CALCULUS A

CALCULUS I with Analytical Geometry

SMAM – 1016 – 271 – 06

FALL 2004 QUARTER SYLLABUS

INSTRUCTOR: Dr. Michael A. Radin

DAYS AND TIMES THE CLASS MEETS:

CLASS – TIME: Mondays 2 – 2:50 p.m. ; 86 – 1100
Tuesdays 2 – 3:50 p.m. ; 86 – 1100
Thursdays 2 – 2:50 p.m. ; 86 – 1100

WORKSHOPS: Mondays 3 – 3:50 p.m. ; 86 – 1100
Thursdays 3 – 3:50 p.m. ; 86 – 1100

TELEPHONE NUMBERS:

*   585 – 475 – 7681 (Office Phone)
*   585 – 475 – 2498 (Secretary's number)
*   585 – 461 – 4002 (Home Number)
*   585 – 475 – 4551 (Fax Number)

E – MAILS: michael.radin@rit.edu   and   mradin@mail.ru

OFFICE: College of Science, Gosnell Hall (Building 08) - 3116
Third Floor of the Building.

OFFICE HOURS:

Mondays   4:00 – 4:45 p.m.

Tuesdays   11:00 a.m. – 12:30 p.m.
               4:00 – 4:45 p.m.

Thursdays 11:00 a.m. – 12:00 p.m.
               4:00 – 4:30 p.m.

TUTORING HOURS: There will be tutoring hours available at the Institute's

COLLEGE OF SCIENCE STUDENT STUDY CENTER

and   LEARNING DEVELOPMENTAL CENTER.

Check the schedule there for the availability of tutors. My hours at the
COLLEGE OF SCIENCE STUDENT STUDY CENTER will be:

Mondays   11:00 a.m. – 12:30 p.m.

TEXT BOOK:

- **CALCULUS,**
  by Larson, Hostetler and Edwards,
  7th Edition,
  Houghton Mifflin Company.

  - Textbook has a CD inside.

COURSE PRE – REQUISITES:

- The pre-requisites are Algebra, Geometry, Trigonometry and Pre-Calculus.

- It is essential to know **all classes of functions** and their properties: linear, quadratic, polynomial, rational, exponential, logarithmic, and trigonometric.

- It is also important to know basic geometry: geometrical figures in 2-D and 3-D such as rectangle, circle, triangles, sphere, box, cylinder, cone, as well as their properties (perimeter, area, right triangles, diagonal, surface area, and volume).

- Furthermore, it is important to know the laws of exponents, logarithmic properties and basic trigonometric identities. We will use them to simplify many complicated expressions, especially in taking derivatives and simplifying them.

- Also know some basic physics; velocity, speed, acceleration and power.

COURSE OBJECTIVES:

Our goal is to understand what is a limit and a derivative. Furthermore, to develop techniques in finding limits and derivatives and see how they are related to each other and to the material in the previous mathematics courses. In addition, do applications of Calculus. Also, develop our analytical skills and problem solving techniques.

Moreover, our goal is to discover the beauty and power of Calculus; to be able to visualize the material and problems geometrically and analytically. To discover how Calculus is related to previous mathematics courses. Furthermore, to get as much out of the course; this will be a very important foundation for future courses in mathematics, physics and engineering.

Also, we will learn to work in a group to solve mathematics problems. This will be done during the workshops twice a week; discussing more difficult and challenging problems that will not be done during class. Many of these problems will be applications of the concepts that we will be studying.

TOPICS IN THE CLASS:

- We will be covering **CHAPTERS P, 1, 2,** and portions of **CHAPTER 3** in the text book.

- We will start off by reviewing **CLASSES OF FUNCTIONS**, their properties, and some applications of each class of functions.

- We will then continue by studying **LIMITS of functions.**

- The course will then proceed with the **AVERAGE** and the **INSTANTANEOUS RATE OF CHANGE**. This will lead to understanding what a **DERIVATIVE** is.

- We will then **learn what a DERIVATIVE is**, define what is a derivative, and understand what is a derivative from the geometrical point of view and the analytical point of view as well.

- Estimating the derivatives numerically and graphically.

- **DETERMINING THE DERIVATIVES** of functions by definition and by various rules:

    (i)   Power rule,
    (ii)   Derivatives of all classes of simple functions
    (iii)   Product Rule
    (iv)   Quotient Rule
    (v)   Chain Rule
    (vi)   Implicit Differentiation

- **APPLICATIONS OF DERIVATIVES** in:

    (i)   Determining the properties of functions:

            (a) Monotonic properties of functions (Increasing & Decreasing)
            (b) Critical points (Relative Minimum and Maximum)
            (c) Inflection Points

    (ii)   Applications of Derivatives in **RELATED RATES OF CHANGE**.

GRADING:

There will be three tests, homework assignments, worksheets from the workshops, and a final exam. Here is the following course's **GRADING SYSTEM:**

- 3 TESTS (150 points each)	450 points
- 8 HOMEWORK ASSIGNMENTS (40 points each; the lowest one will be dropped)	280 points
- ATTENDANCE (Class & workshop attendance)	50 points
- FINAL EXAM	220 points

- **TOTAL**	1000 points

NOTE: You will be graded on how you approach each problem, set up each problem, and what method(s) to solve each problem; not on what the final answer is. You MUST show all work on each problem.

TESTS: There will be a test about **every three weeks**. Each test will have between 6 – 10 questions. Test dates and the material that will be on the test will be sent by e – mail. There are **ABSOLUTELY NO CALCULATORS** allowed on tests.

ATTENDANCE: For every class and workshop that you miss without calling me, e – mailing me, or somehow notifying me, there will be 5 points deducted off your ATTENDANCE GRADE.

HOMEWORKS: Unless stated, homework assignments are due in exactly one week after they are assigned. For each academic day that each assignment is late there will be 4 points deducted.
Extensions are not automatic and must be asked for. I will then determine if the reason is legitimate for an extension.

Homework assignments will be sent by e – mail.

ATTENDANCE AND EXAM POLICY:

- It is very important to attend class all times. If you are going to be absent from class, **you must inform me before** by either calling me, e-mailing me, by telling me before class, or by asking one of your classmates to tell me about it. Missing too many classes puts you in risk of failing the class, since you are missing the material that was covered in class. Furthermore, I can not teach you anything if you are not in class.

- Regarding exams, you must also notify me **before the exam** if you are going to be unable to make it to the regularly scheduled exam. Failure to do so will result in a 0 on your exam.

