **Formulate an effective thesis statement:**
  - 2.2.1 **Identify a limited subject**
  - 2.2.2 **State a controlling purpose**
  - 2.2.3 **Limit the discussion according to the purpose and length of the assignment**
- 2.3 **Develop the essay by the following:**
  - 2.3.1 **Creating an effective introduction**
  - 2.3.2 **Providing adequate support by means of concrete evidence**
    - 2.3.2.1 **Distinguishing between hard and soft evidence**
    - 2.3.2.2 **Distinguishing between facts and opinions**

- 2.4 **Arrange the main idea and the supporting details in an appropriate organizational pattern. These organizational modes may include the following:**
  - 2.4.1 **Classification and Division**
  - 2.4.2 **Extended Definition**
  - 2.4.3 **Comparison/Contrast**
  - 2.4.4 **Process Analysis**
  - 2.4.5 **Example**
  - 2.4.6 **Description**
  - 2.4.7 **Narration**
  - 2.4.8 **Argumentation**
  - 2.4.9 **Causal Analysis**
- 2.5 **Conclude the paper in an appropriate manner such as restating the thesis or drawing a logical conclusion.**
- 2.6 **Write an essay clearly and coherently. The writing will incorporate what the students have learned in both this unit and the previous unit. It will be understandable and meaningful to the general reader.**
- 2.7 **Think creatively, logically, critically, and reflectively in writing an essay. Students will be able to offer their own ideas on the unit and apply what they have learned to their own writing in a manner that is both reasonable and original.**
- 2.8 **Demonstrate and apply information and cultural literacy in writing an essay.**
- 2.9 **Research, synthesize, and produce an original essay using methods taught in this unit.**
- 2.10 **Demonstrate self-direction and self-motivation in writing an essay. Students will use acquired skills and writing methods to decide which writing approach to adapt and apply to specific assigned writing tasks.**

### **Unit 3 Conventions of Standard American English**

#### General Outcome

- 3.0 **Transmit ideas and information in effective written language by employing good diction, conventional sentence structure, and standard written American English grammar and usage.**

#### Specific Learning Outcomes

- 3.1 **Demonstrate effective word choice by doing the following:**
  - 3.1.1 **Using words which appropriately convey the denotative (specific) and connotative (associational) meanings required by context.**
  - 3.1.2 **Avoiding weaknesses such as slang, jargon, clichés, pretentious expressions, and wordiness.**
  - 3.1.3 **Using proper diction.**
  - 3.1.4 **Avoiding sexist, racist, ageist, or gender-biased language.**
- 3.2 **Employ conventional sentence structure by:**
  - 3.2.1 **Placing modifiers correctly**
  - 3.2.2 **Coordinating and subordinating sentence elements effectively**
  - 3.2.3 **Using parallel expressions when appropriate**
- 3.3 **Avoid errors such as fragments, comma splices, and fused sentences.**
- 3.4 **Use effective sentence structure by:**
  - 3.4.1 **Employing a variety of sentence patterns**
  - 3.4.2 **Avoiding unnecessary use of passive construction**
  - 3.4.3 **Avoiding awkward constructions**

- 3.5 **Observe conventions of Standard written American English by the following:**
  - 3.5.1 **Using standard verb forms**
  - 3.5.2 **Maintaining agreement between subject and verb and between pronoun and antecedent**
  - 3.5.3 **Employing standard spelling, punctuation, and capitalization**
  - 3.5.4 **Maintaining a consistent point of view**
  - 3.5.5 **Using proper case forms**
- 3.6 **Write clearly and coherently using the conventions of Standard American English. The writing will incorporate what the students have learned in both this and any previous units. It will be understandable and meaningful to the general reader.**

#### **Unit 4 Research Skills**

##### General Outcome

- 4.0 **Locate and evaluate primary and secondary sources in both print and electronic formats and incorporate the relevant information into a properly documented paper, both internally and bibliographically.**

##### Specific Learning Outcomes

- 4.1 **Select a subject suitable for library research.**
- 4.2 **Use appropriate library resources to compile a preliminary bibliography and working outline.**
  - 4.2.1 **Demonstrate a familiarity with and ability to consult and employ a variety of print sources.**
  - 4.2.2 **Demonstrate a familiarity with and ability to consult and employ a variety of electronic sources.**
- 4.3 **Apply critical thinking and problem solving skills to researching and synthesizing source material.**
- 4.4 **Extract relevant factual notes from a variety of sources and incorporate this information appropriately using MLA Format, including the use of internal citations and a Works Cited Page.**
- 4.5 **Incorporate quotations and ideas into papers through appropriate treatment of précis, paraphrase, indirect and direct quotations, and summary in order to avoid plagiarism.**
- 4.6 **Prepare a documented first draft.**
- 4.7 **Prepare the final document using MLA format.**
- 4.8 **Research, synthesize, and produce an original work using research sources. The resulting work will not be derivative but represent the students' own ideas and writing, aside from citations drawn from sources.**
  - 4.8.1 **Students will demonstrate an understanding of ethical and unethical use of source material by properly citing and attributing ideas and source material whenever it appears in the paper.**

## BROWARD COLLEGE COURSE OUTLINE

Last Review: 08/01/2010

Next Review: 08/01/2015

**COURSE TITLE:** COMPOSITION II**COMMON COURSE NUMBER:** ENC1102**EFFECTIVE TERM:****CREDIT HOURS:** 3**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** Composition II is designed to further develop a students composition skills by building on the rhetorical modes/strategies learned in ENC 1101. The course requires students to observe the conventions of Standard American English and create documented essays, demonstrating the students ability to think critically and write analytically. Selected readings supplement the course and provide topics for discussion and written assignments. Students use library research methods for primary and secondary sources to produce MLA style-documented and well argued essays and research paper. Students must earn a minimum grade of C to meet the requirements of the Gordon Rule.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 1b: Advanced Composition

AA/Bac-Area 7: Writing Requirement

AAS Degree, meets Area(s):

AAS-Area 5: Program-Designated Courses

**UNIT TITLES**

1. Reading and Writing
2. Elements of Analysis
3. Extended Research Skills

**EVALUATION:**

-

<b>Portfolio</b>	1.2; 1.3; 1.4; 2.1; 2.2; 2.3; 2.4; 2.5; 3.1; 3.2; 3.3
<b>Short Essay</b>	1.1; 1.2; 1.3; 1.4; 2.1; 2.2; 2.3; 2.4; 2.5; 3.1
<b>Research Project</b>	1.1; 1.2; 1.3; 1.4; 2.1; 2.2; 2.3; 2.4; 3.1; 3.2
<b>Group Projects</b>	1.1; 1.2; 1.4; 2.1; 2.2; 2.3; 2.5; 3.1; 3.3
<b>Discussion</b>	1.1; 1.4; 2.1; 2.2; 2.3; 2.5; 3.1; 3.3
<b>Multiple Choice Tests</b>	1.3; 2.1; 2.2; 2.3; 3.1; 3.3



<b>Presentations</b>	1.1; 2.1; 2.2; 2.3; 2.5; 3.1; 3.3
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	1.3; 2.1; 2.2; 2.3; 3.1
<b>Take Home Tests</b>	3.1
<b>Summaries and Critiques</b>	1.1; 1.2; 2.1; 2.2; 2.3; 2.5; 3.1; 3.3
<b>Reaction Papers</b>	1.1; 1.2; 1.4; 2.1; 2.2; 2.3; 2.4; 2.5; 3.1; 3.3
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	1.3; 2.1; 2.2; 2.3; 3.1
<b>Class Room Debates and Colloquia</b>	1.1; 1.4; 2.1; 2.2; 2.3; 2.5; 3.1; 3.3
<b>Blog, Wikis, Webpages</b>	1.2; 1.3; 1.4; 2.1; 2.2; 2.3; 2.5; 3.1; 3.3
<b>Other</b>	

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	1.1 , 1.4 , 2.1 , 2.5 , 3.1 , 3.3
<b>2. Write clearly and coherently.</b>	1.2 , 1.3 , 1.4 , 2.4 , 2.5 , 3.2 , 3.3
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Information: 1.1 , 2.1 , 2.2 , 2.3 , 2.4 , 3.2 Cultural: 1.1 , 2.3
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	1.1 , 1.3 , 1.4 , 2.1 , 2.2 , 2.3 , 2.4 , 2.5 , 3.1 , 3.2 , 3.3
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	1.1 , 2.3
<b>8. Speak and listen effectively.</b>	

## UNITS

### Unit 1 Reading and Writing

#### General Outcome

- 1.0 **Create clearly organized, thoroughly developed essays which sustain a focus on a central idea while producing a well-supported interpretation of the unit's assigned reading(s).**

#### Specific Learning Outcomes

- 1.1 **Read and analyze one or more texts for artistic, cultural, historical, or structural merit.**
- 1.1.1 **Explain how and why the text supports this reading by employing textual evidence.**
- 1.1.2 **Assess the validity of the texts' meaning with logical analysis.**

- 1.2 **Arrange a sufficient number of paragraphs with supporting details in a clear, logical order**
  - 1.2.1 **Assemble ideas and their support.**
  - 1.2.2 **Construct meaning and understanding for those ideas.**
  - 1.2.3 **Formulate a paper demonstrating logical analysis of the paper's thesis.**
- 1.3 **Devise a limited and coherent thesis statement**
  - 1.3.1 **Appraise the meaning of a text.**
  - 1.3.2 **Evaluate an understanding of a text.**
  - 1.3.3 **Formulate a clear, concise, arguable position based on a text or its meaning.**
- 1.4 **Revise**
  - 1.4.1 **Judge the paper's overall effectiveness.**
  - 1.4.2 **Formulate sentence structure with improved grammar.**
  - 1.4.3 **Develop clarity through substantive revision.**

## **Unit 2 Elements of Analysis**

### General Outcome

- 2.0 **Create analytical essays through the synthesis of selected readings and their potential interpretations.**

### Specific Learning Outcomes

- 2.1 **Explain relevant literary devices and rhetorical strategies as they relate to the selected readings.**
  - 2.1.1 **Read and analyze one or more texts for literary, technical, artistic, cultural or structural merit.**
  - 2.1.2 **Explain how and why textual evidence supports a particular interpretation of the text.**
  - 2.1.3 **Assess the validity of the texts' meaning with logical analysis.**
- 2.2 **Develop thematic ideas based on logical, independent analysis and class discussion.**
  - 2.2.1 **Read and analyze one or more texts for its/their thematic connections or underpinnings.**
  - 2.2.2 **Explain how and why textual evidence supports or extends the themes of a particular reading.**
  - 2.2.3 **Assess the validity of a theme's existence and meaning with logical analysis.**
- 2.3 **Formulate an understanding of a reading or an idea's import for its historical, contemporary, or social context.**
  - 2.3.1 **Explain how and why this understanding is supported through textual evidence.**
  - 2.3.2 **Assess the understanding's validity with logical analysis**
  - 2.3.3 **Appraise the relationship of a reading or idea to the human experience**
  - 2.3.4 **Analyze how a text informs an understanding of the concepts of race, gender, sexuality, religion, economic status, national heritage, and/or cultural background.**
  - 2.3.5 **Defend this reading with logical analysis**
- 2.4 **Assemble a formal essay based on the unit's readings and their constructed understanding.**
  - 2.4.1 **Devise a limited and coherent thesis statement**
    - 2.4.1.1 **Appraise the meaning of a text.**
    - 2.4.1.2 **Evaluate an understanding of a text.**
    - 2.4.1.3 **Formulate a clear, concise, arguable position on a topic, an idea, or the meaning of a text.**
  - 2.4.1 **Arrange a sufficient number of paragraphs with supporting details in a clear, logical order**
    - 2.4.2.1 **Assemble ideas and their support.**
    - 2.4.2.2 **Construct meaning and understanding for those ideas.**

- 2.4.2.3 Formulate a paper demonstrating logical analysis of the paper's thesis.
- 2.4.3 Incorporate supportive quotation, effective paraphrasing, and accurate summary of text to support the paper's thesis.
- 2.4.4 Employ MLA guidelines for writers of research papers.

## 2.5 Revise

- 2.5.1 Judge the paper's overall effectiveness.
- 2.5.2 Formulate sentence structure with improved grammar.
- 2.5.3 Develop clarity through substantive revision.

## Unit 3 Extended Research Skills

### General Outcome

- 3.0 Write and sustain an argument in a critical, argument-based research paper which follows current MLA guidelines. Using the skills learned in Units 1 and 2, students will employ a balance of direct quotation and paraphrases from a variety of primary and secondary sources, culminating in an argument-based research paper.

### Specific Learning Outcomes

- 3.1 Assess and evaluate the unit's readings, ideas, or researched materials.
  - 3.1.1 Explain how and why the text supports this reading by using textual evidence.
  - 3.1.2 Assess the validity of the texts' meaning with logical analysis.
- 3.2 Develop a paper structured around an original, clearly-developed argument or analysis, while effectively employing self-researched, primary and secondary sources in support of this paper's thesis.
  - 3.2.1 Chose and evaluate source materials from various library resources, including major indexes and databases
  - 3.2.2 Collect, assess, cite, and document source ideas free of plagiarism, using MLA style
  - 3.2.3 Devise a limited and coherent thesis statement
    - 3.2.3.1 Appraise the meaning of a text.
    - 3.2.3.2 Evaluate an understanding of a text.
    - 3.2.3.3 Formulate a clear, concise, arguable position on a topic, an idea, or the meaning of a text.
  - 3.2.4 Arrange a sufficient number of paragraphs with supporting details in a clear, logical order
    - 3.2.4.1 Assemble ideas and their support.
    - 3.2.4.2 Construct meaning and understanding for those ideas.
    - 3.2.4.3 Formulate a paper demonstrating logical analysis of the paper's thesis.
    - 3.2.4.4 Incorporate supportive quotation, effective paraphrasing, and accurate summary of relevant and researched source materials to support the paper's thesis.
  - 3.2.5 Employ MLA guidelines for writers of research papers.
- 3.3 Revise a work from this unit's writing
  - 3.3.1 Judge the paper's overall effectiveness.
  - 3.3.2 Formulate sentence structure with improved grammar.
  - 3.3.3 Develop clarity through substantive revision.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2010

**Next Review:** 08/01/2015

**COURSE TITLE:** ENVIRONMENTAL SCIENCE

**COMMON COURSE NUMBER:** EVR1009

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** Study of the physical environment, its relationship with the biosphere, and man's impact upon natural systems. Placement by Testing Department.

### MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 4a: Biological Sciences

AA/Bac-Area 4b: Physical Sciences

AS Degree, meets Area(s):

AS-Area 4: Natural Sciences

AAS Degree, meets Area(s):

AAS-Area 4: Mathematics/Science

AAS-Area 5: Program-Designated Courses

### UNIT TITLES

1. Reading and Writing in the Biological Sciences
2. Physical Factors and the Environment
3. Water in Natural Systems
4. Ecosystems
5. Geology of Florida
6. Weather and the Environment
7. Ecosystems of Florida
8. The Ocean
9. Energy and the Environment
10. Sustainable Solutions

### EVALUATION:

-

<b>Portfolio</b>	10.0
<b>Short Essay</b>	2.0 - 9.0
<b>Research Project</b>	1.0 - 10.0

<b>Group Projects</b>	2.0, 3.0, 4.0, 6.0, 7.0, 9.0
<b>Discussion</b>	2.0 - 10.0
<b>Multiple Choice Tests</b>	1.0 - 10.0
<b>Presentations</b>	2.0 - 10.0
<b>Service Learning Projects</b>	9.0 - 10.0
<b>Pop Quizzes</b>	2.0 - 10.0
<b>Take Home Tests</b>	1.0 - 10.0
<b>Summaries and Critiques</b>	1.0 - 10.0
<b>Reaction Papers</b>	
<b>Surveys</b>	3.0; 9.0 - 10.0
<b>Performance</b>	
<b>Short Answer Tests</b>	1.0 - 10.0
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	1.0 - 10.0
<b>Other</b>	

#### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	1.0
<b>2. Write clearly and coherently.</b>	1.0
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Information: 1.2 , 7.5 Quantitative: 2.4 , 3.2 , 3.3 , 4.2 , 4.3 , 4.8 , 6.5 , 9.4 Scientific: 2.0 , 3.0 , 4.0 , 5.0 , 6.0 , 7.0 , 8.0 , 9.0 , 10.0 Environmental: 2.0 , 3.0 , 4.0 , 5.0 , 6.0 , 7.0 , 8.0 , 9.0 , 10.0
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	3.4 , 3.5 , 9.1 , 10.2 , 10.3 , 10.4 , 10.5
<b>5. Differentiate between ethical and unethical behavior.</b>	3.4 , 3.5 , 5.5 , 10.2
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	3.4 , 3.5 , 4.4 , 4.9 , 5.5 , 5.6 , 6.7 , 7.5 , 7.8 , 8.5 , 9.6 , 10.0
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

#### UNITS

##### Unit 1 Reading and Writing in the Biological Sciences

###### General Outcome

- 1.0 Clearly communicate in writing information derived from course related readings the major concepts and themes in the environmental sciences.

###### Specific Learning Outcomes

- 1.1
- 1.2 Demonstrate in writing the ability to analyze, evaluate, compare, and extract data relevant to environmental science from course related readings.
- 1.3 Evaluate the validity of information from a variety of sources, including but not limited to such sources as electronic, print sources, and data bases.
- 1.4 Demonstrate using diagrams, drawings, outlines, concept maps, and/or other methods connections among concepts in environmental science.
- 1.5 Demonstrate the ability to use the appropriate technology to carry out course requirements.

## **Unit 2 Physical Factors and the Environment**

### General Outcome

- 2.0 Demonstrate an understanding of global geologic, atmospheric, and oceanic trends and evaluate their relationship to the environment.

### Specific Learning Outcomes

- 2.1
- 2.2 Describe the earth's structure.
- 2.3 Examine the characteristics of plate tectonic settings and plate movement.
- 2.4 Describe characteristics of the troposphere and stratosphere.
- 2.5 Illustrate the Coriolis Effect on global atmospheric belts.
- 2.6 Explain the generation and movement of air masses.
- 2.7 Compare the patterns of major ocean surface and subsurface currents.

## **Unit 3 Water in Natural Systems**

### General Outcome

- 3.0 Describe and diagram the hydrologic cycle, analyze the characteristics of water and assess the finite, recycled nature of the world's water in relationship to Florida's water budget.

### Specific Learning Outcomes

- 3.1
- 3.2 Assess the importance of water to life.
- 3.3 Diagram the hydrologic cycle (closed system) showing the various compartments and processes of the cycle.
- 3.4 Demonstrate the flow of water through natural systems in Florida. (Open system)
- 3.5 Evaluate the importance of ground water to Florida.
- 3.6 Recognize and evaluate the impact of humans upon managing the flow of water through Florida.

## **Unit 4 Ecosystems**

### General Outcome

- 4.0 Categorize the ecosystems and the food and energy flow within them.

### Specific Learning Outcomes

- 4.1
- 4.2 Compare and contrast food chains, food webs, and energy flow through ecosystems.
- 4.3 Describe and quantify trophic levels in ecosystems.
- 4.4 Understand and quantify the concepts underlying population dynamics.

- 4.5 Explain predator-prey relationships and the impact of disruptions on these relationships.
- 4.6 Compare and contrast the major biomes and aquatic ecosystems of the world.
- 4.7 Describe the special features and importance of wetlands ecosystems.
- 4.8 Analyze the concept of succession.
- 4.9 Calculate residence time of pesticides and other toxins introduced into the environment.
- 4.10 Describe and diagram biogeochemical cycles such as carbon, nitrogen, and phosphorus and how they have been impacted by humans.

## **Unit 5 Geology of Florida**

### General Outcome

- 5.0 Categorize the various physiographic regions of Florida and explain the underlying geologic processes and their economic importance as non renewable resources.

### Specific Learning Outcomes

- 5.1 Describe the formation and characteristics of igneous, sedimentary and metamorphic rocks.
- 5.2 Explain the effect of different methods of weathering on rocks.
- 5.3 Evaluate the impact of underlying geologic formations on the surface.
- 5.4 Explain the origin of minerals such as carbonate and phosphate.
- 5.5 Assess the uses of minerals and other nonrenewable resources mined in Florida.
- 5.6 Determine the importance of soil to ecosystems and their distribution.

## **Unit 6 Weather and the Environment**

### General Outcome

- 6.0 Explain the fundamentals of meteorology and relate these fundamentals to the weather trends in Florida.

### Specific Learning Outcomes

- 6.1 Analyze the different factors involved in describing weather.
- 6.2 Differentiate between the characteristics of different types of weather fronts.
- 6.3 Evaluate influences on Florida's weather and major weather trends in Florida.
- 6.4 Describe conditions which promote hurricane formation and explain the heat engine dynamics of a hurricane.
- 6.5 Interpret the Saffir-Simpson storm classification scheme and give examples of historical storms which have struck Florida.
- 6.6 Determine methods of adaptation within native species in response to Florida's weather.
- 6.7 Describe the effect of human activities on global warming and solutions that will stabilize the earth's climate.

