Official Course Outline
MAC 2312
Calculus/Analytic Geometry II

General Course Information

Common Course Number: MAC2312

Course Title: Calculus/Analytic Geometry II

Prerequisite(s): Minimum grade of C in MAC 2311

Contact Hour Breakdown: **CR** 5 **CLASS** 5 **LAB** 0

Discipline: Mathematics

Catalog Description: Prerequisite: Minimum grade of C in MAC 2311. Topics include differentiation and integration of exponential logarithmic transcendental functions, techniques of integration, indeterminate forms, conic sections, and infinite series. Gordon Rule course. Minimum grade of C required if MAC 2312 is used to satisfy Gordon Rule and general education requirement.

Major Topics/ Concepts/ Skills/ Issues

- DIFFERENTIATION OF TRANSCENDENTAL FUNCTIONS
- INVERSE FUNCTIONS
- FURTHER APPLICATIONS OF INTEGRATAION (e.g. ARC LENGTH)
- TECHNIQUES OF INTEGRATION
- PARAMETRIC EQUATIONS AND POLAR COORDINATES
- TAYLOR'S FORMULA, INFINITE SEQUENCES AND SERIES
- TOPICS FROM PLANE ANALYTIC GEOMETRY

Major Learning Outcomes with Evidence, Core Competencies and Indicators

Learning Outcome 1:

Demonstrate an understanding of differentiation and its applications.

Corresponding Evidence of Learning

- Find derivatives of transcendental functions.
- Use differentiation to evaluate limits of an indeterminate form.
- Use logarithmic differentiation.
- Use differentiation of transcendental functions in applications such as optimization, related rates or curve analysis.

Core Competency: Think

Indicators	Level of Integration	Method of Assessment
• employ the facts, formulas, procedures of the discipline	• Instruct • Practice • Assess	• Knowledge recall quiz • Locally developed exam/objective • Locally developed multiple choice exam • Problem-solving quiz • Project • Choose any of the above methods of assessment. Alternate methods may also be used.

Core Competency: Value

Indicators	Level of Integration	Method of Assessment
• recognize the value of differentiation in other disciplines/applications	• Instruct • Practice	

Core Competency: Think

Indicators	Level of Integration	Method of Assessment
• draw well-supported conclusions	• Instruct • Practice • Assess	• Knowledge recall quiz • Locally developed exam/objective • Locally developed multiple choice exam • Problem-solving quiz • Project • Choose any of the above methods of assessment. Alternate methods may also be used.

Core Competency: Communicate

Indicators	Level of Integration	Method of Assessment
• employ methods of communication appropriate to your audience and purpose	• Instruct • Practice • Assess	• Within a test/project student should be able to document their conclusions.

Core Competency: Act		
Indicators	**Level of Integration**	**Method of Assessment**
• implement effective problem-solving, decision-making, and goal-setting strategies	• Instruct • Practice • Assess	• Knowledge recall quiz • Locally developed exam/objective • Locally developed multiple choice exam • Problem-solving quiz • Project • Choose any of the above methods of assessment. Alternate methods may also be used.

Learning Outcome 2:

Demonstrate an understanding of integration and its applications.		
Corresponding Evidence of Learning		
• Evaluate definite and indefinite integrals involving transcendental functions. • Choose an appropriate technique of integration to evaluate definite, indefinite and improper integrals. • Use integration to find area, volume, surface area and arc length of cartesian, parametric and polar curves. • Approximate integrals using numerical techniques such as the Trapezoidal and Simpson Rules.		
Core Competency: Think		
Indicators	**Level of Integration**	**Method of Assessment**
• employ the facts, formulas, procedures of the discipline	• Instruct • Practice • Assess	• Knowledge recall quiz • Locally developed exam/objective • Locally developed multiple choice exam • Problem-solving quiz • Project • Choose any of the above methods of assessment. Alternate methods may also be used.
• draw well-supported conclusions	• Instruct • Practice • Assess	• Knowledge recall quiz • Locally developed exam/objective • Locally developed multiple choice exam • Problem-solving quiz • Project • Choose any of the above methods of assessment. Alternate methods may also be used.
Core Competency: Value		
Indicators	**Level of Integration**	**Method of Assessment**
• recognize the value of integration in other disciplines/applications	• Instruct • Practice	

Core Competency: Communicate		
Indicators	**Level of Integration**	**Method of Assessment**
• employ methods of communication appropriate to your audience and purpose	• Instruct • Practice • Assess	• Within a test/project student should be able to document their conclusions.

Core Competency: Act		
Indicators	**Level of Integration**	**Method of Assessment**
• implement effective problem-solving, decision-making, and goal-setting strategies	• Instruct • Practice • Assess	• Knowledge recall quiz • Locally developed exam/objective • Locally developed multiple choice exam • Problem-solving quiz • Project • Choose any of the above methods of assessment. Alternate methods may also be used.

Learning Outcome 3:

Demonstrate an understanding of sequences and series.		
Corresponding Evidence of Learning		
• Determine the convergence/divergence of a sequence/series. • Find the interval and radius of convergence of a power series. • Find a Taylor/MacLaurin series representation of a function. • Differentiate and integrate functions using their series representations.		
Core Competency: Think		
Indicators	**Level of Integration**	**Method of Assessment**
• analyze patterns in sequences and/or series and be able to find the nth term.	• Instruct • Practice • Assess	• Knowledge recall quiz • Locally developed exam/objective • Locally developed multiple choice exam • Problem-solving quiz • Project • Choose any of the above methods of assessment. Alternate methods may also be used.
• employ the facts, formulas, procedures of the discipline	• Instruct • Practice • Assess	• Knowledge recall quiz • Locally developed exam/objective • Locally developed multiple choice exam • Problem-solving quiz • Project • Choose any of the above methods of assessment. Alternate methods may also be used.

• draw well-supported conclusions	• Instruct • Practice • Assess	• Knowledge recall quiz • Locally developed exam/objective • Locally developed multiple choice exam • Problem-solving quiz • Project • Choose any of the above methods of assessment. Alternate methods may also be used.
Core Competency: Value		
Indicators	**Level of Integration**	**Method of Assessment**
• recognize the value of sequences/series in other disciplines/applications	• Instruct • Practice	
Core Competency: Communicate		
Indicators	**Level of Integration**	**Method of Assessment**
• employ methods of communication appropriate to your audience and purpose	• Instruct • Practice • Assess	• Within a test/project student should be able to document their conclusion
Core Competency: Act		
Indicators	**Level of Integration**	**Method of Assessment**
• implement effective problem-solving, decision-making, and goal-setting strategies	• Instruct • Practice • Assess	• Knowledge recall quiz • Locally developed exam/objective • Locally developed multiple choice exam • Problem-solving quiz • Project • Choose any of the above methods of assessment. Alternate methods may also be used.

Office of the Vice President for Academic Affairs & Chief Learning Office
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