- Also please note that **Make – up Exams** is a **privilege** in this class that I am allowing you; it is not your right. Abuse of the privilege will also result in a 0 on your exam as well as loss of the privilege. The following behavior will be considered as an abuse of your privilege:

1. Not showing up to the scheduled make – up exam.

2. Constantly rescheduling the time of the make – up exam.

3. Constantly being late to the make – up exam.

POLICY ON CURVINGS AND SCALINGS:

There will be **ABSOLUTELY NO GENERAL CURVES** for the entire class. Final grade will be determined individually in each situation by the following factors and issues:

- Did you attend each class?

- Did you hand in all the homework assignments on time and completed?

- Was there overall improvement throughout the course?

POLICY ON ACADEMIC DISHONESTY:

Academic Dishonesty will **NOT** be tolerated. In particular, appropriate actions will be taken by the institute policy if any instances of academic dishonesty happen such as cheating on a test.

POLICY ON TALKING IN CLASS:

There should be absolutely no talking in class at any time. If you have a question, please ask me and not your class - mate. Talking in class is very disruptive to other students and will not be tolerated.

POLICY ON CELLULAR PHONES AND PAGERS:

Please do not bring any cellular phones or pagers to class, or shut them off before the class begins. They are very disruptive during class.

E – MAIL POLICY:

You must have an e-mail account in this class. All the assignments, test dates and other notices will be sent to you by e-mail. You are responsible for all the e-mails. You all get a free e-mail account with the school. Make sure that your e-mail does not constantly experience technical problems. You must check your e-mail every day.

Make sure that you have free space on your e-mail server and that it will accept my e-mails. You are responsible for all e-mail that I will send to you.

TEAM WORK IN ACCOMPLISHING GOALS:

We are going to work as a team together to make sure that you are understanding the material and that you are going to do well on tests.

- It is **my responsibility** to explain the material in the clearest way possible for you to comprehend it and see how the material ties in together with the previous material that you have learned in other classes. Furthermore, it is also my responsibility to be available for help by providing office hours and being available for help at other times.

- It is **your responsibility** to be in class at all times. I can not teach you anything if you do not come to class. In addition, study the material consistently and ask me questions whenever you do not understand the material.

SUGGESTIONS AND GOALS:

- Come class at all times.

- Take advantage of my office hours and the Institute's tutoring hours
  for help.

- Don't wait until the last minute to get help whenever you do not
  understand the material.

- Study the material consistently.

- Form study groups to work on homework problems and to study for the
  exams. Test each other by asking each other questions.

- Get the notes from one of your classmates the day that you missed class.

- Try to understand the material by understanding the general concepts
  and using examples to see how the concepts apply.

- Do as many problems as you can (at the end of each section and at the end
  of each chapter). The more problems you do and practice, the better you get
  at understanding the material.

- Develop a systematic approach to solving problems; analyzing each problem
  very carefully and deduce your conclusion by applying the concepts and
  the rules that we learned; check your work after finishing each problem.

- See how the concepts apply (extend) from previous classes in this class.

RECOMMENDED PROBLEMS FROM TEXT:

NOTE: These are not the assigned problems to hand in.

SECTION P.1, # 1 – 46, 48 – 72, 81 – 85
SECTION P.2, # 1 – 78, 83 – 88
SECTION P.3, # 1 – 36, 43 – 45, 47 – 68, 70 – 76
SECTION P.4, # 1 – 41

SECTION 1.1,   # 1 – 11
SECTION 1.2,   # 1 – 18, 27 – 46
SECTION 1.3,   # 1 – 78, 83 – 88, 101 – 104
SECTION 1.4,   # 1 – 72, 79 – 95
SECTION 1.5,   # 1 – 67

SECTION 2.1,   # 1 – 86
SECTION 2.2,   # 1 – 94
SECTION 2.3,   # 1 – 104
SECTION 2.4,   # 1 – 95, 99
SECTION 2.5,   # 1 – 61, 64
SECTION 2.6,   # 1 – 54

SECTION 3.1, # 1 – 57
SECTION 3.2, # 1 – 54

CALCULUS B

CALCULUS II with Analytical Geometry

SMAM – 1016 – 272 – 03

SPRING 2005 QUARTER SYLLABUS

INSTRUCTOR: Dr. Michael A. Radin

DAYS AND TIMES THE CLASS MEETS:

CLASS – TIME: Mondays 4 – 4:50 p.m. ; 86 – 1100
Tuesdays 4 – 5:50 p.m. ; 86 – 1100
Thursdays 4 – 4:50 p.m. ; 86 – 1100

WORKSHOPS: Mondays 5 – 5:50 p.m. ; 86 – 1100
Thursdays 5 – 5:50 p.m. ; 86 – 1100

TELEPHONE NUMBERS:

*   585 – 475 – 7681 (Office Phone)
*   585 – 475 – 2498 (Secretary's number)
*   585 – 461 – 4002 (Home Number)
*   585 – 475 – 4551 (Fax Number)

E – MAILS: michael.radin@rit.edu   and   mradin@mail.ru

OFFICE: College of Science, Gosnell Hall (Building 08) - 3116
Third Floor of the Building.

OFFICE HOURS:

Mondays   12:00 – 1:30 p.m.

Tuesdays   11:00 a.m. – 12:30 p.m.
                4:00 – 5:00 p.m.

Thursdays 11:00 a.m. – 12:30 p.m.

TUTORING HOURS: There will be tutoring hours available at
the Institute's

COLLEGE OF SCIENCE STUDENT STUDY CENTER

and   **LEARNING DEVELOPMENTAL CENTER**.

Check the schedule there for the availability of tutors. My hours at the
COLLEGE OF SCIENCE STUDENT STUDY CENTER will be:

Wednesdays   10:00 a.m. – 11:00 a.m.

TEXT BOOK:

- **CALCULUS,**
  by Larson, Hostetler and Edwards,
  7th Edition,
  Houghton Mifflin Company.

  - Textbook has a CD inside.

COURSE PRE – REQUISITES:

- The pre-requisites are Algebra, Geometry, Trigonometry, Pre-Calculus and Calculus I.

- It is also important to know basic geometry: geometrical figures in 2-D and 3-D such as rectangle, circle, triangles, sphere, box, cylinder, cone, as well as their properties (perimeter, area, right triangles, diagonal, surface area, and volume).

- Furthermore, it is important to know the laws of exponents, logarithmic properties and basic trigonometric identities. We will use them to simplify many complicated expressions, especially in taking derivatives and integrals and simplifying them too.

- Moreover, must know all the **Rules of Differentiation** such as Power Rule, Product Rule, Quotient Rule and Chain Rule.

- Also know some basic physics; velocity, speed, acceleration and power.