## **Unit 7 Ecosystems of Florida**

### General Outcome

- 7.0 Examine the interaction between the abiotic and biotic factors within different ecosystems of Florida.

### Specific Learning Outcomes

- 7.1 Describe the geological and other factors that affect ecosystem distribution in Florida.
- 7.2 Examine the characteristics of low energy coastal ecosystems such as mangrove swamps, salt marshes and estuaries and their importance to marine fisheries.

- 7.3 Describe the high energy beach ecosystem, including forces that shape coastlines such as longshore drift; explain the importance of vegetation in stabilizing this dynamic ecosystem and how human activities have contributed to beach erosion.
- 7.4 Compare and contrast the characteristics of wetland ecosystems such as freshwater marshes, cypress swamps, and southern hardwood swamps.
- 7.5 Describe the characteristics of the Everglades and how humans have impacted water distribution, timing, quality and quantity; ~~list~~ Explain the components of CERP and the Kissimmee River Restoration Project.
- 7.6 Compare and contrast the characteristics of upland ecosystems such as slash pine forests, sandhill community, scrub, prairie, and hardwood hammocks.
- 7.7 Analyze the role of fire in shaping Florida ecosystems.
- 7.8 Assess the impact of human activities on Florida ecosystems.

## **Unit 8 The Ocean**

### General Outcome

- 8.0 Describe the various physical components of the ocean and the biological interaction with the physical marine environment.

### Specific Learning Outcomes

- 8.1 Recognize the various physical zones of the ocean including benthic, littoral and pelagic and the types of organisms found in each.
- 8.2 Compare and contrast the diversity of life on a coral reef.
- 8.3 Explain how the health of coral reefs is influenced by the adjacent coastal and inland ecosystems.
- 8.4 Distinguish among the various types of reefs such as barrier, fringe and patch.
- 8.5 Interpret the impact of pollution, global warming, over-fishing and other human activities on the marine environment and suggest possible solutions.

## **Unit 9 Energy and the Environment**

### General Outcome

- 9.0 Describe the law of conservation of matter and the two laws of thermodynamics; compare renewable and nonrenewable energy and compare the advantages and environmental costs of each.

### Specific Learning Outcomes

- 9.1 Apply the Law of Conservation of Matter and the First and Second Laws of Thermodynamics to analyze current environmental problems such as pollution and energy conservation.
- 9.2 Distinguish between potential and kinetic energy.
- 9.3 Describe the differences between renewable and nonrenewable sources of energy, and recognize examples of each.
- 9.4 Calculate how long non-renewable fuels will last under a variety of different consumption rates.
- 9.5 Describe environmental consequences caused by exploiting different forms of energy.
- 9.6 Discuss how transition to renewable forms of energy will help reduce the threat of global warming.

## **Unit 10 Sustainable Solutions**

### General Outcome



- 10.0 Argue the actions needed to create a sustainable society and analyze ways to apply principles of sustainable thinking to solve environmental problems.

Specific Learning Outcomes

10.1

- 10.2 Define sustainable development and recognize the current lifestyle of North Americans is not sustainable.
- 10.3 Analyze the interrelationship between the three components of a sustainable society: ecological integrity, social justice, and economic prosperity.
- 10.4 Demonstrate how the components of sustainable thinking, including basing decisions on what is best in the long term, utilizing interdisciplinary analysis, mirroring nature's solutions, implementing prevention rather than remediation, and systems analysis, may be applied to daily decisions.
- 10.5 Apply the components of sustainable thinking to the analysis of real world problems such as loss of biodiversity, global warming, deforestation and pollution; implement solutions to local problems.
- 10.6 Assess the role of individuals in creating a sustainable society.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2008

**Next Review:** 08/01/2013

**COURSE TITLE:** ENTREPRENEURSHIP

**COMMON COURSE NUMBER:** GEB2112

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** This course presents a modern treatment of business. It explores start-up/buy-out, franchising, business plans, marketing plans, human resources, financial planning, legal forms, products/services, selling, advertising, management policies, accounting systems, tax issues, capital management, computers, risk management, and ethical issues.

### UNIT TITLES

1. Nature of Small Business
2. Investigating Entrepreneurial Opportunities
3. Establishing the Firm
4. Marketing Your Product or Service
5. Managing Operations
6. Financial Management of the Small Business
7. Social Responsibility and Small Business

### EVALUATION:

Exams, Quizzes, Presentations, Portfolios, Discussions, Class Participation, Attendance, Projects, Co-ops, Practicum, Internships, Externships, and Research Reports.

### UNITS

#### Unit 1 Nature of Small Business

##### General Outcome

- 1.0 The student shall be able to develop a business plan by using the principles and techniques discussed in each unit.

##### Specific Learning Outcomes

- 1.1 Identify the relative incidence of small business in today's society.  
1.2 Give examples of the contributions of small businesses to the economy.

- 1.3 Describe the types of activities in which small businesses are engaged.
- 1.4 Compare the advantages of a small firm to its problems and limitations.
- 1.5 List reasons for the high rate of small business failure.
- 1.6 Identify the characteristics of successful entrepreneurs.
- 1.7 Compare the rewards of entrepreneurship with its potential drawbacks.
- 1.8 Analyze the personal needs, skills, and degree of commitment necessary to launch a new enterprise.
- 1.9 Indicate personal considerations to take into account before initiating a small business operation.
- 1.10 Contrast the skills necessary for successful entrepreneurship with the skills necessary for successful small business management.

## **Unit 2 Investigating Entrepreneurial Opportunities**

### General Outcome

- 2.0 The student shall be able to describe the steps a person should follow in assessing the viability of beginning a business.

### Specific Learning Outcomes

- 2.1 Identify and list ways to assess the competitive nature of an idea for a potential product or service.
- 2.2 Summarize the sources of planning statistics and/or data for the potential business owner.
- 2.3 Describe the relationship between the quality of survey research and success or failure of the venture.
- 2.4 Describe the process involved in selecting a market niche; in developing a profile of potential customers for a product or service.
- 2.5 Discuss the factors involved in establishing the cost of and price for a proposed product or service.
- 2.6 Plan and implement a feasibility study to determine the viability of a proposed small business venture.
- 2.7 Indicate the advantages and disadvantages of buying an ongoing business vs. starting your own.
- 2.8 Identify ways a person interested in purchasing a small business can find one to buy.
- 2.9 Discuss approaches to use in investigating and evaluating an existing business.
- 2.10 Indicate factors to consider in establishing the value of a company, negotiating price and terms, and closing the deal.
- 2.11 List and give examples of various types of franchises and franchise arrangements.
- 2.12 Compare the advantages and disadvantages of franchising.
- 2.13 Summarize factors to consider in evaluating and financing a franchise opportunity.
- 2.14 Identify the legal aspects of franchise arrangements; in particular, the contractual obligations that permeate the relationship.
- 2.15 Describe the process involved in selling a franchise.

## **Unit 3 Establishing the Firm**

### General Outcome

- 3.0 The student shall be able to explain how a firm will begin its marketing process and discuss its business plan.

### Specific Learning Outcomes

- 3.1 Describe the relationship between the marketing philosophy a new firm establishes and its marketing activities and consumer orientation.
- 3.2 Define market segmentation and recognize its significance for a small business.
- 3.3 Describe the various types of market segmentation strategies that can be employed.
- 3.4 Explain the role of the sales forecast and its relationship to cash flow.
- 3.5 Summarize the steps involved in the forecasting process.
- 3.6 Given a specific product or service, describe the process involved in conducting the market research and analysis necessary to develop a formal marketing plan.
- 3.7 Develop the marketing strategy and determine the marketing mix for a given company.
- 3.8 Describe the process involved in conducting a trade area analysis.
- 3.9 Indicate factors to consider in selecting a region in which to establish a business; in selecting a city or town within the region.
- 3.10 Given a specific product or service, establish and rank criteria that should be considered in choosing the site for a new business; in evaluating the site of an existing business.
- 3.11 Compare the advantages and disadvantages of building, buying, and leasing business facilities.
- 3.12 Identify the benefits that can accrue from planning and implementing a functional layout of facilities.
- 3.13 Given a specific product or service, identify the basic equipment, supplies, and inventory required to establish a business and to maintain the ongoing business operation.
- 3.14 Describe the process involved in determining the financial requirements for a new business including current-asset capital, fixed-asset capital, start-up expenses, and funds for personal expenses.
- 3.15 Given a specific product or service, calculate the assets needed to start a business. Verify your calculations with a break-even or empirical analysis.
- 3.16 Develop pro forma financial statements (balance sheets, income statements, cash flow projections) that will communicate funding needs to a prospective lender.
- 3.17 Differentiate between debt capital and equity capital.
- 3.18 Compare and contrast sources of start-up capital for a new business.
- 3.19 Describe the characteristics of a proprietorship.
- 3.20 Describe the following aspects of a partnership:
  1. Qualifications of partners
  2. Rights and duties of partners
  3. The tax and liability considerations of partnerships
  4. Termination of a partnership
  5. The articles of partnership
  6. The limited partnership
- 3.21 Discuss the legal aspects of a corporation, including:
  1. The rights and status of stockholders
  2. Tax considerations
  3. The liability of stockholders
  4. The death or withdrawal of stockholders
  5. The corporate charter
- 3.22 Identify the differences between regular or C corporations and chapter S or S corporations.
- 3.23 Compare the advantages and disadvantages of proprietorships, partnerships, and corporations.
- 3.24 Identify policies and decisions that should be discussed with an attorney.

- 3.25 Give examples of licenses or permits required in starting a new business and indicate where a new business owner can find out what is needed.
- 3.26 Explain the purpose of a business plan and how it is used.
- 3.27 Give examples of techniques that can be used in preparing a business plan.
- 3.28 Describe the elements of a business plan and high-light the components of each section.

#### **Unit 4 Marketing Your Product or Service**

##### General Outcome

- 4.0 The student shall be able to evaluate, illustrate, and discuss the marketing process.

##### Specific Learning Outcomes

- 4.1 Identify the psychological factors that influence consumer behavior and the decision to purchase a product or service.
- 4.2 Summarize concepts related to market segmentation.
- 4.3 Compare and contrast product/service strategy alternatives for an initial product/service, a modified product/service, and new related and unrelated products and services.
- 4.4 Describe the product development curve.
- 4.5 Describe the introduction of a new product or service in terms of:
  - 1. Its relationship to an existing product line or service strategies
  - 2. The costs of development and introduction
  - 3. Its impact on personnel and facilities
  - 4. Its effect on existing competition and on new competitions resulting from business success
  - 5. The potential for market acceptance
- 4.6 Discuss the concept of a product life cycle.
- 4.7 Discuss the importance of pricing and price image.
- 4.8 Indicate how cost, demand, and competitive factors influence pricing decisions.
- 4.9 Explain the significance of a break-even analysis in pricing and know how it is calculated.
- 4.10 Describe techniques that can be used to develop an appropriate price for a product or service.
- 4.11 List and compare five different pricing strategies used by small businesses.
- 4.12 List the factors that affect the decision to grant credit to customers and the variety of credit options available.
- 4.13 Describe the importance of promotional planning in establishing and maintaining the image of a firm.
- 4.14 Determine the appropriate promotional mix given the goods or services a firm produces and the market it serves.
- 4.15 Discuss various methods a small businessperson can use to establish a realistic promotional budget.
- 4.16 Establish an advertising budget and program for a small business consistent with the role and purpose of advertising.
- 4.17 Identify when and where sales promotions can be used effectively and the various tools that can be employed.
- 4.18 Describe the role of sales personnel in promoting the image of a firm.
- 4.19 Compare the various channels of distribution available to small business owners and the advantages or disadvantages of each.
- 4.20 Indicate the factors that should be considered in selecting distribution systems.

- 4.21 Describe the scope of physical distribution, from transportation and storage to materials handling and delivery.
- 4.22 Discuss the potential of international distribution for small business owners.
- 4.23 Suggest ways in which the small businessperson can research and evaluate foreign markets and obtain assistance in deciphering export regulations and negotiating trade agreements.

## **Unit 5 Managing Operations**

### General Outcome

- 5.0 The student shall be able to describe the various aspects of managing a business and discuss the role of leadership in working with employees.

### Specific Learning Outcomes

- 5.1 Describe the distinctive aspects of managing a small business.
- 5.2 Relate basic management functions to the leadership of a small business operation.
- 5.3 Compare the management of small retail stores, franchises, service firms, and manufacturing plants.
- 5.4 Examine alternative styles of leadership and how they affect employee productivity and satisfaction.
- 5.5 Describe the role of human relationships and communication in a small business.
- 5.6 Explain the importance of formal planning in a small organization, the value of involving employees in the process, and the kinds of plans critical to a small business.
- 5.7 Discuss the significance of structuring and defining organizational relationships to the successful management of a small business.
- 5.8 Describe the importance of revising and updating plans; and the organizational structure as the economic climate, goals, and resources change.
- 5.9 List sources of assistance outside the organization that might be called on to give support to the manager of a small business.
- 5.10 Identify the value of human resources in a small firm and the importance of establishing sound personnel practices.
- 5.11 Give examples of sources a small business might use to find good employees, as well as recruitment devices that may attract applicants to small firms.
- 5.12 List and describe the steps involved in the evaluation and selection process.
- 5.13 Indicate why employee training and development is important, and suggest coaching techniques that can be used to improve performance.
- 5.14 Compare compensation and incentive alternatives that small businesses employ.
- 5.15 Describe the manager's role in dealing with employee discipline; in developing positive employee relations and a productive, supportive work environment.
- 5.16 Discuss social and legal issues related to personnel management that affect small businesses.
- 5.17 Identify the stages of the purchasing cycle and their importance to a small business.
- 5.18 Indicate the policies and procedures necessary to establish a sound purchasing system.
- 5.19 Discuss the importance of good relations with suppliers.
- 5.20 Identify the objectives of inventory control.
- 5.21 Compare various inventory control methods and indicate how these assist managers in controlling costs.
- 5.22 Assess the capabilities and limitations of a computer-based control system.
- 5.23 Compare the advantages and disadvantages of retail inventory valuation procedures.

## **Unit 6 Financial Management of the Small Business**

General Outcome

- 6.0 The student shall be able to use financial data and recognize current account principles used in financially managing a business.

Specific Learning Outcomes

- 6.1 Describe the importance of establishing a viable accounting system for a small business.
- 6.2 List the basic requirements for maintaining records and controlling cash.
- 6.3 Describe and differentiate among the financial tools of the entrepreneur: budgets, balance sheets, income and cash flow statements, and ratio analyses.
- 6.4 Relate the importance of financial information to managerial decision making.
- 6.5 Discuss the budgets essential to the operation of a small firm and how budgets can be used to control and reduce expenses.
- 6.6 Identify ways in which a small business can meet its tax liabilities and engage in appropriate tax planning.
- 6.7 Evaluate the advantages and disadvantages of a small firm's maintaining its own accounting records vs. using a bookkeeper or accounting service.
- 6.8 Explain the concept of working capital and recognize its significance in the day-to-day management of a small business.
- 6.9 Identify ways in which a manager can use a cash budget and/or forecast to optimize the cash flow cycle.
- 6.10 Describe the life cycle of receivables and how an aging schedule can be used to prompt the collection of past due accounts.
- 6.11 Give examples of strategies a manager can use to monitor purchasing and inventory.
- 6.12 Identify strategies that are important in the financial management of accounts payable.
- 6.13 Identify the procedures a small business must establish to control and minimize the cost of credit.
- 6.14 Distinguish between the payback period and the return-on-investment methods of evaluating investment opportunities and recognize the weaknesses inherent in these two capital budgeting approaches.
- 6.15 Discuss approaches a small business might use to counter financial problems common to small businesses (maintaining cash flow, securing funds for expansion, credit hold).
- 6.16 Discuss the role computer technology can play in each of the following areas within a small business operation:
1. Word processing
  2. Payroll
  3. Accounts receivable
  4. Accounts payable
  5. General ledger
  6. Inventory control
- 6.17 Indicate how computers can be utilized in financial planning, the management of information, and marketing.
- 6.18 Describe the importance of analyzing business needs and establishing criteria for selecting hardware or software before an investment is made.
- 6.19 Describe the various options a small business might consider in acquiring computing capabilities.
- 6.20 Identify where members of a small business staff might acquire training on the use of computers and specific applications packages.

- 6.21 Describe the risks that small businesses commonly face within each of the following categories:
1. Market-centered risks
  2. Property-centered risks
  3. Personnel-centered risks
  4. Customer-centered risks
- 6.22 Define risk management and identify the basic ways in which a small firm can cope with business risks.
- 6.23 Describe the basic principles of a sound insurance program.
- 6.24 List the requirements that must be met before an insurance company will underwrite possible losses.
- 6.25 Give examples of the variety of insurance classifications and coverages that insurance companies offer to small businesses.

## **Unit 7 Social Responsibility and Small Business**

### General Outcome

- 7.0 The student shall be able to recognize the importance of ethics in a small firm and to discuss its community involvement.

### Specific Learning Outcomes

- 7.1 Identify the contributions society expects from privately-owned firms, particularly in relation to their customers, the environment, and public welfare.
- 7.2 Describe the kinds of ethical issues that are prevalent in small businesses.
- 7.3 Explain why small firms may be especially vulnerable to act unethically.
- 7.4 List ways in which a small business can provide leadership in the areas of ethics and social responsibility.
- 7.5 Describe the role government regulation plays in the life of a small business.
- 7.6 List and describe the major regulations that affect small businesses and the legal agencies that administer these regulations at local, state, and federal levels.
- 7.7 Describe the ways in which a small business can protect its intangible assets.
- 7.8 Briefly explain the categories of legal agreements and relationships listed below that are part of most small business operations:
1. Contracts
  2. Agency relationships
  3. Negotiable instruments
- 7.9 Identify strategies a small business can use to avoid legal entanglements.



## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2010

**Next Review:** 08/01/2015

**COURSE TITLE:** INTERNATIONAL CURRENT BUSINESS PRACTICES

**COMMON COURSE NUMBER:** GEB2955

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 16

Lab: 0

Clinic: 0

Other: 32

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** Upon successful completion of this course, students should have a broad conceptual viewpoint of international business activity in areas such as finance, marketing, production and manufacturing. This course covers the nature and purpose of business between nations as well as the concepts of the multinational corporation and its importance in the world marketplace. Business concepts of other nations are studied through actual visits to foreign business enterprises. Emphasis is given to the differences in business policies between countries and their relationship to business activity.

### UNIT TITLES

1. The Nature of Business Activities Between Nations
2. Multinational Corporations
3. Foreign Environmental Concepts
4. Foreign Business Philosophies

### EVALUATION:

### UNITS

#### Unit 1     **The Nature of Business Activities Between Nations**

##### General Outcome

- 1.0     The student will be able to understand the nature and purposes of business activities between nations.

##### Specific Learning Outcomes

- 1.1     Discuss why nations trade with each other.
- 1.2     Define the meaning of an absolute trade advantage and a comparative trade advantage.
- 1.3     Discuss why nations have balance of trade deficits or surpluses.
- 1.4     Describe the international economy and its impact on national interests.

**Unit 2 Multinational Corporations**General Outcome

- 2.0 The student will be able to understand the concepts of the multinational corporation and its importance in the world marketplace.

Specific Learning Outcomes

- 2.1 Discuss the nature of multinational enterprises.  
2.2 Describe U.S. policy towards foreign multinational enterprises.  
2.3 Describe host country policies toward U.S. multi-national corporations.  
2.4 Discuss the meaning of and the reasons for direct foreign investment.  
2.5 Detail the reasons for and the application of GATT (General Agreement on Tariffs and Trade).  
2.6 Detail the reasons for and the application of GATT (General Agreement on Tariffs and Trade).

**Unit 3 Foreign Environmental Concepts**General Outcome

- 3.0 The student will be able to contrast U.S. environmental concepts with those of foreign countries through actual visits to foreign business enterprises.

Specific Learning Outcomes

- 3.1 Differentiate environmental policies of foreign countries as compared to those of the U.S.  
3.2 Discuss new industries created as a result of environmental policies and decisions.  
3.3 List improvements resulting from environmental policies and decisions.

**Unit 4 Foreign Business Philosophies**General Outcome

- 4.0 The student will be able to discuss the differences in business policies between countries and how these policies impact business activity between nations.

Specific Learning Outcomes

- 4.1 Discuss how cultural values, ethics and social mores affect a country's business philosophy.  
4.2 Explain the European Economic Community and its functions.  
4.3 Discuss the impact of developing countries in the world economy.  
4.4 Describe the foreign exchange rates and their determination.  
4.5 Describe the transfer of international payments.  
4.6 Define the balance of international payments.  
4.7 Discuss the demand for a new international economic order.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2010

**Next Review:** 08/01/2015

**COURSE TITLE:** TOTAL WELLNESS

**COMMON COURSE NUMBER:** HLP1081

**EFFECTIVE TERM:**

**CREDIT HOURS:** 2

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 32

Lab: 16

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** Total Wellness emphasizes the importance of knowledge, attitudes, and practices relating to personal wellness. It is a course designed to expose students to a broad range of issues and information relating to the various aspects of personal wellness including physical, social emotional, intellectual, spiritual and environmental wellness. This course integrates personal wellness and fitness in both a classroom and exercise environment. Evolving current topics such as nutrition, disease prevention, stress reduction, exercise prescription, and environmental responsibility are integrated to enable the student to understand the lifelong effects of healthy lifestyle choices.

### MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 4d: Wellness

AAS Degree, meets Area(s):

AAS-Area 5: Program-Designated Courses

### UNIT TITLES

1. Physical Wellness
2. Emotional Wellness
3. Intellectual Wellness
4. Spiritual Wellness
5. Interpersonal and Social Wellness
6. Environmental/Planetary Wellness

### EVALUATION:

-

<b>Portfolio</b>	1.1, 1.3
<b>Short Essay</b>	
<b>Research Project</b>	1.3, 2.1
<b>Group Projects</b>	6.0

<b>Discussion</b>	1.1, 1.2, 1.3, 1.4, 3.2, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 5.4, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6
<b>Multiple Choice Tests</b>	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.5, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 5.4, 6.1, 6.3, 6.4,
<b>Presentations</b>	1.1, 1.2, 1.3, 1.4, 2.1
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0
<b>Take Home Tests</b>	
<b>Summaries and Critiques</b>	1.1
<b>Reaction Papers</b>	1.1, 1.2, 1.3, 1.4, 6.2, 6.4
<b>Surveys</b>	
<b>Performance</b>	1.1, 1.2, 1.3, 2.5
<b>Short Answer Tests</b>	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5, 4.1, 4.2, 4.3, 5.2, 5.4
<b>Class Room Debates and Colloquia</b>	1.1, 2.1, 2.2, 2.5, 3.2, 6.1, 6.2, 6.6
<b>Blog, Wikis, Webpages</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0
<b>Other</b> a. Goal Setting Project/Presentation b. Nutrition Analysis c. Fitness Testing	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.5, 3.3, 3.4, 4.4, 6.2, 6.4 1.3, 3.3, 3.4 1.1, 1.2

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	1.0 , 2.1 , 3.2 , 3.3 , 5.2 , 5.4 , 6.2
<b>2. Write clearly and coherently.</b>	1.0 , 3.2 , 3.3
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Technology: 1.1 , 1.3 Cultural: 5.2 , 5.3 Quantitative: 1.4 Environmental: 6.0
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	1.1 , 1.2 , 1.3 , 1.4 , 2.2 , 2.4 , 3.2 , 5.4 , 5.5 , 6.2 , 6.6
<b>5. Differentiate between ethical and unethical behavior.</b>	2.4 , 4.1 , 5.4 , 5.5 , 6.1 , 6.3
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	1.1 , 1.2 , 2.1 , 2.2 , 2.4 , 2.5 , 3.3 , 4.2 , 5.2 , 5.3 , 5.4 , 6.0
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	2.5 , 4.1 , 4.2 , 4.3 , 5.2 , 5.3 , 5.4 , 5.5
<b>8. Speak and listen effectively.</b>	

### UNITS

Unit 1      Physical Wellness  
                 General Outcome

- 1.0 The student shall be able to understand all aspects of physical wellness including assessment, interpretation, maintenance and implementation of a wellness plan.

#### Specific Learning Outcomes

- 1.1
- 1.2 Assess, record and compare their current (pre-test) physical fitness level and end of term (post-test) level of physical wellness by means of standardized diagnostic evaluations (body composition, flexibility, muscular strength and endurance, and cardiovascular response to exercise). The student will use the information gathered in the pre-test fitness test to set personal goals and help develop their personal wellness plan.
- 1.3 Using the FITT (Frequency, Intensity, Time and Type) Principle as a guideline, the student will write and implement an exercise prescription specific to the needs of the student.
- 1.4 The student will document their food intake for a specified period of time and then using a software application, run an analysis of food intake, and use that information to help formulate a personal nutrition plan.
- 1.5 Measure and record the personal data necessary to calculate body mass index, waist-to-hip ratio, and target heart rate zone. Students will learn the formulaic calculations as well as the implications of the how to use the measurements in terms of their overall health and wellness.

### **Unit 2 Emotional Wellness**

#### General Outcome

- 2.0 The students shall identify factors that may influence their emotional well-being.

#### Specific Learning Outcomes

- 2.1 Determine how lifestyle choices can affect current and long-term quality of life. Students will survey their personal stress factors using information found in the course textbook or in a related website.
- 2.2 Identify the primary causes of stress, its physiological impact on the human body, and strategies for managing stress.
- 2.3 Establish their readiness and personal approach to a wellness program.
- 2.4 Recognize obstacles to emotional well-being and examine possible solutions and outcomes.
- 2.5 Compare a variety of stress management techniques, and develop a personal stress management plan. Students will have the opportunity to try out different techniques such as journaling, music interpretation, guided imagery, and breathing exercises.

### **Unit 3 Intellectual Wellness**

#### General Outcome

- 3.0 The student shall identify factors that may improve intellectual well-being.

#### Specific Learning Outcomes

- 3.1 Describe the potential impact of dementia and ways to prevent or reduce its effects.
- 3.2 Identify the importance of intellectual wellness and critical thinking skills for lifelong problem solving. Working individually or in small groups, students may work with case studies, simulated situations and physical challenges to develop teamwork and to discover creative solutions.

- 3.3 Connect the six dimensions of wellness and recognize how the integration of many factors contributes to overall wellness. By the end of the semester, students will demonstrate their understanding of how the six dimensions of wellness overlap and influence every aspect of life in class discussions, online blogs and postings, and personal goal setting plans.
- 3.4 Develop a personal intellectual wellness plan.

#### **Unit 4 Spiritual Wellness**

##### General Outcome

- 4.0 The student shall define factors that affect spiritual wellness.

##### Specific Learning Outcomes

- 4.1 Describe how values and beliefs give meaning to life.
- 4.2 Examine the impact volunteering, connection to other people, and service learning has on their health and well-being.
- 4.3 Outline the behaviors that illustrate their personal spiritual activities and examine their personal beliefs.
- 4.4 Identify the components of a personal spiritual wellness plan.

#### **Unit 5 Interpersonal and Social Wellness**

##### General Outcome

- 5.0 The student shall identify factors that affect interpersonal-social wellness.

##### Specific Learning Outcomes

- 5.1 Recognize the importance of a social network in supporting a personal wellness plan.
- 5.2 Examine current concerns of global obesity, the patterns and behaviors that have contributed to this epidemic, and the long-term risks associated with obesity.
- 5.3 Compare and contrast diverse cultural lifestyles and their effect on eating patterns, physical activity, and wellness.
- 5.4 Investigate and discuss HIV infection and sexually transmitted infections, how students can protect themselves from becoming infected, and how individuals can participate in global awareness and treatment of the diseases.
- 5.5 Participate in a team building exercise.

#### **Unit 6 Environmental/Planetary Wellness**

##### General Outcome

- 6.0 The students shall identify how personal wellness affects the health of the planet and how they can help to create a more sustainable world.

##### Specific Learning Outcomes

- 6.1 Describe the greenhouse effect and global warming; investigate personal, local and global behaviors that can create a more sustainable Earth.
- 6.2 Identify hazards in their personal environment (home, school, work) and develop a personal environmental/planetary wellness plan.
- 6.3 Examine how government programs can have a positive effect on the health of humans and the environment.
- 6.4 Recognize how the integration of many factors contributes to the overall wellness of our environment and the planet.
- 6.5 Discuss how population growth affects the environment.

6.6 Recognize various hazards to our food and water supply.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2011

**Next Review:** 08/01/2016

**COURSE TITLE:** WELLNESS WORKOUT

**COMMON COURSE NUMBER:** HLP1087

**EFFECTIVE TERM:**

**CREDIT HOURS:** 1

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 0

Lab: 32

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** This course is an advanced extension of the wellness track classes. It reviews exercise principles and offers an opportunity for pre-testing to aid in Personal Program Development and post-testing for improvement evaluation. An individualized approach is used in helping class members to develop and implement a personal wellness program. Prerequisites: (any of the following): HLP1081, PEM1116, PEM1131, PEM1141," "PEM1181, PEN1171, HSC1101C or instructor's approval.

### UNIT TITLES

1. Pre-course fitness analysis
2. Review of Fitness Components
3. Review of Fitness Components
4. Development/Revision of Personal Fitness Program
5. Application of Personal Fitness Program
6. Post-Course Fitness Analysis

### EVALUATION:

### UNITS

#### Unit 1      **Pre-course fitness analysis**

##### General Outcome

- 1.0      The students shall be able to discuss the degree of fitness present in his/her body prior class workouts.

##### Specific Learning Outcomes

- 1.1      Identify his/her entry level of fitness in aerobics, strength, and flexibility by means of diagnostic tests.
- 1.2      Identify his/her percent of body fat.
- 1.3      Identify his/her body measurements, height, and weight.



**Unit 2 Review of Fitness Components**General Outcome

- 2.0 The students shall be able to review and discuss aerobics, muscular strength/endurance, and flexibility as components of fitness.

Specific Learning Outcomes

- 2.1 Explain aerobics as a component of fitness.  
2.2 Explain muscular strength/endurance as a component of fitness.  
2.3 Explain flexibility as a component of fitness.

**Unit 3 Review of Fitness Components**General Outcome

- 3.0 The students shall be able to review and discuss fitness principles pertaining to aerobic strength and flexibility exercise.

Specific Learning Outcomes

- 3.1 Explain the frequency of exercising for aerobic, strength and flexibility fitness.  
3.2 Explain the intensity of exercising for aerobic, strength and flexibility fitness, including the overload principle.  
3.3 Identify his/her training zone for aerobic exercise.  
3.4 Explain the duration of aerobic, strength and flexibility exercise.  
3.5 Discuss the specificity principle and how the different types of exercise will vary in frequency, intensity and duration.

**Unit 4 Development/Revision of Personal Fitness Program**General Outcome

- 4.0 The students shall be able to develop or revise a personal fitness program.

Specific Learning Outcomes

- 4.1 Select the type of aerobic, strength, and flexibility exercises he/she prefers to include in a personal exercise program.  
4.2 Develop or revise a personal exercise program including aerobic, strength and flexibility exercises.

**Unit 5 Application of Personal Fitness Program**General Outcome

- 5.0 The students shall be able to participate in a personal fitness program.

Specific Learning Outcomes

- 5.1 Participate in a personal fitness program involving a variety of exercises to develop strength, aerobic fitness, and flexibility.  
5.2 Apply the overload principle to revise his/her program in order to improve his/her level of fitness.

**Unit 6 Post-Course Fitness Analysis**General Outcome

- 6.0 The students shall be able to discuss the degree of fitness improvement in his/her body after completion of class workouts.

Specific Learning Outcomes

- 6.1 Identify his/her exit level of fitness in aerobics, strength and flexibility by means of diagnostic tests.
- 6.2 Identify his/her percent of body fat.
- 6.3 Identify his/her body measurements height, and weight.
- 6.4 Identify his/her fitness improvements by comparing pre and post-test results.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/11/2014

**Next Review:** 08/01/2016

**COURSE TITLE:** HONORS INTERDISCIPLINARY STUDIES IN GEN. EDUCATION

**COMMON COURSE NUMBER:** IDH2121

**EFFECTIVE TERM:** Fall 2014

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab:

Clinic:

Other:

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** The Honors Interdisciplinary Studies Seminar is the capstone course in the Honors Program. It is open to Honors Institute students who have attended Broward College for at least one term and have met half of the requirements for graduation from the Honors Institute. The course will be organized and unified around a specific theme, event, time period, issue/controversy, or concept, which will then be explored through at least two distinct and discernible academic fields of study. These two or more academic fields of study will come from within or across one or more of the following of Broward College's broad disciplinary units: Visual/Performing Arts, Criminal Justice, Business, Social Sciences, Mathematics, Biological Sciences, Behavioral Sciences, Communication, Education, Natural Sciences, Computer Science, and English / Literature. Students will be exposed to a variety of texts and knowledge, which will be integrated and connected using various modes of academic inquiry. These academic and intellectual inquiries will be applied to and serve as the basis for numerous types of assessments. A Research Project is required as is at least one Critical Writing Assignment; other types of assessment should be varied and reflect the interdisciplinary nature of the course.

### UNIT TITLES

1. Interdisciplinary Study
2. Varieties of Knowledge
3. Integrated Inquiry
4. Critical Applications

### EVALUATION:

Test

### UNITS

#### Unit 1      **Interdisciplinary Study**

##### General Outcome

- 1.0      **Understand the concept of interdisciplinary study, particularly as it relates to the organizing rationale of the course.**

Specific Learning Outcomes

- 1.1 Explain interdisciplinary study as an academic practice and intellectual approach.
- 1.2 Describe the specific theme, event, time period, issue/controversy, or concept being used to organize and unify the course.
- 1.3 Analyze the rationale for an interdisciplinary approach to the course's chosen theme, event, time period, issue/controversy, or concept.
- 1.4 Evaluate the academic and intellectual merits of the interdisciplinary approach used to explore the organizing framework of the course.

**Unit 2 Varieties of Knowledge**General Outcome

- 2.0 **Understand a variety of knowledge from the two or more chosen academic fields of study.**

Specific Learning Outcomes

- 2.1 Discuss the main ideas and/or themes of various, representative texts and knowledge (namely, key studies, works, case studies, and theories) in two or more fields of academic study that pertain to the organizational framework of the course.
- 2.2 Interpret the evidence, composition, and/or biases of a variety of relevant texts and knowledge in the chosen two or more fields of study.
- 2.3 Evaluate the claims, conclusions, assumptions, and/or implications of several pertinent studies, works, case studies, and/or theories in the two or more designated fields.
- 2.4 Debate the significant intellectual issues and problems raised by the various, representative texts and knowledge in the two or more chosen fields of study.

**Unit 3 Integrated Inquiry**General Outcome

- 3.0 **Understand methods of critical and integrated inquiry essential to the practice of interdisciplinary study.**

Specific Learning Outcomes

- 3.1 Compare and contrast texts and knowledge from within and across the two or more academic fields of study designated in the course.
- 3.2 Assess the relationship between the course's texts and knowledge and the course's chosen theme, event, time period, issue/controversy, or concept.
- 3.3 Argue about the connections among course texts and knowledge.
- 3.4 Debate the relationship between course texts and knowledge and the course's chosen theme, event, time period, issue/controversy, or concept.

**Unit 4 Critical Applications**General Outcome

- 4.0 **Understand critical applications for the types of knowledge and methods of inquiry acquired in the interdisciplinary course.**

Specific Learning Outcomes

- 4.1 Propose interdisciplinary projects and assignments based on the course's unifying framework.
- 4.2 Collect evidence and ideas from a variety of texts and sources in two or more academic areas.

- 4.3 Assemble evidence and ideas into projects, assignments, and assessments based on the interdisciplinary focus of the course.
- 4.4 Compose and create original work that reflects the interdisciplinary emphasis of the course.
- 4.5 Practice previously-acquired and relevant academic skills (i.e., MLA, APA documentation) necessary to the completion of course assessments, projects, and assignments.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2010

**Next Review:** 08/01/2015

**COURSE TITLE:** INTRODUCTION TO INTERNATIONAL RELATIONS

**COMMON COURSE NUMBER:** INR2002

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** A cross national analysis of the concepts of sovereignty, power, security, economic development and national interests in the formulation of foreign policy; the respective roles of the United Nations and the European Union within the context of the growth of Intergovernmental Organizations and Non- governmental actors such as legislatures and interest groups. Study of the utilization of those concepts on policy of both leading nations and the emerging states with emphasis on both conflictual issues related to both tangible and intangible causes as well as the cooperative aspects of a more globalized and interdependent economic system. Students must earn a minimum grade of C to meet the requirements of the Gordon Rule.

### MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 3a: Historical, Political and Global Perspectives

AA/Bac-Area 7: Writing Requirement

AA/Bac-Area 8: International/Intercultural

AS Degree, meets Area(s):

AS-Area 3: Social/Behavioral Sciences

AAS Degree, meets Area(s):

AAS-Area 3: Social/Behavioral Sciences

AAS-Area 5: Program-Designated Courses

### UNIT TITLES

1. International Relations: Historical Development and Increasing Economic Interdependence
2. Realism, Power Dimensions, and Polarity
3. Alternatives to Power Politics: Liberalism, Peace Studies, Feminism, and Constructivism
4. Conflict: Ware, Terrorism, and Military Decision Making
5. International Political Economics: Trade Relations, Currency, Foreign Direct Investment, and Multinational Corporations
6. International Law and Intergovernmental organizations: Global Integration approaches in the 21st century
7. North-South Relations: Poverty, Economic Development and Human Rights
8. Future World Order, Environmental Issues, Sustainable Development, Technological Innovation and Collective Goods concerns

**EVALUATION:**

<b>Portfolio</b>	
<b>Short Essay</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0
<b>Research Project</b>	Honors By Contract Only- 1.0, 2.0, 3.0, 4.0, 5.0
<b>Group Projects</b>	
<b>Discussion</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0
<b>Multiple Choice Tests</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0
<b>Presentations</b>	5.0
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	
<b>Take Home Tests</b>	2.0, 4.0, 6.0, 8.0
<b>Summaries and Critiques</b>	1.0, 2.0, 3.0, 4.0, 5.0
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	
<b>Class Room Debates and Colloquia</b>	3.0, 4.0, 5.0, 6.0
<b>Blog, Wikis, Webpages</b>	
<b>Other</b> Simulations: 1.0, 3.0, 4.0, 5.0, 6.0 Hotel Rwanda: 3.0, 13 Days: 4.0	

**GENERAL EDUCATION Competencies and Skills:**

<b>1. Read with critical comprehension.</b>	1.1 , 2.6 , 3.1 , 4.4 , 5.1 , 6.7 , 7.4
<b>2. Write clearly and coherently.</b>	1.6 , 1.7 , 3.12 , 4.2 , 5.4 , 5.6 , 7.5
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Information: 1.2 , 2.7 , 3.6 , 3.7 , 4.2 , 5.8 , 6.1 , 6.3 , 7.1 , 7.6 , 8.1 Cultural: 1.4 , 3.5 , 3.9 , 4.2 , 4.4 , 6.6 , 7.2 , 7.4 , 8.5
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	1.5 , 2.1 , 2.5 , 3.2 , 3.9 , 3.12 , 4.1 , 4.6 , 5.8 , 5.10 , 6.2 , 6.4 , 6.7 , 7.3 , 7.6 , 7.7 , 7.8 , 8.1 , 8.6
<b>5. Differentiate between ethical and unethical behavior.</b>	5.2 , 6.5 , 8.6
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	6.3 , 6.4 , 7.0 , 8.0
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	1.0 , 4.0 , 5.0 , 6.0 , 7.0 , 8.0
<b>8. Speak and listen effectively.</b>	

**UNITS**

**Unit 1 International Relations: Historical Development and Increasing Economic Interdependence**

General Outcome

- 1.0 **Identify and recognize the political, economic, ideological, geographical, and historical factors which influence the formulation and determination of the foreign policies of the United States and other countries while being introduced to analytical tools and theoretical perspectives on the relationship between domestic and international politics.**

Specific Learning Outcomes

- 1.1 **Distinguish between state, sub state, and non-state actors via readings.**
- 1.2 **Describe and interpret the historical development of the international system during the 20<sup>th</sup> century.**
- 1.3 **Identify and Evaluate collective goods problems and compare and contrast possible solutions to them.**
- 1.4 **Explain globalization and the various perspectives on the phenomenon.**
- 1.5 **Distinguish between the four levels of analysis.**
- 1.6 **Recognize and express via writing or other appropriate means how international events affect the daily lives of diverse populations globally.**
- 1.7 **Demonstrate understanding of appropriate style and quality of writing and citation of sources/references within the discipline of political science and also how to find and utilize appropriate sources in political science research/writing.**

**Unit 2 Realism, Power Dimensions, and Polarity**General Outcome

- 2.0 **Appraise the many different dimensions of power in the international system, interpret the validity of realism as an explanatory theory of state behavior, and describe the various models related to the distribution of power.**

Specific Learning Outcomes

- 2.1 **Explain realism, including its assumptions about actor behavior and its focus on power.**
- 2.2 **Identify and Evaluate long- and short term power resources and capabilities.**
- 2.3 **Via written or other assignments distinguish between great power and middle powers.**
- 2.4 **Distinguish among the various types of alliances and the various motivations behind their formation and duration.**
- 2.5 **Explain the relationship between power distribution and international structures with special attention to the unipolar, bipolar, and multipolar models.**
- 2.6 **Evaluate the concept of hegemony and the theory of hegemonic stability as discussed in assigned readings.**
- 2.7 **Examine the historical basis of the balance of power system.**

**Unit 3 Alternatives to Power Politics: Liberalism, Peace Studies, Feminism, and Constructivism**General Outcome

- 3.0 **Compare, contrast, and criticize the cooperative theories of liberalism, feminism as international theories of state behavior while also recognizing and appraising the various actors' approaches to individual and group decision making in the formulation of both democratic and authoritarian states' foreign policy.**

Specific Learning Outcomes

- 3.1 **Via assigned readings interpret Immanuel Kant's explanation of how peace and cooperation are possible.**



- 3.2 Explain how liberalism differs from neo-liberal approaches and realism.
- 3.3 Recognize the role of international regimes in International Relations.
- 3.4 Appraise collective security and criticize attempts at achieving it.
- 3.5 Judge the relationship between democracies and war.
- 3.6 Identify various substate actors who influence foreign policy decision-making and some of the tensions that arise within and between them.
- 3.7 Illustrate the systematic ways in which individual decision making diverges from the rational model: misperceptions, affective bias, and cognitive bias.
- 3.8 Evaluate group psychology that affects decision-making processes.
- 3.9 Differentiate between the two primary strands of constructivist approaches to International Relations.
- 3.10 Compare and contrast the role of economic classes and revolution in Marxism and in Lenin's theory of imperialism.
- 3.11 Defend or critique the concept of positive peace.
- 3.12 Compare and contrast via written or other forms of response the feminist critiques of realism, including difference and liberal approaches to the topic.

