

COURSE NUMBER: Vv116	COURSE TITLE: Calculus I
Credit: 4	PREREQUISITES: Vv115
TEXTBOOKS/REQUIRED MATERIAL: Hughes-Hallett, Gleason, McCallum, et al., <i>Calculus</i> , 7 th Edition	INSTRUCTOR: Zachiri McKenzie DATE OF PREPARATION: DATE OF UC APPROVAL:
INSTRUCTOR(S):	SCIENCE/DESIGN: n/a
CATALOG DESCRIPTION: The sequence Calculus Vv115-116-215-216 is an introduction to basic calculus. It differs from the Honors Math sequence in that new concepts are often introduced and extended from concrete examples, remaining closely aligned to applications. Most theorems are stated rigorously and motivated from examples, but complicated proofs and abstract generalizations are often omitted. The emphasis is on applying mathematical results to concrete problems. This sequence has an additional course compared to the Applied Calculus sequence. This allows room for more examples and the discussion of more applications. The present course covers the calculus of functions of a single real variable starting from integration, and sequences and series.	COURSE TOPICS: <ul style="list-style-type: none"> • The definite integral • Antiderivatives • Techniques of Integration • Applications of Integration • Sequences and series • Representing functions as series
COURSE STRUCTURE/SCHEDULE: lecture (five times per fortnight, 90 minutes each)	
COURSE OBJECTIVES [Course Outcomes in brackets]	<ul style="list-style-type: none"> • Provide knowledge about concepts in the calculus of functions of one variable [1-6]. • Present analytic techniques of the single-variable calculus and develop students' ability to apply them effectively in modeling of real-world problems [1-6]. • Develop student's ability to interpret the concepts of calculus algebraically, graphically, and verbally [1-6]. • Improve students' ability to think critically, to analyse a problem and solve it using a wide array of tools [1-6].
COURSE OUTCOMES [Program Outcomes in brackets]	<p>After completing this course, students should be able to:</p> <ol style="list-style-type: none"> 1. Read, write, and speak accurately about mathematical ideas and use correct mathematical notation. 2. Understand the formal definition of the integral; be able to effectively use integration techniques. 3. Be able to analyse convergence of sequences of real numbers. 4. Be able to analyse convergence of series and power series. 5. Solve applied problems using calculus and justify answers. 6. Incorporate the use of computer-based technology (CAS, graphing software) in problem-solving and results presentation.
ASSESSMENT TOOLS [Course Outcomes in brackets]	homework [1-6] midterm and final exams [1-5]