COURSE OBJECTIVES:

Our goal is to understand the applications of Derivatives and the concept of Integration. Furthermore, develop techniques in understanding how to apply derivatives, methods of Integration, and applications of Integrals.
In addition, to see how the material extends from Calculus I and from the material in the previous mathematics courses. Also, develop our analytical skills and problem solving techniques.

In addition, our goal is to discover the beauty and power of Calculus; to be able to visualize the material and problems geometrically and analytically. Furthermore, we want to discover how Calculus is related to previous mathematics courses and to other disciplines.

Also, we will learn to work in a group to solve and practice doing mathematics problems. This will be done during the workshops twice a week; discussing more difficult and challenging problems that will not be done during class. Many of these problems will be applications of the concepts that we will be studying.

TOPICS IN THE CLASS:

- We will be covering **CHAPTERS 3, 4,** and portions of **CHAPTER 5** in the text book.

- We will start off by reviewing **DERIVATIVES OF FUNCTIONS**; power rule, product rule, quotient rule and chain rule.

- We will then continue by studying **APPLICATIONS OF DERIVATIVES** in:

    (i)   Monotonic properties of functions
    (ii)   Critical Points
    (iii)   Concavity
    (iv)   Inflection Points
    (v)   Curve Sketching
    (vi)   Optimization
    (vii)   Linear Approximation and Differentials
    (viii) Newton's Method

- We will also study **LIMITS OF FUNCTIONS** as x goes to infinity.

- The course will then proceed with **INTEGRATION**. Geometrically and analytically understand what is an <u>Integral</u>.

- We will then learn the **METHODS OF INTEGRATION**; Power Rule, Integration by Substitution, and Numerical Integration.

- Also, we will study **LOGARITHMIC FUNCTIONS**; their properties, derivatives and integrals as well.

- We will conclude the course with discussing **Applications of Integrals** in finding: Area Between Curves, Volume by Revolution, Arc Length, in Physics (distance, work, center of mass, and etc.), Biology, Economics, and Probability.

GRADING:

There will be three tests, homework assignments, worksheets from the workshops, and a final exam. Here is the following course's **GRADING SYSTEM:**

- 3 TESTS (150 points each)   450 points

- 8 HOMEWORK ASSIGNMENTS   280 points
   (40 points each; the lowest one will be dropped)

- ATTENDANCE   40 points
   (Class & workshop attendance)

- AN APPOINTMENT TO COME   50 points
   SEE ME IN MY OFFICE

- FINAL EXAM   180 points

- **TOTAL**   1000 points

NOTE: You will be graded on how you approach each problem, set up each problem, and what method(s) to solve each problem; not on what the final answer is. You MUST show all work on each problem.

TESTS: There will be a test about **every three weeks**. Each test will have between 6 – 10 questions. Test dates and the material that will be on the test will be sent by e – mail. There are **ABSOLUTELY NO CALCULATORS** allowed on tests.

HOMEWORK ASSIGNMENTS: Unless stated, each homework assignment is due in exactly one week after they are assigned. For each academic day that each assignment is late there will be 4 points deducted. Extensions are not automatic and must be asked for. I will then determine if the reason is legitimate for an extension.

Homework assignments will be sent by e – mail.

AN APPOINTMENT IN MY OFFICE: During the <u>**first five weeks**</u> of the quarter, you will be required to come see me in my office for 20 – 30 minutes. It is your responsibility to make an appointment by either e-mailing me, calling me, or by directly scheduling an appointment. In addition, you <u>MUST</u> have the information sheet completed and ready to answer questions. This will give me the opportunity to get to know you better and vice versa.

ATTENDANCE: For every class and workshop that you miss without calling me, e – mailing me, or somehow notifying me, there will be 5 points deducted off your <u>ATTENDANCE GRADE</u>.

ATTENDANCE AND EXAM POLICY:

- It is very important to attend class all times. If you are going to be absent from class, **you must inform me before** by either calling me, e-mailing me, by telling me before class, or by asking one of your classmates to tell me about it. Missing too many classes puts you in risk of failing the class, since you are missing the material that was covered in class. Furthermore, I can not teach you anything if you are not in class.

- Regarding exams, you must also notify me **before the exam** if you are going to be unable to make it to the regularly scheduled exam. Failure to do so will result in a 0 on your exam.

- Also please note that **Make – up Exams** is a **privilege** in this class that I am allowing you; it is not your right. Abuse of the privilege will also result in a 0 on your exam as well as loss of the privilege. The following behavior will be considered as an abuse of your privilege:

1. Not showing up to the scheduled make – up exam.

2. Constantly rescheduling the time of the make – up exam.

3. Constantly being late to the make – up exam.

POLICY ON CURVINGS AND SCALINGS:

There will be **ABSOLUTELY NO GENERAL CURVES** for the entire class. Final grade will be determined individually in each situation by the following factors and issues:

- Did you attend each class?

- Did you hand in all the homework assignments on time and completed?

- Was there overall improvement throughout the course?

POLICY ON ACADEMIC DISHONESTY:

Academic Dishonesty will **NOT** be tolerated. In particular, appropriate actions will be taken by the institute policy if any instances of academic dishonesty happen such as cheating on a test.

POLICY ON DISRUPTIVE BEHAVIOR:

There is absolutely no talking in class at any time. If you have a question, please ask me and not your class - mate. Talking in class is very disruptive to other students and will not be tolerated. Disruptive behavior such as talking will be dealt appropriately by the administration if it continues after the first warning. Please use your discretion wisely.

POLICY ON CELLULAR PHONES AND PAGERS:

Absolutely no cellular phones or pagers are allowed in class and workshops. Please do not bring any cellular phones or pagers to class, or please shut them off before the class begins. They are very disruptive during class.

E – MAIL POLICY:

You must have an e-mail account in this class. All the assignments, test dates and other notices will be sent to you by e-mail. You are responsible for all the e-mails. You all get a free e-mail account with the school. Make sure that your e-mail does not constantly experience technical problems. You must check your e-mail every day.

Make sure that you have free space on your e-mail server and that it will accept my e-mails. You are responsible for all e-mail that I will send to you.

TEAM WORK IN ACCOMPLISHING GOALS:

We are going to work as a team together to make sure that you are understanding the material and that you are going to do well on tests.

- It is **MY RESPONSIBILITY**:

(i)   To explain the material in the clearest way possible for you to comprehend it and see how the material ties in together with the previous material that you have learned in other courses.

(ii)   Discuss and provide applications to see the motivation to study the new material.

(iii) To be available for help by providing office hours and being available for help at other times.

- It is **YOUR RESPONSIBILITY**:

(i)   To be in class at all times. I can not teach you anything if you are not in class

(ii)   Study the material consistently.

(iii) Ask me questions when you are having difficulties with the material.