#### **Unit 4 Conflict: Ware, Terrorism, and Military Decision Making**

##### General Outcome

- 4.0 Formulate a model or general theory on both the tangible and intangible causes of conflict and differentiate between interstate and intrastate forms of warfare and recognize the different forms of terrorism.

##### Specific Learning Outcomes

- 4.1 Compare and contrast the various types of war.
- 4.2 Via writing or other appropriate means differentiate among the various causes of international conflict, three which are related to tangible interests (territorial disputes, conflicts over who controls national governments, and economic conflict) and three of which are related to intangible clashes of ideas. (ethnic conflicts, religious conflicts, and ideological conflicts)
- 4.3 Explain the concept of territorial waters and national airspace.
- 4.4 Through assigned readings appraise non-violent and violent Islamist groups and examine the concept of ethnic groups and explain their role in generating international conflict.
- 4.5 Describe the variety of military forces states may employ in their efforts to achieve a variety of goals.
- 4.6 Compare and Contrast the different types of weapons of mass destructions, the purpose they serve, and their relative availability because of proliferation.
- 4.7 Formulate rationale for arms control agreements of all kinds and the factors necessary to make them work.
- 4.8 Explain the economics of military forces and their relationship to a state's economy.

#### **Unit 5 International Political Economics: Trade Relations, Currency, Foreign Direct Investment, and Multinational Corporations**

##### General Outcome

- 5.0 Evaluate the advantages and disadvantages of a globalized international economy; differentiate among the roles played by political actors, governments and multinational corporations in IPE, and examine the impact or influences of currency exchange, foreign investment, and trade regimes on economic growth and development.

Specific Learning Outcomes

- 5.1 Criticize the theories of economic liberalism and mercantilism/protectionism as discussed in assigned readings.
- 5.2 Differentiate the ways in which politics intervene in markets.
- 5.3 Evaluate the evolution of the international trade regime from the establishment of GATT to the contemporary WTO and how free trade rules are enforced.
- 5.4 Discuss in writing or other appropriate ways the roles of industries and interest groups in their states foreign economic policy.
- 5.5 Appraise economic globalization since 1750 and the transition of countries from centrally planned to market based economies.
- 5.6 Compare and contrast in written or other means the positions of different groups favoring and opposing free trade or economic liberalism.
- 5.7 Distinguish among fixed exchange rates, floating exchange rates, and the roles of central banks in manipulating the value of a state's currency.
- 5.8 Summarize the reasons currencies rise or fall in value.
- 5.9 Define the concepts of balance of payments, current accounts, capital flows, foreign exchange reserves, and standing wealth and infer the causes and consequences of international debt.
- 5.10 Distinguish between portfolio investment and foreign direct investment.
- 5.11 Classify the types of multinational corporations and illustrate the roles played by MNC's and their relationship with host and home state governments.

**Unit 6 International Law and Intergovernmental organizations: Global Integration approaches in the 21st century**

General Outcome

- 6.0 Recognize the roles of non-governmental organizations and intergovernmental organizations in the creation and maintenance of multilateral institutions such as the United Nations and European Union; and interpret the different understandings and applications of human rights and international law from a multicultural perspective.

Specific Learning Outcomes

- 6.1 Identify the purposes of international organizations.
- 6.2 Compare and contrast the approaches to international relations by non-governmental (NGOs) and intergovernmental organizations (IGOs)
- 6.3 Evaluate the purposes of the United Nations and describe the organizational structure of the United Nations and its autonomous agencies.
- 6.4 Recognize the differences between domestic and international law in terms of sources and enforcement.
- 6.5 Justify the respective roles of the World Court and International Criminal Court in the area of just war doctrine via an essay or other appropriate means.
- 6.6 Explain the evolution of human rights protection and the tensions between state sovereignty and international law.
- 6.7 From assigned readings, compare and contrast the supra national approaches favored by advocates of functionalism, neo-functionalism, and a sense of community theory.
- 6.8 Examine the development of the European Union and its economic evolution from free trade area and common market to its present monetary union and the challenges faced for further deepening and widening of the European Union to include Russia, Turkey, and other states.

**Unit 7 North-South Relations: Poverty, Economic Development and Human Rights**General Outcome

- 7.0 Identify the primary characteristics of the states of the wealthier “North” in comparison with the poorer “South;” distinguish how colonialism, urbanization, migration, and gender roles have affected the development of the global South; appraise the different approaches to human rights and economic growth from the capitalist and socialist perspectives; and evaluate the different roles of the IMF, World Bank, and NGO’s in alleviating the challenges of debt relief and foreign assistance or developmental aid issues.

Specific Learning Outcomes

- 7.1
- 7.2 Compare and differentiate between the importance of oil as a source of energy and water as an issue in International Relations.
- 7.3 Recognize the different attributes of the North and current developmental issues of the South .
- 7.4 Appraise the causes and consequences of urbanization, land reform efforts, migration, and refugee issues related to 3<sup>rd</sup> world poverty.
- 7.5 Explain world systems theory and the processes and outcomes of economic accumulation from a capitalist and socialist perspective .
- 7.6 Analyze the processes and results of European colonialism including the concepts of neo- colonialism and neo-dependency theory as discussed in assigned readings.
- 7.7 Appraise the various approaches to economic development while analyzing and describing the experiences of the NIC’s, India, and China as they have developed economically.
- 7.8 Evaluate the problems and prospects of foreign investment as a means of fostering economic development and in identifying the conditions necessary for FDI.
- 7.9 Analyze the respective roles of the International Monetary Fund and the World Bank in the extension of multilateral loans to the developing countries .
- 7.10 Compare and Contrast various approaches to development assistance to the poorer or HIC states: the disaster relief, handout, and OXFAM models.

**Unit 8 Future World Order, Environmental Issues, Sustainable Development, Technological Innovation and Collective Goods concerns**General Outcome

- 8.0 Question the assumptions of “Sustainable Development” and compare international efforts to solve global collective goods concerns such as environmental degradation; evaluate the effects of population growth, information diffusion, and demographic change on governmental policy making; and compare and contrast the positive and negative impact of telecommunication revolution and a more globalized culture within the context of cultural imperialism.

Specific Learning Outcomes

- 8.1
- 8.2 Examine the concept of global commons issues and illustrate various proposals to deal with collective goods problems as environmental concerns.
- 8.3 Define the goals of sustainable development and describe international efforts to promote it.

- 8.4 **Explain the concept of demographic transition and analyze the relationships of population growth with economic and social development .**
- 8.5 **Appraise the impacts of the telecommunications revolution and examine how information can be a tool used by or against governments or political actors .**
- 8.6 **Judge the positive and negative impacts of the nascent global culture including the concepts of cultural imperialism and ethnocentrism .**
- 8.7 **Compare and differentiate between the importance of oil as a source of energy and water as an issue in International Relations.**

## BROWARD COLLEGE COURSE OUTLINE

Last Review: 08/01/2010

Next Review: 08/01/2015

**COURSE TITLE:** COLLEGE ALGEBRA**COMMON COURSE NUMBER:** MAC1105**EFFECTIVE TERM:****CREDIT HOURS:** 3**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** A college algebra course containing topics such as solving, graphing and applying linear and quadratic equations and inequalities; exponential and logarithmic properties; linear, quadratic, rational, absolute value, square root, cubic, and reciprocal functions operations, compositions, and inverses of functions; and systems of equations and inequalities, all with applications throughout the course. Recommendation of the Mathematics Department or at least a grade of C in the prerequisite course required.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 5: Mathematics

AS Degree, meets Area(s):

AS-Area 5: Mathematics

AAS Degree, meets Area(s):

AAS-Area 4: Mathematics/Science

AAS-Area 5: Program-Designated Courses

**UNIT TITLES**

1. Selected Topics in Algebra
2. Equations and Inequalities
3. Relations, Functions, and Graphs
4. Exponential and Logarithmic Properties, Functions, and Equations
5. Systems of Linear Equations and Inequalities

**EVALUATION:**

-

<b>Portfolio</b>	
<b>Short Essay</b>	
<b>Research Project</b>	
<b>Group Projects</b>	1.0, 2.0, 3.0, 4.0, 5.0
<b>Discussion</b>	

<b>Multiple Choice Tests</b>	1.0, 2.0, 3.0, 4.0, 5.0
<b>Presentations</b>	
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	1.0, 2.0, 3.0, 4.0, 5.0
<b>Take Home Tests</b>	1.0, 2.0, 3.0, 4.0, 5.0
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	1.0, 2.0, 3.0, 4.0, 5.0
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	
<b>Clickers: 1.0, 2.0, 3.0, 4.0, 5.0</b>	

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	2.3 , 3.8 , 4.6 , 5.3
<b>2. Write clearly and coherently.</b>	1.4 , 2.1 , 2.3 , 2.4 , 2.5 , 2.6 , 2.7 , 3.8 , 3.9 , 3.10 , 3.15 , 4.3 , 4.4 , 4.5 , 4.6 , 4.7 , 5.1 , 5.3
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Quantitative: 1.0 , 2.0 , 3.0 , 4.0 , 5.0
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	2.3 , 3.6 , 3.7 , 3.8 , 3.10 , 3.16 , 3.18 , 4.6 , 5.3
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	2.3 , 3.6 , 3.7 , 3.8 , 3.16 , 4.6
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

### UNITS

#### Unit 1 Selected Topics in Algebra

##### General Outcome

- 1.0 **Work with algebraic concepts.**

##### Specific Learning Outcomes

- 1.1 **Perform operations on rational expressions including complex fractions.**  
 1.2 **Perform long division of polynomials.**  
 1.3 **Perform operations with complex numbers.**  
 1.4 **Graph linear inequalities in two variables.**

**Unit 2 Equations and Inequalities**General Outcome

- 2.0 **Solve radical, rational, and quadratic equations. The students shall be able to solve radical, quadratic, and absolute value inequalities.**

Specific Learning Outcomes

- 2.1 **Solve quadratic equations in one variable by factoring, using the square root property, completing the square, and using the quadratic formula.**
- 2.2 **Analyze the discriminant to determine the nature of solutions.**
- 2.3 **Read and solve applied problems.**
- 2.4 **Solve rational equations, equations quadratic in form, and radical equations including, but not limited to, those requiring double-squaring.**
- 2.5 **Solve quadratic inequalities in one variable, graph the solution set, and express the solution set using interval notation.**
- 2.6 **Solve inequalities that involve absolute value in a single variable, graph the solution sets, and express the solution set using interval notation.**
- 2.7 **Solve inequalities that involve rational expressions, graph the solution sets, and express the solution set using interval notation.**

**Unit 3 Relations, Functions, and Graphs**General Outcome

- 3.0 **Work with relations, functions, and their graphs.**

Specific Learning Outcomes

- 3.1 **Determine if a given relation is a function.**
- 3.2 **Evaluate a given function using function notation.**
- 3.3 **Determine the difference quotient.**
- 3.4 **Determine the domain and range of a relation or function.**
- 3.5 **Determine if a function is even or odd.**
- 3.6 **Determine the vertex and axis of symmetry of quadratic equations and sketch their graphs.**
- 3.7 **Determine x- and y- intercepts.**
- 3.8 **Read and solve maximum/minimum problems.**
- 3.9 **Graph quadratic, absolute value, square root, cubic functions, and the reciprocal function using symmetry, shifting, stretching, compressing, and/or reflecting.**
- 3.10 **Evaluate and graph piecewise-defined functions.**
- 3.11 **Add, subtract, multiply, and divide two functions.**
- 3.12 **Determine the compositions of two functions.**
- 3.13 **Determine if a function is one-to-one.**
- 3.14 **Determine the inverse of a one-to-one function.**
- 3.15 **Graph a function and its inverse.**
- 3.16 **Determine the type(s) of symmetry exhibited by a given relation.**
- 3.17 **Determine the center and radius of a circle and sketch its graph.**
- 3.18 **Use and apply the midpoint and distance formulas.**

**Unit 4 Exponential and Logarithmic Properties, Functions, and Equations**

General Outcome

- 4.0 **Solve and graph logarithmic equations/functions and exponential equations/functions.**

Specific Learning Outcomes

- 4.1 **Define exponential and logarithmic functions.**  
4.2 **Convert a logarithmic equation to exponential form and vice-versa.**  
4.3 **Simplify and evaluate expressions using the properties of logarithms, including change of base.**  
4.4 **Solve exponential equations (same and different bases).**  
4.5 **Graph exponential and logarithmic functions using shifting, stretching, compressing, and reflecting.**  
4.6 **Read and solve applied problems including, but not limited to, compound interest and exponential growth and decay.**  
4.7 **Solve logarithmic equations.**

**Unit 5 Systems of Linear Equations and Inequalities**General Outcome

- 5.0 **Solve systems of linear equations and inequalities.**

Specific Learning Outcomes

- 5.1 **Solve a linear system of equations in two and three variables using algebraic methods.**  
5.2 **Classify a linear system of equations (in two and three variables) as consistent or inconsistent. If the system is consistent, determine whether the equations are dependent or independent.**  
5.3 **Read and solve word problems by modeling them with systems of linear equations.**  
5.4 **Solve a linear system of inequalities by graphing.**



## BROWARD COLLEGE COURSE OUTLINE

Last Review: 08/01/2010

Next Review: 08/01/2015

**COURSE TITLE:** PRE CALCULUS ALGEBRA**COMMON COURSE NUMBER:** MAC1140**EFFECTIVE TERM:****CREDIT HOURS:** 3**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** This course, in conjunction with MAC1114, is designed to prepare the student for the study of calculus. Topics include sequences; series; mathematical induction; matrices; determinants; and systems of equations. Also included are polynomial, rational, exponential, and logarithmic functions and equations; and polynomial and rational inequalities. Functions and graphs are emphasized. A graphing calculator may be required. Recommendation of the Mathematics Department or at least a grade of C in the prerequisite course is required.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 5: Mathematics

AS Degree, meets Area(s):

AS-Area 5: Mathematics

AAS Degree, meets Area(s):

AAS-Area 4: Mathematics/Science

AAS-Area 5: Program-Designated Courses

**UNIT TITLES**

1. Polynomial, Rational, and other Algebraic Functions, with their properties and their Graphs
2. Polynomial and Rational Equations and Inequalities
3. Exponential and Logarithmic Functions, with their Properties and Graphs
4. Conic Sections
5. Systems of Equations and Inequalities, Matrices, and Determinants
6. Mathematical Induction, Sequences, and the Binomial Theorem

**EVALUATION:**

-

<b>Portfolio</b>	
<b>Short Essay</b>	
<b>Research Project</b>	
<b>Group Projects</b>	3.4

<b>Discussion</b>	1.1, 1.2, 1.4, 1.5, 2.1-2.4, 2.9, 3.1, 3.2
<b>Multiple Choice Tests</b>	1.0, 2.1-2.4, 2.6, 2.7, 2.9, 3.1- 3.3, 3.5, 3.6, 4.0, 5.0, 6.0
<b>Presentations</b>	
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	1.0, 2.5, 2.8, 3.4, 4.1, 5.0, 6.0
<b>Take Home Tests</b>	
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	2.5, 2.8, 3.4, 5.0, 6.4, 6.5
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	
<b>Free Response Test: 1.0, 2.5, 2.8, 3.4, 4.1, 5.0, 6.4, 6.5</b>	

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	2.2 , 2.3 , 2.4 , 2.9 , 3.1 , 3.4 , 4.2
<b>2. Write clearly and coherently.</b>	1.0 , 2.5 , 2.8 , 3.4 , 4.1 , 5.1 , 5.2 , 5.3 , 6.5
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Information: 3.4 , 3.6 Quantitative: 3.3 , 3.4 , 3.6 , 4.2
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	2.0 , 3.3 , 3.4 , 4.2
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	3.3 , 3.4
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

### UNITS

#### Unit 1 Polynomial, Rational, and other Algebraic Functions, with their properties and their Graphs General Outcome

- 1.0 Recognize and graph polynomial, rational, and other algebraic functions, as well as write functions that satisfy specific characteristics.

#### Specific Learning Outcomes

- 1.1 Recognize and construct the graphs of polynomial functions.  
1.2 Recognize and construct graphs of rational functions.  
1.3 Define, graph, and write the equations of vertical, horizontal, and slant asymptotes.  
1.4 Recognize and construct graphs of piecewise functions.

- 1.5 Categorize and graph basic algebraic functions, such as absolute value, quadratic, cubic, radical, and reciprocal functions.
- 1.6 Create appropriate functions, from among the above-mentioned types, that satisfy specific given conditions.

## **Unit 2 Polynomial and Rational Equations and Inequalities**

### General Outcome

- 2.0 Identify the zeros of polynomial functions, determine solutions to polynomial and rational inequalities, and the partial fraction decomposition of rational expressions.

### Specific Learning Outcomes

- 2.1 Determine the number of zeros of a polynomial and the multiplicity of each zero.
- 2.2 Read and apply the remainder theorem and the factor theorem.
- 2.3 Read and apply Descartes' rule of signs.
- 2.4 Read and apply the rational root theorem.
- 2.5 Formulate and write the steps for the partial fraction decomposition of a rational expression.
- 2.6 Determine the solutions to polynomial inequalities.
- 2.7 Determine the solutions to rational inequalities.
- 2.8 Perform synthetic division in applications involving polynomials.
- 2.9 Read, illustrate and apply the Intermediate Value Theorem.

## **Unit 3 Exponential and Logarithmic Functions, with their Properties and Graphs**

### General Outcome

- 3.0 Recognize, graph and solve exponential and logarithmic functions.

### Specific Learning Outcomes

- 3.1 Read and apply the definitions and properties of exponents and logarithms.
- 3.2 Recognize and graph exponential and logarithmic functions.
- 3.3 Recognize and solve exponential and logarithmic equations with both exact and estimated (using a calculator) solutions with regard to population growth, compound interest, carbon-14 dating, etc.
- 3.4 Read and solve applications of exponential and logarithmic functions such as exponential growth, decay such as population growth, compound interest, carbon-14 dating, etc. and interpret results in context writing solutions in both exact and estimated (using a calculator) formats.
- 3.5 Illustrate the change of base formula.
- 3.6 Evaluate logarithms using a calculator.

## **Unit 4 Conic Sections**

### General Outcome

- 4.0 Graph conic sections.

### Specific Learning Outcomes

- 4.1 Recognize, write the equations of, and graph conic sections such as parabolas, hyperbolas, ellipses, and circles.
- 4.2 Read and solve applications of conic sections and interpret results (optional).

## **Unit 5 Systems of Equations and Inequalities, Matrices, and Determinants**

General Outcome

- 5.0 Perform matrix operations and apply the theory and techniques used in solving systems of equations and inequalities.

Specific Learning Outcomes

- 5.1 Recognize and solve different types of systems of equations using the method of substitution.
- 5.2 Recognize and solve systems of linear equations in two or more variables using the elimination method, or matrix reduction techniques, and Cramer's rule.
- 5.3 Formulate the sum, difference, and product of two matrices; and the inverse (if it exists) of a matrix.
- 5.4 Demonstrate how to multiply a matrix by a scalar.
- 5.5 Recognize and graph different types of systems of inequalities (optional).

**Unit 6 Mathematical Induction, Sequences, and the Binomial Theorem**General Outcome

- 6.0 Apply properties of sequences and series, and demonstrate the use of the binomial theorem.

Specific Learning Outcomes

- 6.1 Perform operations on summations; determine sequences defined recursively; and determine the  $n$ th term of an arithmetic or geometric sequence.
- 6.2 Compare the differences between arithmetic and geometric sequences.
- 6.3 Determine the sum of the first  $n$  terms of an arithmetic or geometric sequence and also the sum of an infinite geometric series.
- 6.4 Use the principle of mathematical induction to prove statements (optional).
- 6.5 Apply the binomial theorem to expand powers of binomials; and write the  $k^{\text{th}}$  term of an indicated binomial expansion.

