

**SPRING 2007**  
**MTH 251-01 – Calculus II (4 credit hours)**  
**MW 4:00-6:00PM BMH C123**

**Instructor:** Dr. Ming Fang, Assistant Professor

**Location:** BMH B-181

**Phone Number:** 823-8867

**E-mail:** [mfang@nsu.edu](mailto:mfang@nsu.edu) (preferred)

**Office Hours:** Monday 2:00-4:00pm; Wednesday 1:00-4:00pm; Tuesday and Thursday:  
8:00-9:30am

**Math Dept.** BMH B168 **Phone:** 823-8820

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**Course Description:**

The topics of this course are applications of definite integrals, the calculus of transcendental functions, infinite series, and integration techniques. Some topics are integrated with computer activities.

**Prerequisite:** Math 184 (C or higher) or equivalent

**Course Rationale:**

This is a second course in the essentials of Calculus, necessary for more advanced study in mathematics and the sciences. We continue an exploration of the integral concept, and spend some time on applications (areas between curves, volumes, arc length, work and surface area.) We expect the student to understand how the various applications come about as limits of Riemann-type sums, hence, as definite integrals. This is followed by a treatment of the calculus of some transcendental functions -- the exponential function, the logarithm function, the trig functions and their inverses, and various combinations of these. We also include a brief treatment of first order differential equations. The course then turns to techniques of integration -- integration by parts, by trig. substitutions, by partial fractions. Improper integrals and L'Hopital's Rule then serve as introductions to the final portion of the course, where we give a treatment of infinite series. This section ends with a consideration of Taylor series representations of functions.

**Goals & Measurable Intended Student Learning Outcomes:**

To make full use of the student's previous mathematical experiences, to provide an adequate foundation for the student's success in Calculus III, and to enable the student to acquire the understanding necessary for applying the course experiences in subsequent situations.

At a competence level not less than **70%** the student will

1. Use definite integrals to determine
  - a. Areas of regions between curves
  - b. Volumes by disks, washers, and shells
  - c. Lengths of plane curve
2. Differentiate and integrate logarithmic, exponential, inverse trigonometric, and hyperbolic functions.
3. Solve separable differential equations and applications.
4. Evaluate integrals by using u-substitution, integration by parts, trigonometric substitutions & partial fractions.
5. Evaluate integrals whose integrands are powers of sine and cosine and powers of secant and tangent.
6. Use L'Hopital's Rule to determine limits involving appropriate indeterminate forms.
7. Distinguish between convergent and divergent improper integrals and evaluate the convergent improper integrals.
8. Find the limit of convergent sequences.
9. Use appropriate tests for determining the convergence or divergence of infinite series.
10. Test alternating series for conditional or absolute convergence.
11. Find the center, radius, and interval of convergence for power series.
12. Determine the Maclaurin and Taylor series of functions.

**Course Materials/Requirements/ Required Text:**

Each student should :

1. prepare for each lecture by reading the appropriate topic(s).
2. devote a minimum of 10 hours per week for preparation.
3. attend all lectures and keep a notebook of lecture notes and solved problems.
4. complete and turn in all assignments (if required) on time.

**Text:** Thomas' Calculus, Eleventh Edition,  
Finney, Weir, and Giordano

**Available Supplements:**

Solutions manual can be ordered through the bookstore. MAPLE will be used for the class project. The School of Science website for gateway courses can also be used (<http://sst.nsu.edu>).

**Primary Method(s) of Instruction / Methods to Engage Students:**

- 1) For a 4 hour week: 3 hour lecture and discussion – 1 hour problem/drill session
- 2) MyMathLab software assignments
- 3) MAPLE Group Project

**Course Outline:**

<b>Week Number</b>	<b>Topics</b>	<b>Sections</b>
1	Review Derivatives, Basic Integration formulas	3.2, 3.4-3.5 4.8, 5.5, 5.6
2	Transcendental Functions & Diff. Eqns: Logarithms, Exponential Functions	7.2 - 7.4
3	Inverse Trigonometric Functions, Hyperbolic Functions	7.7, 7.8
4	Hyperbolic Functions, Separable Diff. Eqns.	7.8, 9.1
5	Integration Techniques: Integration by Parts	8.1, 8.2
6	Partial Fractions	8.3
7	Trigonometric Substitutions	8.4 -8.5
8	Applications of Integrals: Area, Volume, Lengths of Plane Curves	5.6, 6.1
<b>SPRING BREAK</b>		
10	Volume, Lengths of Plane Curves	6.2 – 6.3
11	L'Hopital's Rule, Improper Integrals	4.6, 8.8
12	Sequences, Infinite Series	11.1 – 11.2
13	Integral, Comparison, Ratio, Root Tests	11.3 - 11.5
14	Absolute and Conditional Convergence, Alternating Series	11.6
15	Power Series, Taylor Series/Polynomials	11.7, 11.8