(iv)   Inform me about any problems that may lead to missing class, missing a test, and/or not handing in a homework assignment on time.

SUGGESTIONS AND GOALS:

- Come class at all times.

- Take advantage of my office hours and the Institute's tutoring hours
  for help.

- Don't wait until the last minute to get help whenever you do not
  understand the material.

- Study the material consistently.

- Form study groups to work on homework problems and to study for the
  exams. Test each other by asking each other questions.

- Get the notes from one of your classmates the day that you missed class.

- Try to understand the material by understanding the general concepts
  and using examples to see how the concepts apply.

- Do as many problems as you can (at the end of each section and at the end
  of each chapter). The more problems you do and practice, the better you get
  at understanding the material.

- Develop a systematic approach to solving problems; analyzing each problem
  very carefully and deduce your conclusion by applying the concepts and
  the rules that we learned; check your work after finishing each problem.

- See how the concepts apply (extend) from previous classes in this class.

RECOMMENDED PROBLEMS FROM TEXT:

NOTE: These are not the assigned problems to hand in.

CHAPTER 3:

SECTION 3.3, # 1 – 48, 58, 60 – 64, 66
SECTION 3.4, # 1 – 54, 61, 70, 79 – 82
SECTION 3.5, # 1 – 35, 37 – 80
SECTION 3.6, # 1 – 54, 67 – 72
SECTION 3.7, # 2 – 41, 43, 44, 47 – 56, 58 – 64
SECTION 3.8, # 1 – 46
SECTION 3.9, # 1 – 48

CHAPTER 4:

SECTION 4.1, # 1 – 84, 87
SECTION 4.2, # 1 – 62, 75, 76
SECTION 4.3, # 1 – 56, 67, 68
SECTION 4.4, # 1 – 52, 61 – 65, 69 – 92
SECTION 4.5, # 1 – 54, 105 – 108
SECTION 4.6, # 1 – 19, 23 – 30, 33 – 39, 41, 42

CHAPTER 5:

SECTION 5.1, # 7 – 92, 98, 102
SECTION 5.2, # 1 – 54, 67 – 75, 77 – 85
SECTION 5.3, # 1 – 44, 47 – 54, 59 – 66, 77 – 90
SECTION 5.4, # 1 – 73, 80, 87 – 106, 109 – 118

CALCULUS C

CALCULUS III with Analytical Geometry

SMAM – 1016 – 273 – 04

SPRING 2005 QUARTER SYLLABUS

INSTRUCTOR: Dr. Michael A. Radin

DAYS AND TIMES THE CLASS MEETS:

CLASS – TIME: Mondays 2 – 2:50 p.m. ; 10 –A310
Tuesdays 2 – 3:50 p.m. ; 13 – 1360
Thursdays 2 – 2:50 p.m. ; 10 – A310

WORKSHOPS: Mondays 3 – 3:50 p.m. ; 10 –A310
Thursdays 3 – 3:50 p.m. ; 10 –A310

TELEPHONE NUMBERS:

*   585 – 475 – 7681 (Office Phone)
*   585 – 475 – 2498 (Secretary's number)
*   585 – 461 – 4002 (Home Number)
*   585 – 475 – 4551 (Fax Number)

E – MAILS: michael.radin@rit.edu   and   mradin@mail.ru

OFFICE: College of Science, Gosnell Hall (Building 08) - 3116
Third Floor of the Building.

OFFICE HOURS:

Mondays   12:00 – 1:30 p.m.

Tuesdays   11:00 a.m. – 12:30 p.m.
4:00 – 5:00 p.m.

Thursdays 11:00 a.m. – 12:30 p.m.

TUTORING HOURS: There will be tutoring hours available at the Institute's

COLLEGE OF SCIENCE STUDENT STUDY CENTER

and   LEARNING DEVELOPMENTAL CENTER.

Check the schedule there for the availability of tutors. My hours at the *COLLEGE OF SCIENCE STUDENT STUDY CENTER* will be:

Wednesdays   10:00 a.m. – 11:00 a.m.

TEXT BOOK:

- **CALCULUS**,
  by Larson, Hostetler and Edwards,
  7th Edition,
  Houghton Mifflin Company.

  - Textbook has a CD inside.

COURSE PRE – REQUISITES:

- The pre-requisites are Algebra, Geometry, Trigonometry, Pre-Calculus and Calculus I, and Calculus II.

- It is also important to know basic geometry: geometrical figures in 2-D and 3-D such as rectangle, circle, triangles, sphere, box, cylinder, cone, as well as their properties (perimeter, area, right triangles, diagonal, surface area, and volume).

- Furthermore, it is important to know the laws of exponents, logarithmic properties and basic trigonometric identities. We will use them to simplify many complicated expressions, especially in taking derivatives and integrals and simplifying them too.

- Moreover, must know all the **Rules of Differentiation** such as Power Rule, Product Rule, Quotient Rule and Chain Rule.

- Also know some basic physics; velocity, speed, acceleration and power.

COURSE OBJECTIVES:

Our goal is to understand the applications of Derivatives and the concept of Integration. Furthermore, develop techniques in understanding how to apply derivatives, methods of Integration, and applications of Integrals.
In addition, to see how the material extends from Calculus I and from the material in the previous mathematics courses. Also, develop our analytical skills and problem solving techniques.

In addition, our goal is to discover the beauty and power of Calculus; to be able to visualize the material and problems geometrically and analytically. Furthermore, we want to discover how Calculus is related to previous mathematics courses and to other disciplines.

Also, we will learn to work in a group to solve and practice doing mathematics problems. This will be done during the workshops twice a week; discussing more difficult and challenging problems that will not be done during class. Many of these problems will be applications of the concepts that we will be studying.

TOPICS IN THE CLASS:

- We will be covering **CHAPTERS 5, 6, & 7** in the text book.

- We will start off by reviewing **INTEGRALS OF FUNCTIONS**:

  (i)   Right Hand and Left Hand sums:
  (ii)   Basic integrals:

  - Power Rule
  - Logarithm Integral
  - Trigonometric Integrals
  - Algebra Simplification(s) and trigonometric identities

  (iii) Integration By Substitution

- Continue the study of **Derivatives** and **Integrals** of:

  (i)   Exponential Functions
  (ii)   Inverse Trigonometric Functions
  (iii) Hyperbolic Functions

- We will then proceed with other **METHODS OF INTEGRATION**:

  (i)   Integration by Parts
  (ii)   Integration by Partial Fractions
  (iii) Integration by Synthetic Division
  (iv)   Integration by Trigonometric Substitution
  (v)   Trigonometric Integrals

- In addition, study **APPLICATIONS OF DEFINITE INTEGRALS** in:

  (i)   Area between curves
  (ii)   Volume and Volume by Revolution
  (iii) Arc Length
  (iv)   Average Value of a function
  (v)   Center of Mass of an object
  (vi)   Moment of Inertia of an object
  (vii) Work

- The course will conclude with **IMPROPER INTEGRALS**.