## BROWARD COLLEGE COURSE OUTLINE

Last Review: 08/01/2010

Next Review: 08/01/2015

**COURSE TITLE:** TRIGONOMETRY**COMMON COURSE NUMBER:** MAC1114**EFFECTIVE TERM:****CREDIT HOURS:** 3**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** This course, in conjunction with MAC1140, is designed to prepare the student for the study of calculus. Topics include a functional approach to trigonometry; trigonometric equations; trigonometric identities; solving triangles; DeMoivre's Theorem; vectors; polar coordinates; and parametric equations. A graphing calculator may be required. Recommendation of the Mathematics Department or at least a grade of C in the prerequisite course is required.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 5: Mathematics

AS Degree, meets Area(s):

AS-Area 5: Mathematics

AAS Degree, meets Area(s):

AAS-Area 4: Mathematics/Science

AAS-Area 5: Program-Designated Courses

**UNIT TITLES**

1. Trigonometric Functions and their Graphs
2. Inverse Trigonometric Functions and their Graphs
3. Trigonometric Identities and Conditional Trigonometric Equations
4. Solutions of Triangles
5. Trigonometric Form of Complex Numbers, Polar Coordinates and DeMoivre's Theorem
6. Vectors and Parametric Equations

**EVALUATION:**

-

<b>Portfolio</b>	
<b>Short Essay</b>	
<b>Research Project</b>	
<b>Group Projects</b>	

<b>Discussion</b>	1.1-1.5, 2.1-2.2, 3.1-3.2, 4.1 – 4.3, 5.1 – 5.6, 6.1 – 6.7
<b>Multiple Choice Tests</b>	1.1-1.5, 2.1-2.2, 3.1-3.2, 4.1 – 4.3, 5.1 – 5.6, 6.1 – 6.7
<b>Presentations</b>	
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	1.1-1.5, 2.1-2.2, 3.1-3.2, 4.1 – 4.3, 5.1 – 5.6, 6.1 – 6.7
<b>Take Home Tests</b>	1.1-1.5, 2.1-2.2, 3.1-3.2, 4.1 – 4.3, 5.1 – 5.6, 6.1 – 6.7
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	1.1-1.5, 2.1-2.2, 3.1-3.2, 4.1 – 4.3, 5.1 – 5.6, 6.1 – 6.7
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	4.1 , 4.3 , 6.5
<b>2. Write clearly and coherently.</b>	3.1 , 3.2 , 4.2 , 4.3 , 5.1 , 6.1
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Quantitative: 1.4 , 1.5 , 2.1 Scientific: 4.3 , 6.1 , 6.5
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	1.3 , 2.2 , 4.2 , 6.5
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	1.1 , 4.3 , 6.1 , 6.5
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

## UNITS

### Unit 1 Trigonometric Functions and their Graphs

#### General Outcome

1.0 Define, apply, and graph the trigonometric functions.

#### Specific Learning Outcomes

- 1.1 Solve problems involving degree and radian measure of angles as they relate to circular models in the physical world.
- 1.2 Define the sine, cosine, tangent, cotangent, secant, and cosecant functions of angles and of real numbers .
- 1.3 Know and apply the fundamental identities relating the functions.

- 1.4 Sketch the graphs of the six basic trigonometric functions and specify the intervals over which they increase or decrease.
- 1.5 Identify and use the domain, range, amplitude, period and phase shift to graph trigonometric functions.

## Unit 2 Inverse Trigonometric Functions and their Graphs

### General Outcome

- 2.0 Define, apply, and graph the inverse trigonometric functions.

### Specific Learning Outcomes

- 2.1 Define, and graph the inverse trigonometric functions.
- 2.2 Apply the definitions, methods of evaluating, and techniques of graphing the inverse trigonometric functions.

## Unit 3 Trigonometric Identities and Conditional Trigonometric Equations

### General Outcome

- 3.0 Verify trigonometric identities and solve trigonometric equations.

### Specific Learning Outcomes

- 3.1 Write the proof of trigonometric identities using fundamental identities, addition subtraction formulas, co-function formulas, half-angle formulas, double-angle formulas, half-angle identities and product-to-sum and sum-to-product formulas.
- 3.2 Algebraically solve trigonometric equations, both with and without an interval specified.

## Unit 4 Solutions of Triangles

### General Outcome

- 4.0 Solve right and oblique triangles.

### Specific Learning Outcomes

- 4.1 Solve a right triangle using the definitions of sine, cosine and tangent (along with cosecant, secant and cotangent).
- 4.2 Read and interpret a word problem and apply the Law of Sines and Law of Cosines.
- 4.3 Read and interpret real world problems such as navigational, angle of elevation/depression, temperature, air flow, biorhythms, and time.

## Unit 5 Trigonometric Form of Complex Numbers, Polar Coordinates and DeMoivre's Theorem

### General Outcome

- 5.0 Manipulate complex numbers in trigonometric form and use DeMoivre's theorem to find  $n$ th roots and powers of complex numbers.

### Specific Learning Outcomes

- 5.1 Compute the absolute value of complex numbers; represent complex numbers geometrically and in trigonometric form; and compute products and quotients of complex numbers in trigonometric form (optional).
- 5.2 Use DeMoivre's theorem to find  $n$ th powers and  $n$ th roots of complex numbers in trigonometric form (optional).
- 5.3 Plot points in polar coordinates on a polar plane.
- 5.4 Convert ordered pairs from rectangular to polar coordinates and vice-versa.

5.5 Convert equations in rectangular form to polar form and vice-versa.

5.6 Plot graphs of simple polar equations.

## Unit 6 Vectors and Parametric Equations

### General Outcome

6.0 Manipulate 2-dimensional vectors; use vectors to solve applied problems; and work with parametric equations.

### Specific Learning Outcomes

6.1 Interpret the various forms of vectors both geometrically and analytically as used in physics.

6.2 Perform operations of addition, subtraction, and scalar multiplication of vectors both geometrically and analytically.

6.3 Calculate the dot product of vectors, the scalar projection of a vector onto another vector, and the cosine of the angle between vectors.

6.4 Express vectors in trigonometric form.

6.5 Read, interpret, and solve applied problems using vectors as used in physics.

6.6 Plot equations represented by parametric equations (optional).

6.7 Eliminate the parameter in a set of equations (optional).



## BROWARD COLLEGE COURSE OUTLINE

Last Review: 08/01/2010

Next Review: 08/01/2015

**COURSE TITLE:** Calculus for Business, Social and Life Sciences**COMMON COURSE NUMBER:** MAC2233**EFFECTIVE TERM:****CREDIT HOURS:** 3**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** This is a general education course which includes the college-level skills of calculus such as: functions, graphs, limits, differentiation, integration, average and instantaneous rates of change and other applications. Recommendation of the Mathematics Department or at least a grade of C in the prerequisite course is required.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 5: Mathematics

AS Degree, meets Area(s):

AS-Area 5: Mathematics

AAS Degree, meets Area(s):

AAS-Area 4: Mathematics/Science

AAS-Area 5: Program-Designated Courses

**UNIT TITLES**

1. Functions, Graphs, Limits
2. Derivatives
3. Integration
4. Exponential and Logarithmic Functions

**EVALUATION:**

-

<b>Portfolio</b>	
<b>Short Essay</b>	
<b>Research Project</b>	
<b>Group Projects</b>	
<b>Discussion</b>	
<b>Multiple Choice Tests</b>	1.0, 2.0, 3.0, 4.0

<b>Presentations</b>	
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	1.0, 2.0, 3.0, 4.0
<b>Take Home Tests</b>	1.0, 2.0, 3.0, 4.0
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	1.0, 2.0, 3.0, 4.0
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	1.5 , 2.9 , 3.4 , 4.8
<b>2. Write clearly and coherently.</b>	1.5 , 2.2 , 2.4 , 2.5 , 2.6 , 2.9 , 3.2 , 3.3 , 3.4 , 4.4 , 4.5 , 4.6 , 4.7 , 4.8
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Technology: 3.4 , 4.8 Quantitative: 1.0 , 2.0 , 3.0 , 4.0
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	1.0 , 2.0 , 3.0 , 4.0
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	3.4 , 4.8
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

## UNITS

### Unit 1 Functions, Graphs, Limits

#### General Outcome

- 1.0 Demonstrate knowledge of the concepts of function, graphing and limits.

#### Specific Learning Outcomes

- 1.1 Define, graph, and write the equation for a linear function in the form  $f(x) = mx + b$ .  
 1.2 Calculate the slope and intercepts of a linear function.  
 1.3 Evaluate the limit of a function, including limits at infinity and one-sided limits.  
 1.4 Determine the continuity of a function at a point or on an interval.

- 1.5 Read and analyze functions to solve applied problems including, but not restricted to:
  - 1.5.1 Fixed and variable costs
  - 1.5.2 Revenue and profit
  - 1.5.3 Supply and demand
  - 1.5.4 Break-even and equilibrium points

## Unit 2 Derivatives

### General Outcome

- 2.0 Demonstrate knowledge of the meaning of derivatives, their applications, and, and rules of differentiation.

### Specific Learning Outcomes

- 2.1 Demonstrate knowledge of the meaning of a derivative.
- 2.2 State and apply the definition of derivative.
- 2.3 Recognize the different derivative notations.
- 2.4 State and apply the rules of differentiation.
- 2.5 Calculate higher order derivatives with or without technology as appropriate.
- 2.6 Determine increasing and decreasing intervals, concavity, critical values, relative extrema, points of inflection, and absolute extrema using first and second derivatives.
- 2.7 Identify and cursorily sketch vertical and horizontal asymptotes of a rational function.
- 2.8 Analyze and sketch polynomial functions with optional technology support for arithmetic as needed.
- 2.9 Read and use derivatives to solve applied problems including, but not restricted to:
  - 2.9.1 Equation of tangent line
  - 2.9.2 Marginal analysis, optionally including differentials
  - 2.9.3 Price elasticity of demand
  - 2.9.4 Optimization in the context of business applications, i.e., maximizing profit, etc.
  - 2.9.5 Average cost and profit

## Unit 3 Integration

### General Outcome

- 3.0 Demonstrate knowledge of integrals and their applications.

### Specific Learning Outcomes

- 3.1 State and apply the rules of integration.
- 3.2 Perform indefinite integration.
- 3.3 Evaluate definite integrals.
- 3.4 Read and use integrals to solve problems including, but not restricted to:
  - 3.4.1 Area
  - 3.4.2 Evaluating the constant of integration to derive cost and revenue functions from marginal functions.
  - 3.4.3 Calculate and interpret consumer and producer surplus.
  - 3.4.4 Calculate quantity from growth/decay function.

## Unit 4 Exponential and Logarithmic Functions

### General Outcome

- 4.0 Demonstrate knowledge of exponential and logarithmic functions, their derivatives, integrals and applications.

Specific Learning Outcomes

- 4.1 Sketch the graph of  $f(x) = e^x$  and related functions using technology as appropriate.
- 4.2 Sketch the graph of  $f(x) = \ln x$  and related functions using technology as appropriate.
- 4.3 State and apply the properties of logarithms.
- 4.4 Solve logarithmic and exponential equations.
- 4.5 Find derivatives of exponential and logarithmic functions.
- 4.6 Find integrals of exponential functions.
- 4.7 Find integrals resulting in logarithmic functions.
- 4.8 Read and apply exponential and logarithmic functions to discrete and continuous problems including, but not limited to:
  - 4.8.1 Present value and future value including compounding.
  - 4.8.2 Effective rate
  - 4.8.3 Finding  $C$  (initial value) and  $k$  (proportionality constant) in exponential growth and decay.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 03/26/2014

**Next Review:** 03/01/2019

**COURSE TITLE:** CALCULUS AND ANALYTICAL GEOMETRY I

**COMMON COURSE NUMBER:** MAC2311

**EFFECTIVE TERM:** Fall 2014

**CREDIT HOURS:** 5

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 80

Lab:

Clinic:

Other:

### College Placement Testing Requirements

N/A

### Prerequisite

MAC1114 with a minimum grade of C

MAC1140 with a minimum grade of C

MAC1147 with a minimum grade of C

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** This is the first of a three-course sequence in calculus. Students may need to a graphing calculator throughout the sequence of courses. Topics include: analytic geometry, functions, limits, continuity, derivatives and their applications, transcendental functions, antiderivatives, and definite integrals. Certain sections of this course may require the use of a graphing calculator. Recommendation of the Mathematics Department or at least a grade of C in each of the prerequisite courses is required.

### UNIT TITLES

1. Functions, Limits, and Continuity
2. The Derivative and Differentiation
3. Extreme Function Values and Techniques of Graphing
4. The Definite Integral and Integration
5. Transcendental Functions
6. Inverse Trigonometric Functions

### EVALUATION:

Students will be assessed on the course outcomes of this course in a variety of ways. They will be assessed with chapter tests, quizzes on one or more sections, midterm exams and final exams.

### UNITS

#### Unit 1      **Functions, Limits, and Continuity**

##### General Outcome

- 1.0      Evaluate limits and determine when a function is continuous.

##### Specific Learning Outcomes

- 1.1      Graphically estimate limits.

- 1.2 Graphically recognize if a limit exists.
- 1.3 Demonstrate knowledge of  $\varepsilon$ - $\delta$  definition of limits.
- 1.4 Evaluate limits using the theorems on limits including the “squeeze” theorem.
- 1.5 Evaluate one-sided limits.
- 1.6 Determine if a function is continuous at a number “c” and on an interval for selected algebraic and transcendental functions.
- 1.7 Distinguish between removable and non-removable discontinuities using algebraic and graphical techniques.
- 1.8 Apply the Intermediate Value Theorem.
- 1.9 Graphically determine the domain and range of a function.

## Unit 2 The Derivative and Differentiation

### General Outcome

- 2.0 Derivatives using the definition of a derivative and special formulas, and apply derivatives to geometrical and physical problems.

### Specific Learning Outcomes

- 2.1 Define the derivative and use it to find the slope of a curve.
- 2.2 Calculate the derivative by its limit definition.
- 2.3 Use the derivative to calculate instantaneous rates of change.
- 2.4 Explain the relationship between the differentiability and continuity of a function.
- 2.5 Graphically interpret if a function is continuous and/or differentiable.
- 2.6 Apply the power rule, the scalar multiple rule, the sum rule, the product rule, and the quotient rule to find the derivative.
- 2.7 Use the chain rule for differentiating.
- 2.8 Calculate second-, third-, and higher-order derivatives.
- 2.9 Distinguish between explicit and implicit forms of an equation.
- 2.10 Demonstrate the technique of implicit differentiation and apply it to equations in implicit form.
- 2.11 Solve related rate problems.
- 2.12 Define the differentials  $dy$  and  $dx$  and demonstrate their use.

## Unit 3 Extreme Function Values and Techniques of Graphing

### General Outcome

- 3.0 Find relative and absolute maxima and minima of a function, solve related geometrical and physical problems, and sketch graphs using the techniques of calculus.

### Specific Learning Outcomes

- 3.1 Apply Rolle’s Theorem and the Mean Value Theorem.
- 3.2 Use the derivative to determine when a function is increasing or decreasing.
- 3.3 Use the derivative of a function to locate its relative extrema.
- 3.4 Graphically estimate the maximum or minimum of a function.
- 3.5 Use the first and second derivatives of a function to determine concavity and points of inflection.
- 3.6 Sketch the graph of a function using calculus techniques.
- 3.7 Solve applied problems using the concepts of extrema.

- 3.8 Use derivatives to determine the velocity and acceleration of objects traveling along linear paths.

#### **Unit 4 The Definite Integral and Integration**

##### General Outcome

- 4.0 Demonstrate knowledge of the theory of antiderivatives and skills in evaluating and applying antiderivatives.

##### Specific Learning Outcomes

- 4.1 Use the summation notation with knowledge of its properties and rules.  
 4.2 Evaluate antiderivatives using basic theorems and substitution techniques.  
 4.3 Calculate the definite integral and the area under a curve as the limit of a Riemann sum.  
 4.4 Use the Fundamental Theorem of Calculus to calculate the value of a definite integral.  
 4.5 Apply the properties of the definite integral when evaluating an integral.  
 4.6 Demonstrate knowledge of the Mean Value Theorem for Integrals.  
 4.7 Demonstrate knowledge of the Mean Value Theorem for Integrals.  
 4.8 Estimate the value of definite integrals and determine a bound for the error in the estimate.

#### **Unit 5 Transcendental Functions**

##### General Outcome

- 5.0 Differentiate and integrate transcendental functions.

##### Specific Learning Outcomes

- 5.1 Define the natural logarithmic function and use the definition to establish its properties.  
 5.2 Calculate the derivative of logarithmic functions.  
 5.3 Apply logarithmic differentiation to functions that are not themselves logarithmic.  
 5.4 Calculate the derivative of exponential functions.  
 5.5 Use integration formulas for exponential functions.  
 5.6 Derive and apply formulas for the derivatives of trigonometric functions.  
 5.7 Derive and apply the formulas for integrating trigonometric functions.

#### **Unit 6 Inverse Trigonometric Functions**

##### General Outcome

- 6.0 Differentiate and integrate inverse trigonometric functions.

##### Specific Learning Outcomes

- 6.1 Demonstrate an understanding of the relationship between the derivative of a function and the derivative of the function's inverse.  
 6.2 Derive and apply the formulas for the derivatives of the inverse trigonometric functions.  
 6.3 Identify and integrate functions whose antiderivatives are inverse trigonometric functions.  
 6.4 Evaluate definite and indefinite integrals yielding inverse trigonometric functions.  
 6.5 Apply the derivatives of inverse trigonometric functions, and apply integrals yielding inverse trigonometric functions, to geometrical and physical problems.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2009

**Next Review:** 08/01/2014

**COURSE TITLE:** CALCULUS AND ANALYTICAL GEOMETRY II

**COMMON COURSE NUMBER:** MAC2312

**EFFECTIVE TERM:**

**CREDIT HOURS:** 5

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 80

Lab: 0

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** This is the second of a three-course sequence in calculus. Topics include techniques of integration, conics, polar coordinates, indeterminate forms, L'Hopital's Rule, proper integrals, infinite series, parametric equations, improper integrals, vectors, volume, arc length, surface area, work, and other applications of integration. A graphing calculator may be required in certain sections of this course. Recommendation of the Mathematics Department or at least a grade of C in the prerequisite course is required.

### UNIT TITLES

1. Techniques of Integration
2. Polar Coordinates and Conics
3. Indeterminate Forms and Improper Integrals
4. Sequences and Infinite Series
5. Vectors
6. Parametric Equations
7. Applications of the Definite Integral

### EVALUATION:

Students will be assessed on the course outcomes of this course in a variety of ways. They will be assessed with chapter tests, quizzes on one or more sections, midterm exams and final exams.

### UNITS

#### Unit 1      **Techniques of Integration**

##### General Outcome

- 1.0      Apply systematic procedures for estimating and evaluating elementary integrals.

##### Specific Learning Outcomes

- 1.1      Integrate by using basic integration formulas.  
1.2      Integrate by using algebraic, trigonometric and other substitution methods.



- 1.3 Integrate by parts.
- 1.4 Integrate certain trigonometric integrals involving powers of trigonometric functions.
- 1.5 Integrate by trigonometric substitution when integrands contain expressions of the forms:  $a^2 - u^2$ ,  $u^2 - a^2$ ,  $a^2 + u^2$  or  $ax^2 + bx + c$
- 1.6 Evaluate integrals with rational integrands by the use of partial fractions.
- 1.7 Evaluate integrals using a table of integrals.

## Unit 2 Polar Coordinates and Conics

### General Outcome

- 2.0 Explain the relation-ship between Cartesian and polar coordinates and be able to convert relations in the plane based on one system to the other. In addition, the students should be able to apply the concepts of calculus to these relations and their graphical representations.

### Specific Learning Outcomes

- 2.1 Apply knowledge of polar coordinate system to change points and/or equations from the Cartesian coordinate system to the polar coordinate system and vice versa.
- 2.2 Graph polar equations including some polar equations of conics.
- 2.3 Find the points of intersection of curves whose equations are in polar form.
- 2.4 Find plane areas when the equations of curves are given in polar form.
- 2.5 Define the conics geometrically, graphically and algebraically.
- 2.6 Identify the standard equations, parameters and the relationship among the parameters for the parabola, the ellipse, and the hyperbola; and graph these curves.
- 2.7 Transform equations by translating and/or rotating the coordinate axes.

## Unit 3 Indeterminate Forms and Improper Integrals

### General Outcome

- 3.0 Evaluate limits that are in indeterminate form and to either evaluate convergent improper integrals or show divergence.

### Specific Learning Outcomes

- 3.1 Recognize limits in indeterminate form.
- 3.2 Apply L'Hopital's Rules to evaluate limits involving indeterminate forms.
- 3.3 Evaluate or show divergence of improper integrals that involve infinite limits of integration.
- 3.4 Apply the Comparison Test to show convergence or divergence of an improper integral.
- 3.5 Apply the concepts to evaluate or show divergence of improper integrals in which the integrand has an infinite discontinuity.
- 3.6 Estimate the value of a convergent improper integral.

## Unit 4 Sequences and Infinite Series

### General Outcome

- 4.0 Determine the convergence or divergence of infinite sequences and infinite series; to evaluate certain infinite series; and to determine the set of numbers over which a power series converges.