**Final Exam:**                    **Tuesday, May 1, 2007 3:30pm-5:30pm**

*The schedule is subject to change at the discretion of the instructor or depending upon the progress of the class.*

### **Related University-Wide and Course- Specific Requirements**

- **Writing:** The student will have a project in which there will be a report completed. There are open-ended questions where the student will write the explanation/answer.
- **Information Technology Literacy:** The student will explore various websites to gain a better understanding of math concepts and problems. The student is also required to do math labs on line. Students are encouraged to communicate (outside of class) with the professor or classmates through electronic means.
- **Quantitative Reasoning:** Most of the math concepts have applications that require quantitative reasoning.
- **Scientific Reasoning:** Most of the math applications require the use of scientific reasoning.
- **Oral Communication:** The student demonstrates this through classroom discussions and explanations at the board.
- **Critical Thinking:** Most of the math concepts and applications require critical thinking.
- **Other Requirements:** The student is required to do the Math Lab assignments and MAPLE project for the course.

**Evaluation:**    Final grades are determined as follows:

Quizzes (minimum of 6)	15%
4 Tests:	50%
Project	10%
Lab	5%
Final Exam:	20%

### **Grading Standards:**

A	90 – 100,	88-89	A-		
B +	86 – 87,	80-85	B,	78-79	B-
C +	76 – 77,	70-75	C,	68-69	C-
D +	66 – 67,	60-65	D,	58-59	D-
F	Below 58				

*The instructor reserves the right to revise the grading criteria as appropriate and will make reasonable attempts to notify students as time permits.*

Class Policies And Procedures:

1. **Make-up Tests/Quizzes.** Tests/Quizzes can be made up with a valid excuse and **PRIOR** to the return of the Test/Quiz papers (usually before the next class period).
2. **Cheating of any kind will not be tolerated and will result in an automatic grade of “F” for the semester (further disciplinary actions may be taken by the university).**

### **ACADEMIC INTEGRITY POLICIES:**

Students are expected to attend all class sessions. Further information regarding academic or academically related conduct and disciplinary procedures and sanctions regarding misconduct may be obtained by consulting the NSU Student Handbook.

### **MyMathLab Instructions:** (See Attachment)

### **Americans With Disabilities Act (ADA) Statement**

In accordance with section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ADA) of 1990, if you have a disability or think you have a disability please make contact with Supporting Students through Disability Services (SSDS) Office.

**Location:** 2<sup>nd</sup> floor/Lyman B. Brooks Library, Room 240

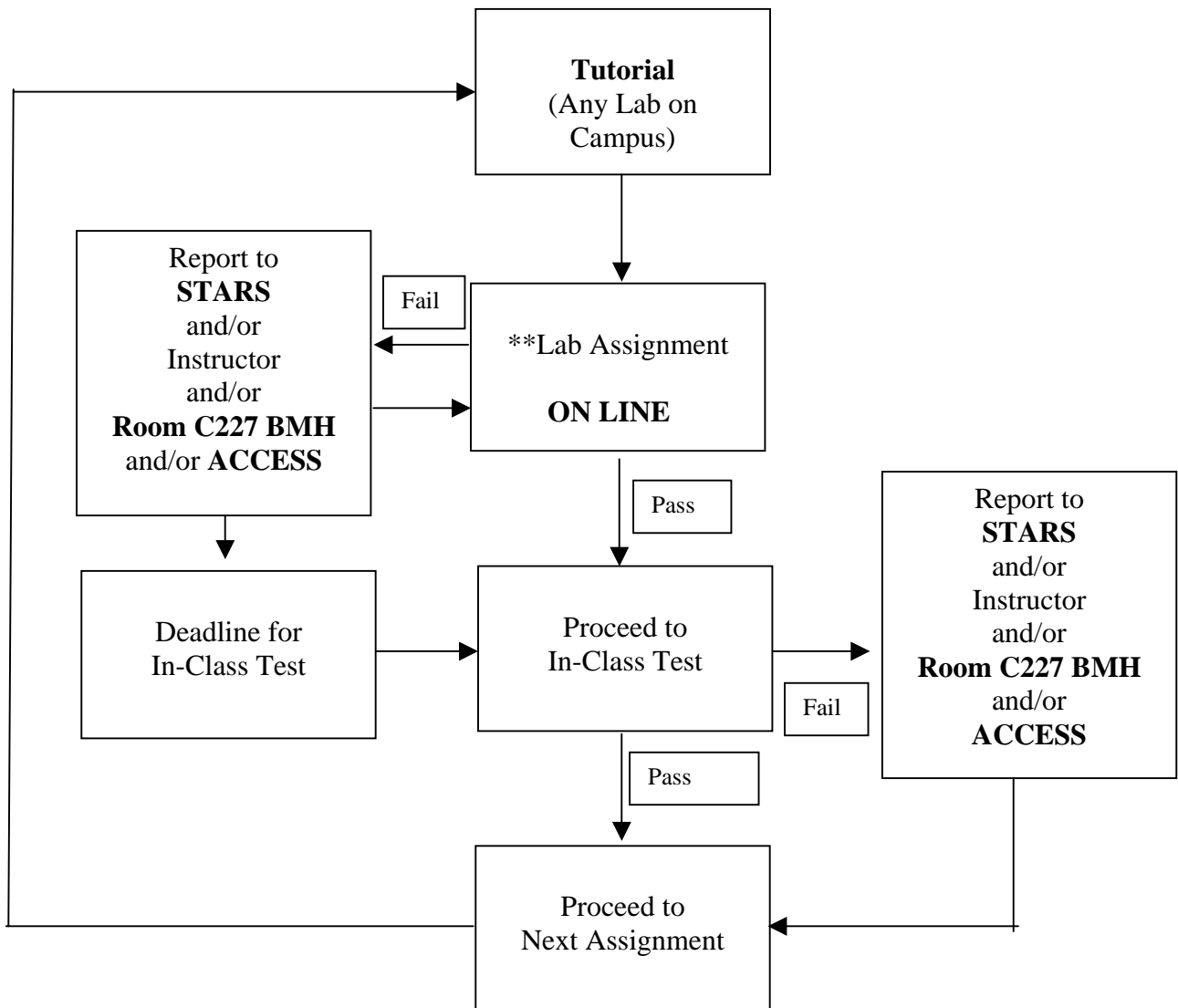
**Contact Person:** Marin E. Shepherd, Disability Services Coordinator