GRADING:

There will be three tests, homework assignments, worksheets from the workshops, and a final exam. Here is the following course's **GRADING SYSTEM:**

- 3 TESTS (150 points each)   450 points

- 8 HOMEWORK ASSIGNMENTS   280 points
  (40 points each; the lowest one will be dropped)

- ATTENDANCE   40   points
   (Class & workshop attendance)

- ATTENDING A TALK AND   50   points
  COMING TO DISCUSS IT WITH ME

- FINAL EXAM   180 points

_____

- **TOTAL**   1000 points

NOTE: You will be graded on <u>how you approach</u> each problem, set up each problem, and what method(s) to solve each problem; not on what the final answer is. You MUST show all work on each problem.

TESTS: There will be a test about **every three weeks**. Each test will have between 6 – 10 questions. Test dates and the material that will be on the test will be sent by e – mail. There are **ABSOLUTELY NO CALCULATORS** allowed on tests.

HOMEWORK ASSIGNMENTS: Unless stated, each homework assignment is due in <u>exactly one week</u> after they are assigned. For each academic day that each assignment is late there will be 4 points deducted. Extensions are not automatic and must be asked for. I will then determine if the reason is legitimate for an extension.

Homework assignments will be sent by e – mail.

ATTENDING A TALK: You are required to attend a talk or presentation throughout the quarter; either chemistry, physics, mathematics, imaging science, college of business, information technology, or any engineering department. I will e-mail you the days, times and locations of those talks. There is usually at least two or three a week. It is your responsibility to make an appointment by either e-mailing me, calling me, or by directly scheduling an appointment. In addition, you <u>MUST</u> have the sheet completed and ready to answer questions and have a discussion. This must be finished before the end of the 7th week of the quarter.

ATTENDANCE: For every class and workshop that you miss without calling me, e – mailing me, or somehow notifying me, there will be 5 points deducted off your <u>ATTENDANCE GRADE</u>.

<u>ATTENDANCE AND EXAM POLICY:</u>

- It is very important to attend class all times. If you are going to be absent from class, **you must inform me before** by either calling me, e-mailing me, by telling me before class, or by asking one of your classmates to tell me about it. Missing too many classes puts you in risk of failing the class, since you are missing the material that was covered in class. Furthermore, I can not teach you anything if you are not in class.

- Regarding exams, you must also notify me **before the exam** if you are going to be unable to make it to the regularly scheduled exam. Failure to do so will result in a 0 on your exam.

- Also please note that **Make – up Exams** is a **privilege** in this class that I am allowing you; it is not your right. Abuse of the privilege will also result in a 0 on your exam as well as loss of the privilege. The following behavior will be considered as an abuse of your privilege:

1. Not showing up to the scheduled make – up exam.

2. Constantly rescheduling the time of the make – up exam.

3. Constantly being late to the make – up exam.

POLICY ON CURVINGS AND SCALINGS:

There will be **ABSOLUTELY NO GENERAL CURVES** for the entire class. Final grade will be determined individually in each situation by the following factors and issues:

- Did you attend each class?

- Did you hand in all the homework assignments on time and completed?

- Was there overall improvement throughout the course?

POLICY ON ACADEMIC DISHONESTY:

Academic Dishonesty will **NOT** be tolerated. In particular, appropriate actions will be taken by the institute policy if any instances of academic dishonesty happen such as cheating on a test.

POLICY ON DISRUPTIVE BEHAVIOR:

There is absolutely no talking in class at any time. If you have a question, please ask me and not your class - mate. Talking in class is very disruptive to other students and will not be tolerated. Disruptive behavior such as talking will be dealt appropriately by the administration if it continues after the first warning. Please use your discretion wisely.

POLICY ON CELLULAR PHONES AND PAGERS:

Absolutely no cellular phones or pagers are allowed in class and workshops. Please do not bring any cellular phones or pagers to class, or please shut them off before the class begins. They are very disruptive during class.

E – MAIL POLICY:

You must have an e-mail account in this class. All the assignments, test dates and other notices will be sent to you by e-mail. You are responsible for all the e-mails. You all get a free e-mail account with the school. Make sure that your e-mail does not constantly experience technical problems. You must check your e-mail every day.

Make sure that you have free space on your e-mail server and that it will accept my e-mails. You are responsible for all e-mail that I will send to you.

TEAM WORK IN ACCOMPLISHING GOALS:

We are going to work as a team together to make sure that you are understanding the material and that you are going to do well on tests.

- It is **MY RESPONSIBILITY**:

(i)   To explain the material in the clearest way possible for you to comprehend it and see how the material ties in together with the previous material that you have learned in other courses.

(ii)   Discuss and provide applications to see the motivation to study the new material.

(iii)   To be available for help by providing office hours and being available for help at other times.

- It is **YOUR RESPONSIBILITY**:

(i)   To be in class at all times. I can not teach you anything if you are not in class

(ii)   Study the material consistently.

(iii)   Ask me questions when you are having difficulties with the material.

(iv)   Inform me about any problems that may lead to missing class, missing a test, and/or not handing in a homework assignment on time.

SUGGESTIONS AND GOALS:

- Come class at all times.

- Take advantage of my office hours and the Institute's tutoring hours
  for help.

- Don't wait until the last minute to get help whenever you do not
  understand the material.

- Study the material consistently.

- Form study groups to work on homework problems and to study for the
  exams. Test each other by asking each other questions.

- Get the notes from one of your classmates the day that you missed class.

- Try to understand the material by understanding the general concepts
  and using examples to see how the concepts apply.

- Do as many problems as you can (at the end of each section and at the end
  of each chapter). The more problems you do and practice, the better you get
  at understanding the material.

- Develop a systematic approach to solving problems; analyzing each problem
  very carefully and deduce your conclusion by applying the concepts and
  the rules that we learned; check your work after finishing each problem.

- See how the concepts apply (extend) from previous classes in this class.

RECOMMENDED PROBLEMS FROM TEXT:

NOTE: These are not the assigned problems to hand in.

