

Purpose: It is the intention of this Administrative-Master Syllabus to provide a general description of the course, outline the required elements of the course and to lay the foundation for course assessment for the improvement of student learning, as specified by the faculty of Wharton County Junior College, regardless of who teaches the course, the timeframe by which it is instructed, or the instructional method by which the course is delivered. It is not intended to restrict the manner by which an individual faculty member teaches the course but to be an administrative tool to aid in the improvement of instruction.

Course Title – Mathematics for Business & Social Sciences II (Formerly known as Mathematical Analysis for Business)

Course Prefix and Number – MATH 1325

Department - MATH

Division – Math and Science

Course Type: (check one)

- Academic General Education Course (from ACGM – but not in WCJC Core)
- Academic WCJC Core Course
- WECM course (This course is a Special Topics or Unique Needs Course: Y or N)

Semester Credit Hours #: Lecture Hours # : Lab/Other Hours # **3:3:0**

Equated Pay hours for course - 3

Course Catalog Description: Limits and continuity, derivatives, graphing and optimization, exponential and logarithmic functions, antiderivatives, integration, applications to management, economics, and business.

Prerequisites/Co-requisites: MATH 1324 or equivalent. (The content level of MATH 1325 is expected to be below the content level of Calculus I, MATH 2413)

List Lab/ Other Hours
Lab Hours 0
Clinical Hours 0
Practicum Hours 0
Other (list) 0

Type: ACAD

Prepared by Dale Neaderhouser

Date 8-24-13

Reviewed by department head Dale Neaderhouser

Date 8-24-13

Accuracy verified by Division Chair Kevin Dees

Date 8-24-13

Approved by Dean or Vice President of Instruction *ggkhunt*

Date 8-24-13



I. Topical Outline

Major areas of coverage:

- A) Limits
- B) Average rate of change
- C) Instantaneous rate of change
- D) Definition of derivative as a limit
- E) Basic rules for the derivative of a function
 - 1) The constant rule
 - 2) The power rule
 - 3) The constant multiple rule
 - 4) The sum or difference rule
 - 5) The product rule
 - 6) The quotient rule
 - 7) The chain rule
 - 8) The generalized power rule
 - 9) The exponential rule
- F) Applications of the derivative
 - 1) Find the marginal cost
 - 2) Find the marginal revenue
 - 3) Find the marginal profit
 - 4) Find the relative maximum and relative minimum of a function
 - 5) Find the absolute maximum and absolute minimum of a function on a closed interval
 - 6) Solve a word or story problem finding a maximum or minimum
- G) Definition of the anti-derivative
- H) Find the anti-derivative of a function
- I) Find the area bounded by a function $f(x)$, the x -axis, and two vertical lines $x=a$ and $x=b$
- J) Evaluate a definite integral
- K) With functions of several variables, find the partial derivative
- L) Evaluate a partial derivative at a given point

II. Course Learning Outcomes

Learning Outcomes Upon successful completion of this course, students will:	Assessment Methods
<p>A) <u>Find the limit of a function</u></p> <p>B) <u>Find the derivative of a function</u></p> <p>C) <u>Apply the derivative to problems such as:</u> 1) <u>Find the marginal cost, marginal revenue and marginal profit of a function</u> 2) <u>Find the relative maximum and relative minimum of a function</u> 3) <u>Find the absolute maximum and absolute minimum of a function</u></p> <p>D) <u>Find the anti-derivative of a function</u></p> <p>E) <u>Find the area bounded by a function $f(x)$, the x-axis, and two vertical lines, $x=a$ and $x=b$</u></p> <p>F) <u>Evaluate a definite integral</u></p> <p>G) <u>With functions of several variables, find a partial derivative with respect to a given variable</u></p> <p>H) <u>Evaluate a partial derivative at a given point</u></p>	<p><u>A. Hour exam and department final.</u> <u>B. Hour exam and department final.</u> <u>C. Hour exam and department final.</u> <u>D. Hour exam and department final.</u> <u>E. Hour exam and department final.</u> <u>F. Hour exam and department final.</u> <u>G. Hour exam and department final.</u> <u>H. Hour exam and department final.</u></p> <p>Outcomes assessed by:</p> <p>Hour exams Final Short Answer Discussion Board</p>

III. Required Text(s), Optional Text(s) and/or Materials to be Supplied by Student.

Calculus with Applications, 10th Edition 2012. Lial, Pearson Addison-Wesley (required)
 Calculator (instructor's discretion)

IV. Suggested Course Maximum - 35

V. List any specific spatial or physical requirements beyond a typical classroom required to teach the course.

Students must have computer access to the WCJC website, their WCJC student email and online accounts. WCJC has open computer labs, with internet access, on all campuses for students to use.