**Telephone:** 823-2014

### **University Assessment Statement**

As part of NSU's commitment to provide the environment and resources needed for success, student may be required to participate in a number of university-wide assessment activities. The activities may include tests, surveys, focus groups and interviews, and portfolio reviews. The primary purpose of the assessment activities is to determine the extent to which the university's programs and services maintain a high level of quality and meet the needs of the students. Students will not be identified in the analysis of results. Unless indicated otherwise by the instructor, results from University assessment activities will not be computed in the student grades.

## Mathematics Flowchart



**\*\*No Credit awarded for Lab Tests not passed (below 70%).**

## Lab Tests count for 5% of Final Grade

### **My Math Lab Instructions:**

*You are expected to complete four labs during the semester. You will need:*

- 1. Internet access and an email address*
- 2. A student access code*

*3. A course ID: **fang88900***

### ***Getting started:***

- 1. Visit this site: [www.coursecompass.com](http://www.coursecompass.com)*
- 2. Click Register, click next*
- 3. Type in your six-word access code (do not type the hyphens)*
- 4. Select, No, I am a new user, and Next*
- 5. Type in your course ID number and Next*
- 6. Enter your contact information, click Next*
- 7. Click the drop down arrow next to the Institution Name box*
- 8. Click NSU*
- 9. Enter you desired login name and password (do not use blank spaces or punctuation marks)*
- 10. Click the arrow next to the Question box to select a question that only you can answer to help verify your identity if you forget your login and password*
- 11. Click the license agreement link to open and read the license agreement*
- 12. Click, I agree and Next*
- 13. A page will be displayed confirming your registration. Print this page.*

### ***Access the My Math Lab Site:***

- 1. Go to <http://www.mymathlab.com> (save this site as a favorites on your computer)*
- 2. Click Login*
- 3. Enter your login and password*
- 4. Click on the name of your course*
- 5. Install the plug-ins that allow you to interact with the multimedia. You may already have these on your computer. Some are Adobe Acrobat, Real Player, Macromedia Flash. There are 7 plug-ins. Access the Installation Wizard from the Announcements page.*
- 6. Click current users and upgrade plug-ins on the left*
- 7. Click install to download the latest version of the software*
- 8. Repeat the process until all of the plug-ins are downloaded*

*Now you are ready to use My Math Lab!*

*Do you want a user's guide?*

1. Go to <http://www.mymathlab.com> and click *Getting Started*
2. Under the heading *Current Users*, you can view and print your user's guide.

**MTH 251 – Calculus II, Spring 2007**  
**Lab Test Assessment Form (LTAF)**

Lab Test	Completed Date
1. Transcendental Functions and Differential Equations (Sections 7.2-7.4, 7.7, 7.8, 9.1,)	
<b>Deadline for Lab 1: February 4, 2007</b> <b>In-class Test #1</b>	
2. Integration Techniques (Sections 8.1-8.5)	
<b>Deadline for Lab 2: February 28, 2007</b> <b>In-class Test #2</b>	
3. Applications of Integrals (Sections 5.6, 6.1-6.3)	
<b>Deadline for Lab 3: March 23, 2007</b> <b>In-class Test #3</b>	
4. L'Hopital's Rule, Improper Integrals, Infinite Series (Sections 4.6, 8.8, 11.1-11.8)	
<b>Deadline for Lab 4: April 27, 2007</b> <b>In-class Test #4</b>	
<b>Tests must be taken in consecutive order</b>	<b>No credit awarded for Lab Tests not passed (below 70%).</b>