CHAPTER 5:

SECTION 5.4, # 5 – 32, 37 – 73, 79, 80, 87 – 112, 115 – 123
SECTION 5.5, # 5 – 34, 39 – 68
SECTION 5.6, # 1 – 10, 15 – 28, 49 – 56, 67 – 69
SECTION 5.7, # 1 – 64, 77 – 94
SECTION 5.8, # 5 – 36, 41 – 60, 63 – 74
SECTION 5.9, # 1 – 44, 53 – 63
SECTION 5.10, # 1 – 71, 73 – 90

CHAPTER 6:

SECTION 6.1, # 1 – 46, 53 – 60, 75 – 78
SECTION 6.2, # 1 – 40, 43 – 55, 57 – 59
SECTION 6.3, # 1 – 42
SECTION 6.4, # 1 – 56
SECTION 6.5, # 1 – 30, 37 – 42
SECTION 6.6, # 1 – 39, 49 – 57
SECTION 6.7, # 1 – 34

CHAPTER 7:

SECTION 7.1, # 1 – 72, 85 – 92
SECTION 7.2, # 1 – 80
SECTION 7.3, # 1 – 41, 47 – 78, 83, 84
SECTION 7.4, # 1 – 64, 69 – 75
SECTION 7.5, # 1 – 50, 58 – 63
SECTION 7.6, # 1 – 82
SECTION 7.7, # 1 – 90
SECTION 7.8, # 1 – 56

COMPLEX VARIABLES 1016 – 420 – 01

WINTER 2004 – 05 QUARTER SYLLABUS

INSTRUCTOR: Dr. Michael A. Radin

DAYS AND TIME THE CLASS MEETS:

- Mondays, Tuesdays, Thursdays & Fridays: 9:00 – 9:50 a.m. in 10 – A310

TELEPHONE NUMBERS:

* 585 – 475 – 7681 (Office Number)
* 585 – 475 – 2498 (Secretary's Number)
* 585 – 475 – 5661 (Fax Number)
* 585 – 461 – 4002 (Home number)

E – MAILS: michael.radin@rit.edu   and   mradin@mail.ru

OFFICE: College of Science, Building 08 (Gosnell Hall) – 3116
(on the third floor of the building)

OFFICE HOURS:

Mondays   10:00 – 11:00 a.m.
             4:00 – 5:00 p.m.

Tuesdays   10:00 a.m. – 12:00 p.m.
             4:00 – 5:00 p.m.

Thursdays 10:00 – 11:00 a.m.

COLLEGE OF SCIENCE STUDENT STUDY CENTER

My hours there will be

Mondays   11:00 a.m. – 12:00 p.m.

TEXT BOOK:

- **COMPLEX VARIABLES for Scientists and Engineers, 2nd Edition, by Douglas S. Meadows and John D. Paliouras.**

COURSE PRE – REQUISITES:

- The pre-requisites are:

  CALCULUS I, CALCULUS II, CALCULUS III, and CALCULUS IV.

- It is essential to know how to take **LIMITS** of functions and use limits to determine continuity.

- It is also important to know **DERIVATIVES**. The definition of the derivative, derivatives of all classes of functions, product rule, quotient rule and chain rule. In addition, also important to know how to differentiate functions of two variables (partial derivatives).

- Furthermore, it is important to know **INTEGRALS**. The definition of a definite integral, all the integration techniques (substitution, by parts, partial fractions, etc.) area between curves, and multiple integrals. Knowing how to write limits in definite integrals.

- Finally, it is important to know **SEQUENCES & SERIES**. In particular, Taylor's and McLauren Series. Also know the techniques of determining the convergence of series.

- In addition, also know the basic knowledge of **VECTORS**. How to express vectors in rectangular and polar coordinates. Recall the distance formula as the magnitude of a vector.

COURSE OBJECTIVES:

Our goal is to extend our Pre – Calculus and Calculus knowledge of functions of Real Variables to functions of Complex Variables. To discover how we can examine Calculus in a different approach and how it coalesces concepts in different ways from which we could not see with real variables. In addition, to develop our analytical skills by deriving equations and do some elementary proofs by derivation, definitions and concepts.

In addition, our goal is to discover the beauty and power of Calculus; to be able to visualize the material and problems geometrically and analytically. To discover how Calculus can be extended to Complex Variables just by breaking the problem up into real and imaginary parts and also considering the modulus. Furthermore, to get as much out of the course and making the course as interesting as possible.

TOPICS IN THE CLASS:

- We will be covering **CHAPTERS 1 – 7** in the text book.

- We will start off by **learning the basics of COMPLEX NUMBERS**, expressing a complex number in different forms, and arithmetic between complex numbers.

- We will then continue by studying **FUNCTIONS of a complex variable.**

- Then proceed with studying **CALCULUS OPERATIONS**:

  (i)   Limits and Continuity

  (ii)   Differentiability and Analyticity

  (iii) Integration:

        (a) Complex Integrals

        (b) Line Integrals

        (c) Contour Integration

(iv)   Sequences and Series

    (a) Taylor Series

    (b) Laurent Series

(v)   Theory of Residues

    (a) Evaluating certain real integrals

    (b) Application of residues

GRADING:

There will be three tests, homework assignments, and a final exam.
Here is the following course's

GRADING SYSTEM:

- 3 TESTS (120 points each)   360 points

- 8 HOMEWORK ASSIGNMENTS   280 points
  (40 points each; the lowest one will be dropped)

- FINAL EXAM   160 points

- **TOTAL**   800 points

NOTE: You will be graded on how you approach each problem, set up
each problem, and what method(s) to solve each problem; not on what the
final answer is.

TESTS: There will be a test about **every three weeks**. Each test will have
between 6 – 10 questions. Test dates and the material that will be on the test
will be sent by e – mail.

HOMEWORKS ASSIGNMENTS:

Unless stated, each homework assignment is due in exactly one week after it is assigned. For each academic day that each assignment is late there will be 4 points deducted.
Extensions are not automatic and must be asked for. I will then determine if the reason is legitimate for an extension.
Each homework assignment will be sent by e – mail.

EXAM POLICY:

- Regarding exams, you must also notify me **before the exam** if you are going to be unable to make it to the regularly scheduled exam. Failure to do so will result in a 0 on your exam.

- Also please note that **Make – up Exams** is a **privilege** in this class that I am allowing you; it is not your right. Abuse of the privilege will also result in a 0 on your exam as well as loss of the privilege. The following behavior will be considered as an abuse of your privilege:

1. Not showing up to the scheduled make – up exam.

2. Constantly rescheduling the time of the make – up exam.

3. Constantly being late to the make – up exam.

POLICY ON CURVINGS AND SCALINGS:

There will be **ABSOLUTELY NO GENERAL CURVES** for the entire class. Final grade will be determined individually in each situation by the following factors and issues:

- Did you attend each class?

- Did you hand in all the homework assignments on time and completed?

- Was there overall improvement throughout the course?