### Specific Learning Outcomes

- 4.1 Define infinite sequences, infinite series (including geometric, harmonic and p series), convergence and divergence of sequences and series, and identify the properties of monotonic sequences.

- 4.2 Determine if an infinite sequence diverges or converges and, if the latter, find its limit.
- 4.3 Apply the tests of convergence of a series including the n-th term, geometric series, p-series, alternating series, integral, ratio, root comparison and limit comparison tests.
- 4.4 Determine whether an alternating series converges absolutely, converges conditionally, or diverges.
- 4.5 Determine the radius and interval of convergence of a power series.
- 4.6 Find the power series expansion of certain functions by the processes of algebraic division differentiation and/or integration of a power series.
- 4.7 Find Taylor's expansion with remainder for differentiable functions.
- 4.8 Estimate the error in approximating a convergent series by a partial sum.

## Unit 5 Vectors

### General Outcome

- 5.0 Define vectors in the x-y plane; identifying their properties under vector addition and multiplication by a scalar; and apply the dot product and cross product operations as they relate to angles between vectors and projection.

### Specific Learning Outcomes

- 5.1 Define a vector in algebraic terms.
- 5.2 Define and find the magnitude of a vector.
- 5.3 Identify the properties of vectors under addition and multiplication by a scalar.
- 5.4 Apply the dot product to find projections and angles between vectors.

## Unit 6 Parametric Equations

### General Outcome

- 6.0 Graph curves from their parametric equations and to apply the concepts of calculus to such curves.

### Specific Learning Outcomes

- 6.1 Sketch the curve from a parametric representation.
- 6.2 Determine which of these terms apply to the curve: simple, smooth, closed.
- 6.3 Obtain a Cartesian equation of the curve in parametric form.
- 6.4 Find  $dy/dx$  without eliminating the parameter.
- 6.5 Find the equations of the tangent line and the normal line to the curve at a given point.
- 6.6 Integrate functions of  $x$  and  $y$  by using the parametric representations.
- 6.7 Find the area bounded by a parametrically defined curve.
- 6.8 Find the length of a specified arc of the curve.
- 6.9 Apply the concept of arc length to determine the length of an arc of a specified curve in polar coordinates. Find the length of a specified arc of the curve.

## Unit 7 Applications of the Definite Integral

### General Outcome

- 7.0 Find the area of plane regions, volumes of solids, length of arc of the graph of a function, and the work done by a force using the definite integral.

### Specific Learning Outcomes

- 7.1 Calculate the area of a region between two curves.

- 7.2 Calculate the volume of a solid of revolution using the Disc Method.
- 7.3 Calculate the volume of a solid of revolution using the Shell Method.
- 7.4 Calculate the volume of a solid of known cross sections.
- 7.5 Calculate the length of an arc of the graph of a function over a finite interval.
- 7.6 Calculate the work done by a variable force acting along a line.
- 7.7 Calculate centroids of plane regions.
- 7.8 Calculate fluid pressure on a surface.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2009

**Next Review:** 08/01/2014

**COURSE TITLE:** CALCULUS AND ANALYTICAL GEOMETRY III

**COMMON COURSE NUMBER:** MAC2313

**EFFECTIVE TERM:**

**CREDIT HOURS:** 5

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 80

Lab: 0

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** This is the third of a three-course sequence in calculus. Topics include vectors in 3 space, 3 dimensional surfaces, multivariate functions, cylindrical and spherical coordinates, multiple integrals, partial derivatives, vector fields, Green's Theorem, and Stokes Theorem. A graphing calculator may be required in certain sections of this course. Recommendation of the Mathematics Department or at least a grade of C in the prerequisite course is required.

### UNIT TITLES

1. Vectors in Three Space and Solid Analytic Geometry
2. Differential Calculus of Multivariate Functions
3. Directional Derivatives, Gradients and Applications
4. Multiple Integrals
5. Calculus of Vector Fields

### EVALUATION:

Students will be assessed on the course outcomes of this course in a variety of ways. They will be assessed with chapter tests, quizzes on one or more sections, midterm exams and final exams.

### UNITS

#### Unit 1      **Vectors in Three Space and Solid Analytic Geometry**

##### General Outcome

- 1.0    Compute and construct the Algebra of 3-Tuples, and the dot and cross products of vectors; and graph curves, and surfaces in  $\mathbf{R}^3$ .

##### Specific Learning Outcomes

- 1.1    Carry out the operations in a 3-dimensional vector space, graph lines, quadric surfaces, planes, and curves in  $\mathbf{R}^3$ .
- 1.2    Find dot and cross products in  $\mathbf{R}^3$  and apply them to the geometric constructs.

- 1.3 Find the equation of a plane and the equations of a line in  $\mathbf{R}^3$ , and graph them.
- 1.4 Graph cylinders, surfaces of revolution, quadric surfaces, and curves in  $\mathbf{R}^3$ .
- 1.5 Convert between rectangular, cylindrical and spherical coordinates.

## Unit 2 **Differential Calculus of Multivariate Functions**

### General Outcome

- 2.0 Extend the concepts of domain, range, continuity, limits, derivative and differential from functions of one variable to functions of two or more variables.

### Specific Learning Outcomes

- 2.1 Demonstrate knowledge of the definition of a function of two or more variables by finding its domain and range.
- 2.2 Graph the domain and specified level curves of a function of two variables.
- 2.3 Find the partial derivatives for functions of two or three variables including using the chain rule and finding higher order partial derivatives.
- 2.4 Apply knowledge of the geometric interpretation of partial derivatives.
- 2.5 Find points of continuity of functions of two variables.
- 2.6 Demonstrate knowledge of the definition of limit of a function of two or more variables.
- 2.7 Determine whether or not the limit exists at a specified point for a function of two variables.
- 2.8 Find differentials for functions of two variables.

## Unit 3 **Directional Derivatives, Gradients and Applications**

### General Outcome

- 3.0 Find directional derivatives, gradients, and apply partial derivatives to find extrema of functions of two variables.

### Specific Learning Outcomes

- 3.1 Find the directional derivative of a function in the direction  $\mathbf{v}(t)$ .
- 3.2 Find the gradient of a function,  $\nabla f$ , and use it to find a directional derivative.
- 3.3 Find the equation of the tangent plane to a surface at a point.
- 3.4 Determine if a function has a relative maximum or minimum at a point.
- 3.5 Find the critical points of a function of two variables.
- 3.6 Use the method of Lagrange Multipliers to find the extrema in a constrained extrema problem.

## Unit 4 **Multiple Integrals**

### General Outcome

- 4.0 Extend the concept of integration to double and triple integrals with application.

### Specific Learning Outcomes

- 4.1 Evaluate double integrals by using iterated integrals.
- 4.2 Find volumes, plane areas, and the areas of surfaces using double integrals.
- 4.3 Evaluate double integrals in polar coordinates and use these integrals to find areas in polar coordinates.
- 4.4 Evaluate triple integrals by using iterated integrals.
- 4.5 Use triple integrals to find the volume of a three dimensional region.

- 4.6 Change coordinates of points and the equations of surfaces from Cartesian to cylindrical coordinates and vice versa.
- 4.7 Change the coordinates of points and the equations of surfaces from Cartesian to spherical coordinates and vice versa.

## Unit 5 Calculus of Vector Fields

### General Outcome

- 5.0 Apply the ideas and theorems of the calculus to vector fields, divergence and curl of a vector field, and use line integrals to find the work done by a force field in moving a particle along a curve.

### Specific Learning Outcomes

- 5.1 Prove that a selected vector field  $\mathbf{F}$  is conservative and find a potential function for  $\mathbf{F}$ .
- 5.2 Find the curl and divergence of a vector field.
- 5.3 Find the total work done if the motion is caused by a force field.
- 5.4 Evaluate the line integral over a smooth curve  $C$ .
- 5.5 Show that a particular line integral is independent of the path, and evaluate the integral if  $C$  is any piecewise smooth curve from  $(x_1, y_1, z_1)$  to  $(x_2, y_2, z_2)$ .
- 5.6 Apply Green's, Gauss's and Stokes's Theorems to evaluate line integrals and surface integrals.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2008

**Next Review:** 08/01/2013

**COURSE TITLE:** INTERNATIONAL BUSINESS ENVIRONMENT

**COMMON COURSE NUMBER:** MAN2604

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** A basic course in international business theory and practice focusing on the challenges of managing the operations of an international business in diverse legal, political, economic, and cultural environments. Emphasis is placed on strategic planning and decision-making for the international operations of domestic, foreign and multinational corporations.

### UNIT TITLES

1. The International Business Organization
2. The Economic Environment of International Business
3. Social, Political-Legal, and Cultural Forces
4. Current International Business Concerns

### EVALUATION:

Evaluation may include, but is not limited to, the following:

Exams, quizzes, presentations, portfolios, discussions, class participation, attendance, projects, practicum, co-ops, internships, externships, and research reports.

### UNITS

#### Unit 1      **The International Business Organization**

##### General Outcome

- 1.0 **Describe the current global business environment referenced in the Course Overview, identify major types of organizations that play a role in world commerce, and explain their functions and purposes.**

##### Specific Learning Outcomes

- 1.1 **Define the term "multinational corporation" and describe its major purposes and functions.**

- 1.2 **List the major U.S. Government agencies and describe their role and purposes in encouraging and regulating international trade and direct foreign investment.**
- 1.3 **Name and describe the major methods by which a firm may become involved in international business including:**
  - 1.3.1 **Passive exporting**
  - 1.3.2 **Active exporting**
  - 1.3.3 **Importing**
  - 1.3.4 **Licensing**
  - 1.3.5 **Direct foreign investment**
  - 1.3.6 **Turnkey operation**
  - 1.3.7 **Management contracts**
- 1.4 **Define the terms and explain the functions of:**
  - 1.4.1 **Common Market**
  - 1.4.2 **EC**
  - 1.4.3 **Regional Trading Block**
  - 1.4.4 **Cartel**
  - 1.4.5 **Trade Agreement**
  - 1.4.6 **GATT**
  - 1.4.7 **OPEC**
- 1.5 **Explain the functions of an international manager.**

## **Unit 2 The Economic Environment of International Business**

### General Outcome

- 2.0 **Compare the economic systems of the various major world regions and explain how international organizations must adapt their practices to achieve objectives in each environment.**

### Specific Learning Outcomes

- 2.1 **Define "Comparative Economic Advantage" and explain how the concept affects trade among nations.**
- 2.2 **Contrast business operations in a free enterprise economy with those in a controlled economy.**
- 2.3 **Differentiate between appropriate strategies for firms in a monopolistic environment and in one of competition.**
- 2.4 **Define and give examples of the following:**
  - 2.4.1 **GNP**
  - 2.4.2 **GDP**
  - 2.4.3 **LDC**
  - 2.4.4 **NIC**
- 2.5 **Explain the causes of, problems with, and possible solutions for Third World debt.**
- 2.6 **Describe the current situation of U.S. Government spending and the national debt, and explain the nature of the current world monetary systems.**
- 2.7 **Discuss the functions and goals of the IMF and the World Bank.**

## **Unit 3 Social, Political-Legal, and Cultural Forces**

### General Outcome

- 3.0 **Name the major types of social and political/legal issues that impact international business organizations and suggest strategies for adaptation of business practices in various cultural environments.**



Specific Learning Outcomes

- 3.1 **Define "culture" and list at least 20 components of culture that impact how organizations produce and distribute goods and services to a society.**
- 3.2 **Differentiate among first, second, and Third World nations and describe the nature of business within each of the three types of nations.**
- 3.3 **Define and contrast business operations under each of the two legal systems:**
  - 3.3.1 **Code Law**
  - 3.3.2 **Common Law**
- 3.4 **Identify and describe major world cultural realms in terms of their**
  - 3.4.1 **Economics**
  - 3.4.2 **Government**
  - 3.4.3 **System of Commerce**
- 3.5 **List and explain the advantages and disadvantages of the major types of trade barriers imposed on international marketers, including**
  - 3.5.1 **Duties**
  - 3.5.2 **Quotas**
  - 3.5.3 **Embargoes**
  - 3.5.4 **Sanctions**
  - 3.5.5 **Boycotts**
  - 3.5.6 **Domestic content requirements**
  - 3.5.7 **Mixing requirements**
  - 3.5.8 **Foreign exchange controls**
  - 3.5.9 **Mandatory product adaptation**

**Unit 4 Current International Business Concerns**General Outcome

- 4.0 **Explain the major issues facing an international business firm in today's environment.**

Specific Learning Outcomes

- 4.1 **Explain methods of trading with nations that have excessive debt, inflation, and currency controls.**
- 4.2 **Name and describe current U.S. Government programs that affect world trade including:**
  - 4.2.1 **Exodus**
  - 4.2.2 **HTS classifications for special duties**
  - 4.2.3 **Various USDOC assistance programs**
- 4.3 **Describe modern marketing strategy planning concepts.**
- 4.4 **Identify the world areas subject to high levels of risk due to political instability and terrorism.**
- 4.5 **List the major types of risk facing a multinational enterprise, and suggest actions to be taken by managers to reduce or eliminate such risks.**
- 4.6 **Discuss the current U.S. problem of maintaining global competitiveness for U.S. industry.**

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 04/21/2014

**Next Review:** 08/01/2013

**COURSE TITLE:** DIFFERENTIAL EQUATIONS

**COMMON COURSE NUMBER:** MAP2302

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab:

Clinic:

Other:

### College Placement Testing Requirements

N/A

### Prerequisite

MAC2312 with a minimum grade of C

**or**

MAC2313 with a minimum grade of C

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** Topics include the classification, solution and application of differential equations, including numerical methods, Laplace transforms, linear systems, and series solutions. Recommendation of the Mathematics Department or at least a grade of C in the prerequisite course is required. This course may be taken for honors credit with the permission of the instructor.

### MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 5: Mathematics

### UNIT TITLES

1. Definitions and Procedures
2. Equations of Order One
3. Elementary Applications and Boundary Value Problems
4. Linear Differential Equations
5. Linear Equations with Constant Coefficients
6. Non-Homogeneous Equations, Undetermined Coefficients, and Variation of Parameters
7. The Laplace Transform
8. Systems of Equations
9. Power Series Solutions
10. Numerical Methods of Solving Differential Equations

### EVALUATION:

Students will be assessed on the course outcomes of this course in a variety of ways. They may be assessed with chapter tests, quizzes on one or more sections, midterm exams and final exams.

<b>Portfolio</b>	
<b>Short Essay</b>	

Research Project	
Group Projects	
Discussion	
Multiple Choice Tests	
Presentations	
Service Learning Projects	
Pop Quizzes	
Take Home Tests	
Summaries and Critiques	
Reaction Papers	
Surveys	
Performance	
Short Answer Tests	
Class Room Debates and Colloquia	
Blog, Wikis, Webpages	
Other	

**GENERAL EDUCATION Competencies and Skills:**

1. Read with critical comprehension.	
2. Write clearly and coherently.	
3. Demonstrate literacy as appropriate within a given discipline.	
4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.	
5. Differentiate between ethical and unethical behavior.	
6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.	
7. Demonstrate an understanding of and appreciation for human diversities and commonalities.	
8. Speak and listen effectively.	

**UNITS**

**Unit 1 Definitions and Procedures**

General Outcome

1.0 Demonstrate familiar-ity with the basic definitions and procedures of differential equations.

Specific Learning Outcomes

1.1 Identify and classify differential equations.

1.2 Eliminate arbitrary constants given initial or boundary conditions.

**Unit 2 Equations of Order One**

General Outcome

- 2.0 Solve first-order differential equations and recognize the limitations of the solutions.

Specific Learning Outcomes

- 2.1 Solve equations by the method of separation of variables.  
 2.2 Solve nonlinear equations with homogeneous coefficients.  
 2.3 Solve exact equations.  
 2.4 Determine the solution of the general first-order linear equation.  
 2.5 Find integrating factors.  
 2.6 Solve Bernoulli equations.

**Unit 3 Elementary Applications and Boundary Value Problems**General Outcome

- 3.0 Establish mathematical models for physical situations in terms of first-order differential equations and to recognize the limitations of the models.

Specific Learning Outcomes

- 3.1 Solve problems using Newton's law of cooling.  
 3.2 Solve problems involving rates of growth, decay, and chemical reaction.

**Unit 4 Linear Differential Equations**General Outcome

- 4.0 Recognize the requirements for the general solution to a linear differential equation.

Specific Learning Outcomes

- 4.1 Determine if functions are independent.  
 4.2 Evaluate the Wronskian of a set of functions.  
 4.3 Find the general solution of a linear non-homogeneous equation.  
 4.4 Write an equation in operator form.  
 4.5 Perform algebraic operations on operator expressions.

**Unit 5 Linear Equations with Constant Coefficients**General Outcome

- 5.0 Find the general solutions of linear differential equations with constant coefficients and describe the behavior of these solutions for various values of the constants.

Specific Learning Outcomes

- 5.1 Solve equations whose auxiliary equation has distinct roots.  
 5.2 Solve equations whose auxiliary equation has repeated roots.  
 5.3 Solve equations whose auxiliary equation has imaginary roots.

**Unit 6 Non-Homogeneous Equations, Undetermined Coefficients, and Variation of Parameters**General Outcome

- 6.0 Solve non-homogeneous equations using the methods of undetermined coefficients and variation of parameters.

Specific Learning Outcomes

- 6.1 Solve second order differential equations using the method of undetermined coefficients.
- 6.2 Reduce the order of a differential equation.
- 6.3 Find the general solution of a non-homogeneous equation using the method of variation of parameters.

**Unit 7 The Laplace Transform**General Outcome

- 7.0 Solve a differential equation using the Laplace transform.

Specific Learning Outcomes

- 7.1 Find the Laplace transforms of elementary functions and their derivatives.
- 7.2 Solve differential equations using the Laplace transform.
- 7.3 Solve initial value problems.

**Unit 8 Systems of Equations**General Outcome

- 8.0 Set up and solve systems of linear differential equations.

Specific Learning Outcomes

- 8.1 Use elementary elimination techniques to solve systems of equations.

**Unit 9 Power Series Solutions**General Outcome

- 9.0 Use power series to solve nonelementary differential equations.

Specific Learning Outcomes

- 9.1 Solve nonsingular differential equations by the power series method.
- 9.2 Identify the interval of convergence of a power series solution.

**Unit 10 Numerical Methods of Solving Differential Equations**General Outcome

- 10.0 Use numerical methods to find approximate solutions of differential equations.

Specific Learning Outcomes

- 10.1 Approximate the solution of a differential equation using Euler, Picard, Taylor, or Runge-Kutta methods.

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2004

**Next Review:** 08/01/2009

**COURSE TITLE:** BEGINNING YOGA EXERCISES

**COMMON COURSE NUMBER:** PEM1121

**EFFECTIVE TERM:**

**CREDIT HOURS:** 1

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 0

Lab: 32

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** Students will learn proper exercise, relaxation and balance of both the body and mind. A holistic approach to health and stress management is emphasized. Coeducational.

### UNIT TITLES

1. Proper Exercise
2. Proper Relaxation
3. Proper Breathing
4. Proper Diet
5. Proper Concentration and Positive Thinking

### EVALUATION:

### UNITS

#### Unit 1 Proper Exercise

##### General Outcome

- 1.0 The students shall be able to discuss and demonstrate proper tone, muscle balance and structure of the body by holding yoga positions (Asanas).

##### Specific Learning Outcomes

- 1.1 Relax in yoga positions.  
 1.2 Recognize and release stress and tension in the body.  
 1.3 Demonstrate an increased awareness of the body and universe.

#### Unit 2 Proper Relaxation

##### General Outcome

- 2.0 The students shall be able to relax at will to relieve tension in life's stressful situations as well as to improve physical and mental flexibility.

Specific Learning Outcomes

- 2.1 Recognize and release tension.  
2.2 Increase control of their emotions and thoughts.  
2.3 Use breathing as a tool to relax.

**Unit 3 Proper Breathing**

General Outcome

- 3.0 The students shall be able to breathe correctly and more efficiently (abdominally) to increase their ability to relax, and to rejuvenate at will.

Specific Learning Outcomes

- 3.1 Use breathing exercises for breath control.  
3.2 Breathe to relax.  
3.3 Use breath control for concentration.

**Unit 4 Proper Diet**

General Outcome

- 4.0 The students shall be able to discuss nutrition and its role in improving health and life.

Specific Learning Outcomes

- 4.1 Explain how to eat to live rather than living to eat.  
4.2 Discuss the essential vitamins.  
4.3 Discuss the benefits and drawbacks of vegetarianism.

**Unit 5 Proper Concentration and Positive Thinking**

General Outcome

- 5.0 The students shall be able to improve the quality of their minds and, therefore, their lives through positive thinking and concentration.

Specific Learning Outcomes

- 5.1 Concentrate at will.  
5.2 Describe techniques for increasing positive energy in their lives.