VI. Course Requirements/Grading System – Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course

- | | |
|---|--------|
| a. Average of one hour exams | 40-85% |
| b. Daily participation, quizzes, extra credit | 0-15% |
| c. Homework grade | 0-20% |
| d. Comprehensive Department Final | 15-30% |

A= 90-100 B= 80-89 C= 70-79 D= 60-69 F= 59 and below

VII. Curriculum Checklist

- **Academic WCJC Core Course**

Attach the Core Curriculum Review Forms

- Critical Thinking
- Communication
- Empirical & Quantitative Skills
- Teamwork
- Social Responsibility
- Personal Responsibility

- **General Education Courses (ACGM but non-Core)**

Include the following:

- Objectives/outcomes in space below.

- **WECM Courses**

Include the following:

- SCANS Competencies (attach Program SCANS Checklist)
- WECM and other outcomes/objectives in space provided below.



Core Curriculum Review Form

Foundational Component Area: **Mathematics**

Course Prefix & Suffix: **Math 1325**

Core Objective: **Critical Thinking Skills**—to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

Student Learning Outcome supporting core objective:

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
The SLO is:	Insert SLO (from Administrative Master Syllabi(AMS)) below	Provide a brief name and description of the sample learning activity:	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective:
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input type="checkbox"/> State Mandated	Apply the derivative to find the marginal cost, marginal revenue or marginal profit of a function.. (AMS SLO #C1)	A word problem (application) where the student must identify variables, assemble the correct formulas and solve for the desired result. Including a brief paragraph explaining what was done.	A quiz, test or discussion board artifact showing the student's written answer. Grading for correctness and the rubric for critical thinking will assess this.
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input type="checkbox"/> State Mandated	Find the derivative of a function. (AMS SLO #B)	A written paragraph explaining the steps or rules one uses to compute the derivative of a function.	A quiz, test or discussion board artifact showing the student's written answer. Grading for correctness and the rubric for critical thinking will assess this.
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input type="checkbox"/> State Mandated	Find the anti-derivative of a function. (AMS SLO #D)	Have the student grade an incorrect problem. The student should write a brief paragraph stating what was done incorrectly and what must be done to correct the solution.	A quiz, test or scanned artifact showing the student's written answer. Grading for correctness and the rubric for critical thinking will assess this.



Foundational Component Area: **Mathematics**

Course Prefix & Suffix: Math 1325

Core Objective: **Communication Skills**—to include effective development, interpretation and expression of ideas through written, oral and visual communication

Student Learning Outcome supporting core objective:

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
The SLO is:	Insert SLO (from Administrative Master Syllabi(AMS)) below	Provide a brief name and description of the sample learning activity:	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective:
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input type="checkbox"/> State Mandated	Apply the derivative to find the marginal cost, marginal revenue or marginal profit of a function.. (AMS SLO #C1)	A word problem (application) where the student must identify variables, assemble the correct formulas and solve for the desired result. Including a brief paragraph explaining what was done.	A quiz, test or discussion board artifact showing the student's written answer. Grading for correctness and the rubric for communication will assess this.
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input type="checkbox"/> State Mandated	Find the derivative of a function. (AMS SLO #B)	A written paragraph explaining the steps or rules one uses to compute the derivative of a function.	A quiz, test or discussion board artifact showing the student's written answer. Grading for correctness and the rubric for communication will assess this.
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input type="checkbox"/> State Mandated	Find the anti-derivative of a function. (AMS SLO #D)	Have the student grade an incorrect problem. The student should write a brief paragraph stating what was done incorrectly and what must be done to correct the solution.	A quiz, test or scanned artifact showing the student's written answer. Grading for correctness and the rubric for communication will assess this.



Core Curriculum Review Form

Foundational Component Area: **Mathematics**

Course Prefix & Suffix: Math 1325

Core Objective: **Empirical and Quantitative Skills**—to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Student Learning Outcome supporting core objective:

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
The SLO is:	Insert SLO (from Administrative Master Syllabi) below	Provide a brief name and description of the sample learning activity:	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective:
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input type="checkbox"/> State Mandated	Evaluate a definite integral. (AMS SLO #F)	A problem where the student computes the numerical value of a definite integral.	A quiz, test or discussion board artifact showing the student's written steps and answer. Grading for correctness and the rubric for EQS will assess this.
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input type="checkbox"/> State Mandated	Apply the derivative to find the relative maximum or minimum of a function. (AMS SLO #C2)	A problem where the student uses the derivative to find a numerical value for the relative minimum or maximum of a function.	A quiz, test or discussion board artifact showing the student's written steps and answer. Grading for correctness and the rubric for EQS will assess this.
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input type="checkbox"/> State Mandated	Find the limit of a function. (AMS SLO #A)	A problem where the student finds the limit from the left and right of a function. A sketch or graph is optional.	A quiz, test or scanned artifact showing the student's written steps and answer. Grading for correctness and the rubric for EQS will assess this.