POLICY ON ACADEMIC DISHONESTY:

Academic Dishonesty will **NOT** be tolerated. In particular, appropriate actions will be taken by the institute policy if any instances of academic dishonesty happen such as cheating on a test.

POLICY ON TALKING IN CLASS:

There should be absolutely no talking in class at any time. If you have a question, please ask me and not your class - mate. Talking in class is very disruptive to other students and will not be tolerated.

POLICY ON CELLULAR PHONES AND PAGERS:

Please do not bring any cellular phones or pagers to class, or shut them off before the class begins. They are very disruptive during class.

E – MAIL POLICY:

You must have an e-mail account in this class. All the assignments, test dates and other notices will be sent to you by e-mail. You are responsible for all the e-mails. You all get a free e-mail account with the school. Make sure that your e-mail does not constantly experience technical problems. You must check your e-mail every day.

Make sure that you have free space on your e-mail server and that it will accept my e-mails. You are responsible for all e-mail that I will send to you.

TEAM WORK IN ACCOMPLISHING GOALS:

We are going to work as a team together to make sure that you are understanding the material and that you are going to do well on tests.

- It is **my responsibility** to explain the material in the clearest way possible for you to comprehend it and see how the material ties in together with the previous material that you have learned in other classes. Furthermore, it is also my responsibility to be available for help by providing office hours and being available for help at other times.

- It is **your responsibility** to be in class at all times. I can not teach you anything if you do not come to class. In addition, study the material consistently and ask me questions whenever you do not understand the material.

SUGGESTIONS AND GOALS:

- Come class at all times.

- Take advantage of my office hours and the Institute's tutoring hours for help.

- Don't wait until the last minute to get help whenever you do not understand the material.

- Study the material consistently.

- Form study groups to work on homework problems and to study for the exams. Test each other by asking each other questions.

- Get the notes from one of your classmates the day that you missed class.

- Try to understand the material by understanding the general concepts and using examples to see how the concepts apply.

- Do as many problems as you can (at the end of each section and at the end of each chapter). The more problems you do and practice, the better you get at understanding the material.

- Develop a systematic approach to solving problems; analyzing each problem very carefully and deduce your conclusion by applying the concepts and the rules that we learned; check your work after finishing each problem.

- See how the concepts apply (extend) from previous classes in this class.

RECOMMENDED PROBLEMS FROM TEXT:

NOTE: These are not the assigned problems to hand in.

p 9 – 10 :	# 1.1 – 1.23, 1.28
p 24 – 26 :	# 1 – 17
p 38 :	# 3.1 – 3.13
p 45 – 46 :	# 4.1 – 4.17
p 53 – 54 :	# 5.1 – 5.10, 5.14
p 60 – 61 :	# 6.1 – 6.11
p 65 – 66 :	# 7.1 – 7.10, 7.12 – 7.15
p 82 – 84 :	# 8.1 – 8.3, 8.5 – 8.20, 8.26 – 8.28
p 89 :	# 9.1 – 9.17, 9.20, 9,21
p 90 :	# 3 – 7, 9, 10
p 165 – 166 :	# 13.1 – 13.5, 13.7, 13.8
p 175 - 176 :	# 14.1 – 14.6, 14.8 – 14.15
p 186 – 187 :	# 15.1 – 15.6, 15.8 – 15.12
p 188 – 189 :	# 1 – 11
p 202 – 203 :	# 16.1 – 16.15
p 210 :	# 17.1 – 17.13
p 216 – 217 :	# 18.1 – 18.8, 18.11, 18.13
p 218 :	# 1 – 14

p 258 – 259 : # 1 – 7

p 259 – 260 : # 19.1 – 19.19

p 265 – 266 : # 20.1 – 20.15

p 285 – 287 : # 22.1 – 22.23

p 287 – 288 : # 2 – 10

p 306 – 308 : # 23.1 – 23.16

p 316 – 317 : # 24.1 – 24.19

p 324 – 325 : # 25.1 – 25.20, 25.22

p 334 – 336 : # 26.1 – 26.9, 26.11 – 26.13

p 336 – 339 : # 1 – 9, 12 – 15, 17 – 22

INTRODUCTION TO DIFFERENCE EQUATIONS

SPRING 2005 QUARTER SYLLABUS

INSTRUCTOR: Dr. Michael A. Radin

DAYS AND TIMES THE CLASS MEETS:

Tuesdays & Thursdays   9 – 10:50 a.m.

TELEPHONE NUMBERS:

- 585 – 475 – 7681 (Office)
- 585 – 475 – 2498 (Secretary)
- 585 – 461 – 4002 (Home)

E – MAILS: michael.radin@rit.edu   and   mradin@mail.ru

OFFICE: College of Science, Gosnell Hall (Building 08) - 3116
Third Floor of the Building.

OFFICE HOURS:

Mondays   12:00 – 1:30 p.m.

Tuesdays   11:00 a.m. – 12:30 p.m.
4:00 – 5:00 p.m.

Thursdays   11:00 a.m. – 12:30 p.m.

TUTORING HOURS: There will be tutoring hours available at the Institute's

COLLEGE OF SCIENCE STUDENT STUDY CENTER

TEXT BOOK:

- **Paper back copy; INTRODUCTION TO DIFFERENCE EQUATIONS.**

- **Saber Ellaidi.**

- **Hand outs distributed later in the course.**

COURSE PRE – REQUISITES:

- The pre-requisites are Algebra, Geometry, Trigonometry, Pre – Calculus, Calculus I, Calculus II, Calculus III, Calculus IV, and Matrix Algebra.

- It is essential to know the concept of a **DERIVATIVE**, know how to differentiate all the simple functions and all the derivative rules; power, product, quotient, and chain rule.

- In addition, we must know how to determine the **MONOTONIC PROPERTIES** of functions.

- It is also important to know the **PARTIAL DERIVATIVES** as well.

- Some knowledge of **BASIC DIFFERENTIAL EQUATIONS** is helpful but not required.

- Basic knowledge of **MATRICES**; eigen-values, determinants.

COURSE OBJECTIVES:

It is our goal is to be familiar with the basic theory of first and second order linear difference equations. In addition, it is our goal to understand the difference between discrete and continuous dynamical systems and compare similarities and differences between linear difference and differential equations.

Furthermore, we will learn the how to linearize non – linear difference equations and predict the local stability character of equilibrium point(s). This will lead into studying the long term behavior of solutions to difference equations; convergence, periodicity and boundedness of solutions.

Furthermore, we will learn some applications of difference equations in economics, and biology, and other sciences.