# BROWARD COLLEGE

## COURSE OUTLINE

**Last Review:** 08/01/2010

**Next Review:** 08/01/2015

**COURSE TITLE:** INTRODUCTORY LOGIC

**COMMON COURSE NUMBER:** PHI1100

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

**CONTACT HOUR BREAKDOWN**

(per 16 week term)

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** Study of the principles and evaluation of critical thinking including identification and analysis of fallacious, as well as valid reasoning. Traditional and symbolic logic will be considered and foundations will be laid for further study in each area.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 2f: Philosophy

AA/Bac-Area 7: Writing Requirement

AS Degree, meets Area(s):

AS-Area 2: Humanities/Fine Arts

AAS Degree, meets Area(s):

AAS-Area 2: Humanities/Fine Arts

AAS-Area 5: Program-Designated Courses

**UNIT TITLES**

1. Basic Concepts of Logic
2. Language
3. Informal Fallacies
4. Categorical Propositions
5. Categorical Syllogisms
6. Symbolic Logic
7. Induction
8. Rhetoric

**EVALUATION:**

-

<b>Portfolio</b>	
<b>Short Essay</b>	2.0, 3.0, 4.0, 7.0, 8.0
<b>Research Project</b>	



<b>Group Projects</b>	
<b>Discussion</b>	3.0, 7.0, 8.0
<b>Multiple Choice Tests</b>	1.0, 2.0, 3.0, 4.0, 5.0, 7.0, 8.0
<b>Presentations</b>	
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0
<b>Take Home Tests</b>	
<b>Summaries and Critiques</b>	3.0, 7.0, 8.0
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	1.0, 2.0, 3.0, 5.0, 6.0, 7.0, 8.0
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	

**GENERAL EDUCATION Competencies and Skills:**

<b>1. Read with critical comprehension.</b>	1.0 , 2.0 , 3.0 , 8.0
<b>2. Write clearly and coherently.</b>	1.0 , 2.0 , 3.0 , 8.0
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Quantitative: 4.0 , 6.0 , 7.0
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	4.0 , 5.0
<b>5. Differentiate between ethical and unethical behavior.</b>	8.1 , 8.2 , 8.4
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	8.3
<b>8. Speak and listen effectively.</b>	

**UNITS**

**Unit 1 Basic Concepts of Logic**

General Outcome

1.0 The students should be able to identify the basic components of logic. The students should be able to recognize and evaluate the merit of common language arguments.

Specific Learning Outcomes

- 1.1 Define logic.
- 1.2 Identify and understand the nature of argumentation and differentiate it from disciplines such as speech, and rhetoric.

- 1.3 Recognize and identify arguments formal and informal arguments.
- 1.4 Identify premises and conclusions as components of formal and informal arguments in written and verbal arguments.
- 1.5 Distinguish between inductive and deductive argumentation in written and verbal arguments.
- 1.6 Appraise the validity/invalidity of deductive arguments in written and verbal arguments.
- 1.7 Evaluate strong and weak inductive arguments in written and verbal arguments.
- 1.8 Compare the merits and weaknesses of each form of argumentation in written assignments and class discussions.
- 1.9 Evaluate the appropriate use of different forms of argumentation in written assignments and class discussions.

## **Unit 2 Language**

### General Outcome

- 2.0 The students should be able to recognize the sundry uses of language in text and discussion.

### Specific Learning Outcomes

- 2.1 Differentiate between cognitive meaning and emotive meaning in text and oral arguments.
- 2.2 Differentiate between different uses of language.
- 2.3 Recognize the different types of definitions.
- 2.4 Analyze extended verbal and written arguments.
- 2.5 Critique extended arguments in written assignments and class discussion.

## **Unit 3 Informal Fallacies**

### General Outcome

- 3.0 The students should be able to identify informal fallacies in written and verbal arguments.  
The students should be able to analyze informal fallacies in written assignments and class discussions.

### Specific Learning Outcomes

- 3.1 Recall and describe a variety of fallacies, e.g., fallacies of ambiguity, etc.
- 3.2 Identify a variety of fallacies in written and oral arguments.
- 3.3 Analyze and evaluate a variety of fallacies in both writing and discussion.

## **Unit 4 Categorical Propositions**

### General Outcome

- 4.0 The students should be able to identify various components of deductive arguments.

### Specific Learning Outcomes

- 4.1 Identify the quality, quantity, class relationships, and distribution of categorical propositions.
- 4.2 Recognize the traditional square of opposition.
- 4.3 Apply the rules of immediate inference.

## **Unit 5 Categorical Syllogisms**

### General Outcome

- 5.0 The students should be able to determine the validity of deductive arguments.

Specific Learning Outcomes

- 5.1 Determine the mood and figure of categorical propositions.
- 5.2 Apply the rules of syllogisms for validity.
- 5.3 Recognize the function of Venn Diagrams.
- 5.4 Identify and determine the validity of hypothetical, disjunctive and alternative syllogism
- 5.5 Translate ordinary language arguments into the standard form.
- 5.6 Establish uniform translations.
- 5.7 Explain the nature of enthymemes.

**Unit 6 Symbolic Logic**General Outcome

- 6.0 The students should be able to describe and apply the principles involved in symbolic logic.

Specific Learning Outcomes

- 6.1 Apply the symbols of propositional logic.
- 6.2 Describe the function of truth tables.
- 6.3 Construct truth tables
- 6.4 Illustrate common valid argument forms on truth tables.
- 6.5 Illustrate common invalid argument forms on truth tables.
- 6.6 Translate English expressions into symbolic form.

**Unit 7 Induction**General Outcome

- 7.0 The students should be able to recognize and describe the nature of inductive arguments. The students should be able to analyze and appraise inductive arguments in both writing and class discussion

Specific Learning Outcomes

- 7.1 Identify and appraise analogical arguments.
- 7.2 Identify inductive generalization and hypotheses.
- 7.3 Describe and examine the scientific method.
- 7.4 Identify, compare, and appraise different conceptions of probability.

**Unit 8 Rhetoric**General Outcome

- 8.0 The students should be able to recognize and analyze the nature of rhetoric in both writing and class discussion.

Specific Learning Outcomes

- 8.1 Describe and analyze devices used in advertising.
  - 1. Describe the need for accuracy in advertising
  - 2. Identify commonly used fallacies in advertising
  - 3. Evaluate the appropriate use of rhetorical devices in advertising

- 8.2 Evaluate reported news and analyze the mass media.
  - 1. Describe the need for accuracy in mass media
  - 2. Identify commonly used fallacies in mass media
  - 3. Evaluate the appropriate use of rhetorical devices in mass media
- 8.3 Identify, describe, and appraise the manner in which texts effect our world views.
- 8.4 Identify, describe, and appraise the manner in which valid arguments differ from persuasive arguments

## BROWARD COLLEGE COURSE OUTLINE

Last Review: 08/01/2010

Next Review: 08/01/2015

**COURSE TITLE:** GENERAL PHYSICS WITH CALCULUS I**COMMON COURSE NUMBER:** PHY2048**EFFECTIVE TERM:****CREDIT HOURS:** 4**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture: 64

Lab: 0

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** PHY 2048 is part one of a comprehensive course in physics outlining mechanics, heat, wave motion and sound using analysis in calculus.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 4b: Physical Sciences

AS Degree, meets Area(s):

AS-Area 4: Natural Sciences

AAS Degree, meets Area(s):

AAS-Area 4: Mathematics/Science

AAS-Area 5: Program-Designated Courses

**UNIT TITLES**

1. Measurement and Vectors and Problem Solving
2. Mechanics
3. Energy and Conservation Laws
4. Oscillations and Wave Motion
5. Thermodynamics

**EVALUATION:**

-

<b>Portfolio</b>	1.1, 1.4, 2.0, 3.0, 4.0
<b>Short Essay</b>	
<b>Research Project</b>	
<b>Group Projects</b>	
<b>Discussion</b>	
<b>Multiple Choice Tests</b>	
<b>Presentations</b>	

<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	1.0, 2.0, 3.0, 4.0
<b>Take Home Tests</b>	1.0, 2.0, 3.0, 4.0
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	2.5, 2.9, 3.6, 4.2, 5.3
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	1.2
<b>2. Write clearly and coherently.</b>	1.3
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Quantitative: 1.1 , 1.4 , 2.0 , 3.0 , 4.0 Scientific: 2.0 , 3.0 , 4.0
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	2.0 , 3.0 , 4.0
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	2.5 , 2.9 , 3.6 , 4.2 , 5.3
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

## UNITS

### Unit 1 Measurement and Vectors and Problem Solving

#### General Outcome

- 1.0 Analyze measurement systems, dimensional analysis, and vector operations. The student should be able to read and evaluate readings and problems in clearly written compositions.

#### Specific Learning Outcomes

- 1.1 Manage measurement systems and evaluate an answer based on dimensional analysis.  
 1.2 Select the relevant data and equations in scientific readings and problems to evaluate the concepts presented in physics.  
 1.3 Present solutions and evaluations of readings and word problems using the standard formats in physics.  
 1.4 Differentiate between scalar and vector quantities in Cartesian and non-Cartesian coordinates and be able to manipulate them algebraically.

### Unit 2 Mechanics

General Outcome

- 2.0 Analyze kinematic and static problems.

Specific Learning Outcomes2.1 Kinematics

Distinguish among the equations of motion to the solution of one- and two-dimensional motion problems using Cartesian and non-Cartesian coordinates.

- 2.2 Relate the description of the motion of a particle with respect to a second (moving) coordinate system, i.e., relative motion.
- 2.3 Formulate and analyze Newton's three laws of motion in solving rotating and non-rotating system problems.
- 2.4 Create force diagrams using the different kinds of forces; gravitational, frictional and mechanical.
- 2.5 Formulate and analyze the law of universal gravitation.
- 2.6 Statics
- Assemble the laws of Newton to analyze a rigid body in equilibrium.
- 2.7 Analyze "free body" objects.
- 2.8 Analyze the conservation of torque and angular momentum.
- 2.9 Differentiate among work, energy and power in rotational motion.
- 2.10 Calculate the moment of inertia using the methods of integration.

**Unit 3 Energy and Conservation Laws**General Outcome

- 3.0 Analyze the conservation laws of work, energy, and power.

Specific Learning Outcomes3.1 Work, Energy, Power

Analyze the concept of work in solving problems using the work-energy theorem.

- 3.2 Compare and contrast kinetic energy and potential energy.
- 3.3 Analyze the concept of power.
- 3.4 Conservation Laws
- Distinguish between conservative and non-conservative forces and systems in measuring potential energy.
- 3.5 Analyze the concept of impulse.
- 3.6 Distinguish between elastic and inelastic collisions using the conservation of energy in linear and angular motion.

**Unit 4 Oscillations and Wave Motion**General Outcome

- 4.0 analyze the motion of a particle or system of particles that is periodic.

Specific Learning Outcomes

- 4.1 Formulate the equations of motion of a particle to a simple harmonic oscillator.
- 4.2 Construct a simple harmonic oscillator using its angular frequency, amplitude, period, etc.
- 4.3 Compare different wave phenomena as they move through different forms of matter.
- 4.4 Compare different acoustic phenomena such as standing waves, the Doppler effect, etc.
- 4.5 Analyze the concept of sound intensity level.

**Unit 5 Thermodynamics**General Outcome

- 5.0 Differentiate between heat and temperature and solve basic calorimeter problems, by analyzing the three laws of thermodynamics, the concept of entropy, and the concepts of thermal transport.

Specific Learning Outcomes

- 5.1 Analyze thermodynamics such as heat, specific heat, calorimeter, heat capacity, adiabatic, etc. to create a model of temperature.
- 5.2 Differentiate the thermal expansion of solids, liquids and gases, and thermal phenomena associated with change of phase.
- 5.3 Analyze the laws of thermodynamics, thermal transport, and the concept of entropy.



## BROWARD COLLEGE COURSE OUTLINE

Last Review: 08/01/2010

Next Review: 08/01/2015

**COURSE TITLE:** GENERAL PHYSICS WITH CALCULUS I LAB**COMMON COURSE NUMBER:** PHY2048L**EFFECTIVE TERM:****CREDIT HOURS:** 1**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture: 0

Lab: 32

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** PHY 2048L is a laboratory which allows students to able to collect and analyze data in a variety of experiments covering topics covered in its companion course PHY 2048. Students will create experiment reports using analysis in calculus.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 4c: Science Laboratory

**UNIT TITLES**

1. Laboratory Safety
2. Data Collection
3. Data Analysis and Deductive Reasoning
4. Dynamics
5. Harmonic Motion
6. Moment of Inertia and Angular Momentum

**EVALUATION:**

-

<b>Portfolio</b>	
<b>Short Essay</b>	
<b>Research Project</b>	2.0, 3.0,4.0, 5.0, 6.0
<b>Group Projects</b>	
<b>Discussion</b>	
<b>Multiple Choice Tests</b>	
<b>Presentations</b>	
<b>Service Learning Projects</b>	

<b>Pop Quizzes</b>	1.0, 2.0, 3.0,4.0, 5.0, 6.0
<b>Take Home Tests</b>	
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other Laboratory Reports: 2.0, 3.0, 4.0, 5.0, 6.0</b>	

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	2.0
<b>2. Write clearly and coherently.</b>	3.3 , 3.6
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Information: 1.1 , 2.3 , 2.4 Technology: 1.2 , 1.3 , 2.1 , 2.2 Workplace: 1.0 Quantitative: 3.1 , 3.2 , 3.3 , 3.4 , 3.5 Scientific: 3.0 , 3.6 , 3.7 , 4.0 , 5.0 , 6.0
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	2.0 , 3.0 , 4.0 , 5.0 , 6.0
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	3.6 , 3.7
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

### UNITS

#### Unit 1 Laboratory Safety

##### General Outcome

- 1.0 (1) conduct an experiment using proper safety procedures, (2) recognize and deal with potentially hazardous situations, (3) demonstrate an understanding for the necessity of safe laboratory procedures, and (4) collaborate with fellow students to perform laboratory experiments.

##### Specific Learning Outcomes

- 1.1 Interpret the safety rules as provided by the instructor.  
1.2 Explain why these safety rules are important.

- 1.3 Locate and describe the use of safety equipment including the following
  - 1.1.1. Fire extinguisher
  - 1.1.2. Fire blanket(s)
  - 1.1.3. Eye wash
- 1.4 Create a group which will collaborate on laboratories.

## Unit 2 Data Collection

### General Outcome

- 2.0 Perform experiments correctly and collect data accurately.

### Specific Learning Outcomes

- 2.1 Utilize basic measuring devices such as rulers, micrometers, vernier calipers, protractors, thermometers, balances, etc.
- 2.2 Assemble and use correctly the appropriate equipment for a given experiment.
- 2.3 Follow the procedures correctly and safely in performing experiments.
- 2.4 Collect and accurately record data.

## Unit 3 Data Analysis and Deductive Reasoning

### General Outcome

- 3.0 Analyze the data collected for the purpose of forming conclusions. Students will evaluate the data based on ideas learned in lecture and previous knowledge.

### Specific Learning Outcomes

- 3.1 Identify and trace error propagation in mathematical operations.
- 3.2 Define and apply the concepts of percent error, percent difference, mean, and standard deviation to analyze data.
- 3.3 Analyze and plot data using the method of least squares to find the best fit in order to derive relationships among variables.
- 3.4 Analyze an answer for its reasonableness.
- 3.5 Perform calculations based on the equations from lecture topics.
- 3.6 Write a report with a clear statement of the laboratory purpose and procedures ending with a conclusion of concepts learned from the lab.
- 3.7 Analyze lecture topics with respect to laboratory conclusions.

## Unit 4 Dynamics

### General Outcome

- 4.0 Analyze experiments on dynamic systems. Students will evaluate the experiments based on ideas learned in lecture and previous knowledge.

### Specific Learning Outcomes

- 4.1 Compare the difference of graphical methods of adding vectors to the actual addition of forces.
- 4.2 Calculate the path of a projectile in a gravity field.
- 4.3 Analyze the path of an object experiencing centripetal acceleration.

## Unit 5 Harmonic Motion

### General Outcome

- 5.0 Analyze experiments harmonic motion. Students will evaluate the experiments based on ideas learned in lecture and previous knowledge.

Specific Learning Outcomes

- 5.1 Analyze the motion of an object experiencing different types of harmonic motion; i.e. the motion in a pendulum, spring, etc.
- 5.2 Calculate the wavelength of a standing wave in a string.

**Unit 6 Moment of Inertia and Angular Momentum**

General Outcome

- 6.0 Analyze experiments on the moment of inertia and angular momentum. Students will evaluate the experiments based on ideas learned in lecture and previous knowledge.

Specific Learning Outcomes

- 6.1 Calculate the torque of on an object that is experiencing angular motion.
- 6.2 Analyze how moment of inertia is related to torques and the moment of inertia.
- 6.3 Calculate the center of mass of a solid object and analyze its motion about its center of mass.

## BROWARD COLLEGE COURSE OUTLINE

Last Review: 08/01/2010

Next Review: 08/01/2015

**COURSE TITLE:** GENERAL PHYSICS WITH CALCULUS II**COMMON COURSE NUMBER:** PHY2049**EFFECTIVE TERM:****CREDIT HOURS:** 4**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture: 64

Lab: 0

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** PHY 2049 is part two of a comprehensive physics course outlining electricity, magnetism and optics using analysis in calculus.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 4b: Physical Sciences

AS Degree, meets Area(s):

AS-Area 4: Natural Sciences

AAS Degree, meets Area(s):

AAS-Area 4: Mathematics/Science

AAS-Area 5: Program-Designated Courses

**UNIT TITLES**

1. Electricity and Magnetism
2. Optics
3. Quantum Theory

**EVALUATION:**

-

<b>Portfolio</b>	1.0, 2.0, 3.0
<b>Short Essay</b>	
<b>Research Project</b>	1.0, 2.0, 3.0
<b>Group Projects</b>	
<b>Discussion</b>	
<b>Multiple Choice Tests</b>	1.0, 2.0, 3.0
<b>Presentations</b>	
<b>Service Learning Projects</b>	

<b>Pop Quizzes</b>	1.0, 2.0, 3.0
<b>Take Home Tests</b>	1.0, 2.0, 3.0
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	1.0, 2.0, 3.0
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	1.0 , 2.0 , 3.0
<b>2. Write clearly and coherently.</b>	1.0 , 2.0 , 3.0
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Quantitative: 1.0 , 2.0 , 3.0 Scientific: 1.0 , 2.0 , 3.0
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	1.0 , 2.0 , 3.0
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	1.0 , 2.0 , 3.0
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

## UNITS

### Unit 1 Electricity and Magnetism

#### General Outcome

- 1.0 Analyze how electrical and magnetic fields combine to create the electromagnetic force in electrical circuits. The student will read the course materials critically and create written solutions that will allow for analysis of these circuits.

#### Specific Learning Outcomes

- 1.1 Analyze Coulomb's law in two- and three-dimensional charge configurations.
- 1.2 Analyze the concept of electric field to discrete and continuous bodies using Gauss's Law.
- 1.3 Analyze Ohm's Law and Kirchhoff's Laws to solve simple and compound circuits to create voltage and power relationships in RCL AC circuits.
- 1.4 Analyze magnetic fields effects on moving charged particles and current-bearing wires using Ampere's Laws and Biot-Savart's Laws.
- 1.5 Analyze electromagnetic fields using Faraday's and Lenz's Laws to determine the magnitude and direction of the electromagnetic force.

**Unit 2 Optics**General Outcome

- 2.0 Analyze problems involving geometrical and physical optics. The student will read the course materials critically and create written solutions that will allow for analysis of optical systems.

Specific Learning Outcomes

- 2.1 Analyze the law of reflection and Snell's Law of Refraction to various optical boundaries.  
2.2 Construct ray diagrams for mirrors and lenses.  
2.3 Analyze thin-film and double-slit interference, single-slit diffraction patterns, emission and absorption spectra and polarization affects using electric and magnetic field vectors.

**Unit 3 Quantum Theory**General Outcome

- 3.0 Analyze concepts of quantum theory and probability waves. The student will read the course materials critically and create written solutions that will allow for analysis of quantum theory.

Specific Learning Outcomes

- 3.1 Analyze the following concepts:  
    **3.1.1.** The deBroglie wavelength.  
    **3.1.2.** The photoelectric effect.  
    **3.1.3.** Radioactive decay.  
3.2 Analyze particle behavior using a one-dimensional particle in the box.

## BROWARD COLLEGE COURSE OUTLINE

Last Review: 10/24/2013

Next Review: 08/01/2009

**COURSE TITLE:** GENERAL PHYSICS WITH CALCULUS II LAB**COMMON COURSE NUMBER:** PHY2049L**EFFECTIVE TERM:****CREDIT HOURS:** 1**CONTACT HOUR BREAKDOWN***(per 16 week term)*

Lecture:	Lab: 32
Clinic:	Other:

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** A series of physics laboratory experiments chosen to coincide with the lecture course PHY 2049. The course will include topics in electricity, magnetism and optics. One 2-hour class meeting period per week. A Laboratory fee is charged. Placement by Testing Department or

**UNIT TITLES**

1. Data Collecting
2. Data Analysis and Deductive Reasoning

**EVALUATION:**

Students will be evaluated using a combination of reports, laboratory experiments, quizzes and exams.