TOPICS IN THE CLASS:

- First Order Linear Difference Equations

    (i)   Homogeneous
    (ii)   Non – Homogeneous
    (iii)   With Variable Coefficients
    (iv)   Applications in

        (a)   Finance (Compound Interest Formula)
        (b)   Biology
        (c)   Physics and Chemistry

- Second & Higher Order Linear Difference Equations

    (i)   Homogeneous
    (ii)   Non – Homogeneous
    (iii)   Convergence Theorem (P – Q Theorem)
    (iv)   Periodicity
    (v)   Linear Difference Inequalities

- First Order Non – Linear Difference Equations

    (i)   Linearized Stability Analysis
    (ii)   Difference Equations with sensitivity to initial conditions
    (iii)   Logistic Difference Equation
    (iv)   Riccati Difference Equation
    (v)   Tent Map

- Second & Higher Order Non – Linear Difference Equations

    (i)   Linearized Stability Analysis
    (ii)   Rational Difference Equations

        (a) Trichotomy Character of Solutions
        (b) Period Two Solutions
        (c) Boundedness & Convergence via Linear Difference Inequalities
        (d) Invariant & attracting intervals

    (iii)   Biological Models

        (a) Pelou's Equation
        (b) Epidemic Model(s)

    (iv)   Difference Equations with Periodic Solutions

    (v)   Systems of Difference Equations

    (vi)   Max – Type Difference Equations

GRADING:

There will be two tests, 8 homework assignments, a project, and a final exam. Here is the following course's **GRADING SYSTEM:**

- 2 TESTS   (180 points each)   360 points

- 8 HOMEWORK ASSIGNMENTS   280 points
  (40 points each; the lowest one will be dropped)

- PROJECT   200   points

- FINAL EXAM   160 points

- **TOTAL**   1000 points

PROJECT(S): You are required to do one project throughout the term. It will consist of a problem that you will need to analyze on the computer and determine the long term behavior of solutions and write a full report with computer observations attached to it. More details will be discussed later.

You may choose to do more than one project which can be negotiated for reduction in the number of test questions and/or in the final exam.

ARTICLE(S): You are encouraged to find any articles and papers relative to the topic in class. In particular, bringing it in and sharing it with the class and/or write a report on it. This can also be negotiated for reduction in the number of test questions and/or in the final exam.

PRESENTATION(S): You are encouraged to present the results of your project. In addition, I encourage you to present any article(s) in class that you find very interesting that it pertinent to the topic. This can also be negotiated for reduction in the number of test questions and/or in the final exam.

NOTE: You will be graded on how you approach each problem, set up each problem, and what method(s) to solve each problem; not on what the final answer is.

TESTS: There will be a test about **every four weeks**. Each test will have between 8 – 10 questions.

HOMEWORK ASSIGNMENTS: For each academic day that each assignment is late, there will be 4 points deducted.

Extensions are not automatic and must be asked for. I will then determine if the reason is legitimate for an extension.

Homework assignments will be assigned either assigned by e – mail or given on paper.

Homework assignments are very important to do to get a solid grasp of the material.

ATTENDANCE AND EXAM POLICY:

- It is very important to attend class, seminars and discussions at all times. If you are going to be absent from class, **you must inform me before** by either calling me, e – mailing me, by telling me before class, or by asking one of your classmates to tell me about it. Missing too many classes puts you in risk of failing the class, since you are missing the material that was covered in class. Furthermore, I can not teach you anything if you are not in class.

NOTE: Some material will be covered in class that may not be in the textbook nor in any handouts. This is also why it is very important to attend each class.

- Regarding exams, you must also notify me **before the exam** if you are going to be unable to make it to the regularly scheduled exam. Failure to do so will result in a 0 on your exam.

- Also please note that **Make – up Exams** is a **privilege** in this class that I am allowing you; it is not your right. Abuse of the privilege will also result in a 0 on your exam. The following behavior will be considered as an abuse of your privilege:

1. Not showing up to the scheduled make – up exam.

2. Constantly rescheduling the time of the make – up exam.

3. Constantly being late to the make – up exam.

POLICY ON CURVINGS AND SCALINGS:

There will be **ABSOLUTELY NO GENERAL CURVES** for the entire class. Final grade will be determined individually in each situation by the following factors and issues:

- Did you attend all the classes?

- Did you hand in all the homework assignments on time and completed?

- Was there overall improvement throughout the course?

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Please do not bring any cellular phones or pagers to class, or shut them off before the class begins. They are very disruptive during class.

E – MAIL POLICY:

You must have an e – mail account in this class. All the assignments, test dates and other notices will be sent to you by e – mail. You are responsible for all the e – mails. You all get a free e – mail account with the school. Make sure that your e – mail does not constantly experience technical problems. You must check your e – mail every day.

Make sure that you have free space on your e – mail server and that it will accept my e – mails. You are responsible for all e – mail that I will send to you.

TEAM WORK IN ACCOMPLISHING GOALS:

We are going to work as a team together to make sure that you are understanding the material and that you are going to do well on tests.

- It is **my responsibility** to explain the material in the clearest way possible for you to comprehend it and see how the material ties in together with the previous material that you have learned in other classes. Furthermore, it is also my responsibility to be available for help by providing office hours and being available for help at other times.

- It is **your responsibility** to be in class at all times. I can not teach you anything if you do not come to class.

SUGGESTIONS AND GOALS:

- Come to regular class, seminars and discussions at all times.

- Take advantage of my office hours and tutoring hours for help.

- Don't wait until the last minute to get help whenever you do not understand the material.

- Study the material consistently.

- Form study groups to do homework problems and to study for the exams. Test each other by asking each other questions.

- Get the notes from one of your classmates the day that you missed class.

- Try to understand the material by understanding the general concepts and using examples to see how the concepts apply.

- Develop a systematic approach to solving problems; analyzing each problem very carefully and deducing your conclusion by applying the concepts that we learned.

- See how the concepts apply (extend) from previous courses in this class.

RECOMMENDED PROBLEMS FROM TEXT:

NOTE: These are not the assigned problems to hand in.

P 14 – 16,	# 1 – 5, 7
P 18 – 21,	# 1 – 7
P 28 – 29,	# 1 – 7, 9, 10
P 31,	# 1, 2
P 43,	# 1 – 9, 11 – 13, 15, 17, 18
P 66 – 69,	# 1, 2, 4, 8 – 10, 12, 13
P 81 – 83,	# 4, 6
P 155,	# 1
P 124 – 125,	# 1, 2
P 129 – 130,	# 1 – 6
P 134 – 137,	# 1 – 6
P 142,	# 1 – 3
P 152 – 154,	# 1 – 8
P 156 – 157,	# 1, 2
P 159 – 160,	# 1 – 3
P 216 – 217,	# 1 – 5