**UNITS****Unit 1 Data Collecting**General Outcome

- 1.0 **Perform experiments as instructed and demonstrate accurate and precise data collecting techniques.**

Specific Learning Outcomes

- 1.1 **Utilize basic measuring devices such as rulers, micrometers, vernier calipers, protractors, thermometers, balances, etc.**
- 1.2 **Assemble and use correctly the appropriate equipment for a given experiment.**
- 1.3 **Follow set guidelines for safety procedures in performing experiments.**
- 1.4 **Collect and accurately record data.**

**Unit 2 Data Analysis and Deductive Reasoning**General Outcome



- 2.0 **Analyze the data collected using techniques of Calculus for the purpose of forming conclusions based on deductive reasoning.**

Specific Learning Outcomes

- 2.1 **Identify and trace error propagation in mathematical operations.**
- 2.2 **Define and apply the concepts of % error, % difference, mean and standard deviation to analyze data.**
- 2.3 **Plot data, apply the method of least squares to find the best fit and analyze and interpret data to derive relationships among variable.**
- 2.4 **Analyze answers for their reasonableness.**
- 2.5 **Perform calculations based on scientific problem-solving techniques from lecture topics.**

## BROWARD COLLEGE COURSE OUTLINE

**Last Review:** 08/01/2010

**Next Review:** 08/01/2015

**COURSE TITLE:** INTRODUCTION TO SPEECH COMMUNICATIONS

**COMMON COURSE NUMBER:** SPC1024

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

### CONTACT HOUR BREAKDOWN

(per 16 week term)

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

### College Placement Testing Requirements

N/A

### Prerequisite

None

### Corequisite

None

### Pre/Corequisite

None

**COURSE DESCRIPTION:** This course is designed to provide students with the fundamentals of speech communication including speaking and listening. Topics include: intrapersonal, interpersonal, verbal, nonverbal, small group communication, and public speaking in various cultural contexts.

### MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 6: Oral Communication

AS Degree, meets Area(s):

AS-Area 6: Oral Communication

AAS Degree, meets Area(s):

AAS-Area 5: Program-Designated Courses

AAS-Area 6: Oral Communication

### UNIT TITLES

1. The Communication Process
2. Intrapersonal Communication
3. Listening
4. Nonverbal Communication
5. Verbal Communication
6. Interpersonal Communication
7. Group Processes
8. Speaking to Inform
9. Speaking to Persuade
10. Mass Communication (Optional)

### EVALUATION:

-

<b>Portfolio</b>	
<b>Short Essay</b>	1.0, 2.0, 5.0, 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 10.0
<b>Research Project</b>	

<b>Group Projects</b>	7.0
<b>Discussion</b>	1.0, 2.0, 5.0, 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 10.0
<b>Multiple Choice Tests</b>	1.0, 2.0, 5.0, 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 10.0
<b>Presentations</b>	7.0, 8.0, 9.0
<b>Service Learning Projects</b>	7.0
<b>Pop Quizzes</b>	1.0, 2.0, 5.0, 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 10.0
<b>Take Home Tests</b>	1.0, 2.0, 5.0, 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 10.0
<b>Summaries and Critiques</b>	3.5, 3.6
<b>Reaction Papers</b>	3.5, 3.6
<b>Surveys</b>	
<b>Performance</b>	6.8, 7.0, 8.0, 9.0
<b>Short Answer Tests</b>	1.0, 2.0, 5.0, 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 10.0
<b>Class Room Debates and Colloquia</b>	7.0
<b>Blog, Wikis, Webpages</b>	
<b>Other</b> 8.5, 9.5	

#### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	1.0 , 5.0 , 6.1 , 6.2 , 6.3 , 6.4 , 6.6 , 6.7 , 7.1 , 7.2 , 7.3 , 10.0
<b>2. Write clearly and coherently.</b>	8.5 , 9.5
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Information: 7.0 , 8.0 , 9.0 Cultural: 2.1 , 4.4 , 6.2 , 6.3 , 6.4 , 7.6
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	7.0 , 8.0 , 9.0
<b>5. Differentiate between ethical and unethical behavior.</b>	1.6
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	2.4 , 4.4
<b>8. Speak and listen effectively.</b>	3.0 , 4.0 , 6.5 , 6.8 , 7.4 , 8.0 , 9.0

#### UNITS

##### Unit 1 The Communication Process

###### General Outcome

1.0 Gain an understanding of the elements involved in the communication process.

###### Specific Learning Outcomes

1.1 Identify and explain the major elements in communication.

- 1.2 **Compare types of communication situations (intrapersonal, interpersonal, small group, public speaking).**
- 1.3 **Differentiate purposes for oral communication (informative, persuasive, special occasion).**
- 1.4 **Assess the effects of attitude, values, cultural experiences and emotion on perception.**
- 1.5 **Contrast differences between intended and perceived messages.**
- 1.6 **Explain the ethical responsibilities of communicators.**

## **Unit 2 Intrapersonal Communication**

### General Outcome

- 2.0 **Gain an understanding of the internal processes involved in creating and receiving messages.**

### Specific Learning Outcomes

- 2.1 **Explain factors involved in the internal communication process (e.g.: age, gender, race, ethnicity, education, etc.)**
- 2.2 **Assess personal self-concept development and maintenance.**
- 2.3 **Examine various reasoning processes and thinking errors (fallacies.)**
- 2.4 **Evaluate the impact of past experience and cultural contexts on individual perception.**

## **Unit 3 Listening**

### General Outcome

- 3.0 **Gain an understanding of the importance of and problems involved in effective listening.**

### Specific Learning Outcomes

- 3.1 **Determine purposes of listening (discriminative, comprehensive, empathic, analytical)**
- 3.2 **Evaluate some specific barriers that inhibit listening and strategies to overcome them.**
- 3.3 **Demonstrate knowledge of methods for improving listening comprehension.**
- 3.4 **Explain the factors involved in active, empathic, evaluative, and critical listening.**
- 3.5 **Listen to and critique informative speeches.**
- 3.6 **Listen to and critique persuasive speeches.**

## **Unit 4 Nonverbal Communication**

### General Outcome

- 4.0 **Gain an understanding of the types of nonverbal communication and its different interpretations in various cultural contexts.**

### Specific Learning Outcomes

- 4.1 **Give examples of various nonverbal communication carriers.**
- 4.2 **Summarize the functions of nonverbal communication.**
- 4.3 **Differentiate the relationships between verbal and nonverbal communication.**
- 4.4 **Explain the ways in which nonverbal communication both solidifies and differentiates cultures.**

## **Unit 5 Verbal Communication**

### General Outcome

- 5.0 **Gain an understanding of the various aspects of verbal communication and how a culture uses language to define itself.**

Specific Learning Outcomes

- 5.1 **Explain the cognitive process of encoding and decoding language.**  
 5.2 **Explain the connotative and denotative uses of language.**  
 5.3 **Differentiate among levels of abstraction.**  
 5.4 **Assess the ethical usages of language appropriate to the receiver.**  
 5.5 **Evaluate the uniqueness of a language through analysis of vocabulary, idiomatic expressions, dialect, and pronunciation.**

**Unit 6 Interpersonal Communication**

General Outcome

- 6.0 **Gain an understanding of and experience in utilizing the factors associated with successful interpersonal relationships.**

Specific Learning Outcomes

- 6.1 **Identify and explain the elements of interpersonal communication based on assigned readings.**  
 6.2 **Assess the effects of trust, openness, spontaneity, and defensiveness on communication based on assigned readings. Recognize how these elements vary from culture to culture.**  
 6.3 **Explain the effects of roles, norms and status, and cultural differences on relationships based on assigned readings.**  
 6.4 **Recognize and explain factors promoting interpersonal attractiveness and recognize cultural differences based on assigned readings.**  
 6.5 **Categorize factors related to effective communications at work and at home.**  
 6.6 **Choose methods which facilitate conflict resolution based on theories in assigned readings.**  
 6.7 **Apply effective uses of feedback.**  
 6.8 **Perform in class assignments/exercises demonstrating specific principles in human relations.**

**Unit 7 Group Processes**

General Outcome

- 7.0 **Understand group processes and leadership formation.**

Specific Learning Outcomes

- 7.1 **Explain the factors responsible for group attractiveness and effectiveness based on assigned readings.**  
 7.2 **Categorize factors of the group decision-making process based on assigned readings.**  
 7.3 **Understand leadership development roles based on theories in the assigned readings.**  
 7.4 **Effectively participate in a group task.**  
 7.5 **Evaluate the role of groups in various cultural settings.**  
 7.6 **Interpret how a participant's cultural background may affect participation and leadership.**

**Unit 8 Speaking to Inform**

General Outcome

8.0 **Deliver an effective informative speech.**

Specific Learning Outcomes

8.1 **Choose a topic that increases audience understanding.**

8.2 **Organize materials in a way to not show bias toward the subject.**

8.3 **Choose neutral vocabulary that is appropriate to the audience and speech purpose.**

8.4 **Choose supporting materials from research sources that meet the test of recency, validity, and credibility.**

8.5 **Create a written outline and bibliography that conform to assigned standard format.**

8.6 **Employ the impact of source credibility (character, knowledge, and dynamism.)**

8.7 **Use oral citations to document use of outside sources.**

**Unit 9 Speaking to Persuade**

General Outcome

9.0 **Deliver an effective persuasive speech.**

Specific Learning Outcomes

9.1 **Choose a topic that seeks to change or reinforce the audience's attitudes, values, beliefs, or behavior.**

9.2 **Choose supporting materials from research sources that meet the test of recency, validity, and credibility.**

9.3 **Organize materials to achieve persuasive purpose.**

9.4 **Employ the impact of source credibility (character, knowledge, and dynamism.)**

9.5 **Create a written outline and bibliography that conform to assigned standard format.**

9.6 **Relate audience attitude change to its hierarchy of needs.**

9.7 **Utilize contemporary theories of attitude change.**

9.8 **Use oral citations to document use of outside sources.**

**Unit 10 Mass Communication (Optional)**

General Outcome

10.0 **Gain an understanding of the purposes and techniques used in mass communication and advertising.**

Specific Learning Outcomes

10.1 **Explain the major processes and effects of mass communication.**

10.2 **Explain how information is diffused throughout various cultures.**

10.3 **Understand how new technology enhances information diffusion in and across world cultures.**

# BROWARD COLLEGE

## COURSE OUTLINE

**Last Review:** 08/01/2010

**Next Review:** 08/01/2015

**COURSE TITLE:** STATISTICS

**COMMON COURSE NUMBER:** STA2023

**EFFECTIVE TERM:**

**CREDIT HOURS:** 3

**CONTACT HOUR BREAKDOWN**

(per 16 week term)

Lecture: 48

Lab: 0

Clinic: 0

Other: 0

**College Placement Testing Requirements**

N/A

**Prerequisite**

None

**Corequisite**

None

**Pre/Corequisite**

None

**COURSE DESCRIPTION:** A first course in statistical methods including such topics as collecting, grouping, and presenting data; measures of central tendency, position, and variation; theoretical distributions; probability; test of hypotheses; estimation of parameters; and regression and correlation. Use of statistical computer software and/or a scientific calculator (capable of performing 2-variable statistics) will be required. Recommendation of the Mathematics Department or at least a grade of C in the prerequisite course is required.

**MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS**

AA and Baccalaureate Degrees, meets Area(s):

AA/Bac-Area 5: Mathematics

AS Degree, meets Area(s):

AS-Area 5: Mathematics

AAS Degree, meets Area(s):

AAS-Area 4: Mathematics/Science

AAS-Area 5: Program-Designated Courses

**UNIT TITLES**

1. Frequency Tables and Graphs
2. Descriptive Measures
3. Probability
4. Discrete Probability Distributions
5. Normal Distribution and Central Limit Theorem
6. Hypothesis Testing Concepts
7. Hypothesis Testing Applications
8. Estimation of Parameters
9. Linear Correlation and Regression

**EVALUATION:**

-

<b>Portfolio</b>	
<b>Short Essay</b>	

<b>Research Project</b>	
<b>Group Projects</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0
<b>Discussion</b>	
<b>Multiple Choice Tests</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0
<b>Presentations</b>	
<b>Service Learning Projects</b>	
<b>Pop Quizzes</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0
<b>Take Home Tests</b>	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0
<b>Summaries and Critiques</b>	
<b>Reaction Papers</b>	
<b>Surveys</b>	
<b>Performance</b>	
<b>Short Answer Tests</b>	
<b>Class Room Debates and Colloquia</b>	
<b>Blog, Wikis, Webpages</b>	
<b>Other</b>	

### GENERAL EDUCATION Competencies and Skills:

<b>1. Read with critical comprehension.</b>	3.3 , 3.4 , 3.5 , 3.6 , 3.7 , 4.4 , 4.5 , 4.6 , 4.7 , 4.8 , 5.2 , 5.3 , 5.6 , 6.1 , 6.3 , 7.0 , 8.0 , 9.3 , 9.4 , 9.5
<b>2. Write clearly and coherently.</b>	5.5 , 6.1 , 6.2 , 6.8 , 7.0
<b>3. Demonstrate literacy as appropriate within a given discipline.</b>	Technology: 2.2 , 2.3 , 2.5 , 2.6 , 6.6 , 7.7 , 8.3 , 8.4 , 8.5 , 8.6 , 9.1 , 9.4 Quantitative: 1.0 , 2.0 , 3.0 , 4.0 , 5.0 , 6.0 , 7.0 , 8.0 , 9.0
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.</b>	1.0 , 2.0 , 3.0 , 4.0 , 5.0 , 6.0 , 7.0 , 8.0 , 9.0
<b>5. Differentiate between ethical and unethical behavior.</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	3.7 , 5.2 , 5.3 , 5.6 , 7.0 , 8.3 , 8.4 , 8.5 , 8.6 , 9.2 , 9.3 , 9.4 , 9.5
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

### UNITS

#### Unit 1 Frequency Tables and Graphs

##### General Outcome

- 1.0 Organize summarize, and illustrate data both in table and in graph form, as well as be able to interpret the meanings of such tables and graphs.



Specific Learning Outcomes

- 1.1 **Construct and interpret frequency, relative and cumulative frequency distribution tables.**
- 1.2 **Construct and interpret stem-and-leaf distributions.**
- 1.3 **Construct and interpret histograms.**
- 1.4 **Construct and interpret frequency and relative frequency polygons. OPTIONAL**
- 1.5 **Construct and interpret ogives. OPTIONAL**

**Unit 2 Descriptive Measures**General Outcome

- 2.0 **Calculate measures of location, central tendency and dispersion, and distinguish between population parameters and sample statistics**

Specific Learning Outcomes

- 2.1 **Calculate and interpret the mean, median, and mode of a set of numbers.**
- 2.2 **Calculate and interpret the weighted mean.**
- 2.3 **Calculate and interpret quartiles and percentiles.**
- 2.4 **Calculate and interpret box-and-whisker diagrams. OPTIONAL**
- 2.5 **Calculate and interpret the range, variance, and standard deviation of a set of numbers.**
- 2.6 **Calculate and interpret the mean, variance, and standard deviation for data from a frequency distribution. OPTIONAL**
- 2.7 **Determine and interpret the inter-relationships between the mean, median, and mode for skewed and symmetrical distributions.**
- 2.8 **Determine if a value is unusual (or range of usual values) based upon given or calculated mean and standard deviation.**
- 2.9 **Calculate and interpret z scores for a normal distribution.**

**Unit 3 Probability**General Outcome

- 3.0 **Apply the definitions and rules of probability to solve problems involving discrete variables.**

Specific Learning Outcomes

- 3.1 **Apply the classical definition of probability.**
- 3.2 **Compute probabilities using the fundamental counting principle, permutations, and combinations.**
- 3.3 **Read applied problems and compute probabilities using the law of complementation.**
- 3.4 **Read applied problems and compute probabilities using the laws of addition.**
- 3.5 **Read applied problems and compute probabilities using the laws of multiplication.**
- 3.6 **Read applied problems and compute conditional probabilities.**
- 3.7 **Determine whether an event is unusual or not based upon the relevant probability.**
- 3.8 **Read applied problems and calculate the odds associated with given probabilities. OPTIONAL**

**Unit 4 Discrete Probability Distributions**General Outcome

- 4.0 **Determine the probability distribution for a given experiment and random variable, and calculate its mean and standard deviation.**

Specific Learning Outcomes

- 4.1 **Differentiate between discrete and continuous random variables.**  
 4.2 **Decide whether a given distribution satisfies the requirements of a probability distribution.**  
 4.3 **Calculate the mean (expected value) and standard deviation for a given random variable.**  
 4.4 **Read applied problems and solve problems involving expected value.**  
 4.5 **Read applied problems and decide whether a given distribution is binomial.**  
 4.6 **Read applied problems and calculate the binomial probability using the table or technology.**  
 4.7 **Read applied problems and calculate the binomial probability using the binomial formula.**  
 4.8 **Read applied problems and calculate the mean and standard deviation of a binomial distribution.**

**Unit 5 Normal Distribution and Central Limit Theorem**

General Outcome

- 5.0 **Solve problems using normal distributions and apply the Central Limit Theorem for sample means.**

Specific Learning Outcomes

- 5.1 **Identify the properties of the standard and nonstandard normal distributions.**  
 5.2 **Read applied problems and calculate probabilities using the standard and nonstandard normal distributions.**  
 5.3 **Read applied problems and calculate values in the standard and nonstandard normal distributions when given specific probabilities.**  
 5.4 **Determine when the normal distribution can be used to approximate the binomial distribution, and compute the binomial probabilities using the normal approximation.**  
 OPTIONAL  
 5.5 **Explain the meaning of the Central Limit Theorem and its properties associated with the distribution of sample means.**  
 5.6 **Read applied problems and calculate probabilities for the distributions of sample means using the Central Limit Theorem.**

**Unit 6 Hypothesis Testing Concepts**

General Outcome

- 6.0 **Demonstrate an understanding of the concepts and structure of hypothesis testing and by performing hypothesis tests in various situations.**

Specific Learning Outcomes

- 6.1 **Read applied problems and formulate the null and alternative hypotheses that would be used to test a claim.**  
 6.2 **Describe, analyze, and differentiate between Type I and Type II errors.**  
 6.3 **Read applied problems and decide when to use the t or z statistic, and be able to determine the correct values for these statistics for various hypothesis tests.**

- 6.4 Determine the rejection region(s), and construct a sketch of the region(s).
- 6.5 Determine the p-value for a hypothesis test involving the z test statistic.
- 6.6 Calculate the sample z or t test statistic for given sample data.
- 6.7 Decide whether to reject or fail to reject the null hypothesis based upon comparison of the test statistic value and the rejection region, or comparison of the p-value and the level of significance.
- 6.8 Write the hypothesis test conclusion as a meaningful holistic answer to the original problem situation.

## Unit 7 Hypothesis Testing Applications

### General Outcome

- 7.0 Apply the hypothesis testing concepts to a wide variety of different situations.

### Specific Learning Outcomes

- 7.1 Read applied problems and perform a hypothesis test relating to the mean of a population by using the z statistic.
- 7.2 Read applied problems and perform a hypothesis test relating to the mean of a population by using the t statistic.
- 7.3 Read applied problems and perform a hypothesis test relating to the difference of two mean when given two independent samples.
- 7.4 Read applied problems and perform a hypothesis test relating to the difference between mean using paired samples.
- 7.5 Read applied problems and perform a hypothesis test relating to a proportion using one large sample.
- 7.6 Read applied problems and perform a hypothesis test relating to the Chi-square test for the independence of two variables.
- 7.7 The use of a computer or calculator to perform any of the aforementioned hypothesis tests. OPTIONAL

## Unit 8 Estimation of Parameters

### General Outcome

- 8.0 Determine point and interval estimates for population parameters and to determine sample sizes for the estimation of parameters.

### Specific Learning Outcomes

- 8.1 Read applied problems and determine point estimates for the population mean and population proportion.
- 8.2 Read applied problems and determine a point estimate for the population variance. OPTIONAL
- 8.3 Read applied problems and construct and interpret confidence intervals for the population mean and population proportion.
- 8.4 Read applied problems and construct and interpret confidence intervals for the population variance. OPTIONAL
- 8.5 Read applied problems and determine the sample sizes necessary to estimate population means and population proportions within a given error.
- 8.6 Read applied problems and construct the confidence intervals for the difference between mean and difference between proportions. OPTIONAL

## Unit 9 Linear Correlation and Regression

General Outcome

- 9.0 Calculate the correlation coefficient, determine if there is a significant linear correlation, and find the line of best fit.

Specific Learning Outcomes

- 9.1 Explain the meaning of and calculate the sample linear correlation coefficient, .
- 9.2 Construct and interpret scatter diagrams.
- 9.3 Read applied problems and conduct a test to determine if there is a significant linear correlation between two variables.
- 9.4 Read applied problems and determine the equation of the regression line.
- 9.5 Determine the best predicted y value for a given x value using the strength of the linear correlation and then either the regression equation or as appropriate.