Teaching Statement
Fall 2006 - Spring 2011

François Blanchette, School of Natural Sciences, UCM

Over the period covered by this statement, I have taught the following courses:

Semester	Course #	Type	Credits
Fall 2006	Math 298	Graduate	1
Spring 2007	Math 23	Undergrad. lower div.	4
Fall 2007	Math 24	Undergrad. lower div.	4
Fall 2007	Math 298	Graduate	1
Spring 2008	Math 122	Undergrad. upper div.	4
Fall 2008	Math 298	Graduate	1
Fall 2008	Math 131	Undergrad. upper div.	4
Spring 2009	Math 122	Undergrad. upper div.	4
Spring 2009	Math 91	Undergrad. lower div.	1
Fall 2009	Math 131	Undergrad. upper div.	4
Fall 2009	Math 298	Graduate	1
Spring 2010	Math 122	Undergrad. upper div.	4
Spring 2010	Math 91	Undergrad. lower div.	1
Fall 2010	Math 23	Undergrad. lower div.	4
Fall 2010	Math 298	Graduate	1
Spring 2011	Math 223	Graduate	4
Spring 2011	Math 91*	Undergrad. lower div.	1

Table 1: List of courses taught over the Fall 2006-Spring 2011 period. The * indicates that this course was co-taught with Prof. Marcia

In addition to the courses listed in Table 1, I have taught a directed independent study courses, Math 295, to various graduate students. This course formed the basis of the project used by the student, David Hambley, to fulfill his capstone requirement for his Masters degree (completed in Spring 2009). Similarly, Ivan Navarro used this course as a basis for his capstone project (Masters degree completed in Summer 2010). I also gave an independent study course (Math 099) covering the contents of Math 23 over the summer of 2008, was the instructor of record for a student's internship in the summer of 2010, and was the instructor of record for the graduate seminar Math 291 in the spring of 2007. Lastly, I covered my own discussion sections for Math 122 in 2010 and for Math 223 in 2011. After briefly presenting my general teaching philosophy, I describe below the main contributions I made to teaching at UC Merced through each of those courses, with the exception of the individual courses.

My approach to teaching is to take any means necessary to engage the students in the learning process. I believe that engaged students can learn from basically any teacher with a decent textbook. The challenge is to get the students interested enough, and motivated enough to want to learn the material for themselves. Therefore, in my lecture, I strive to motivate students using humor (usually at my own expense), direct questions, numerous examples of applications, and quizzes that actually affect a student's grade. Usually the response from students is very positive, attendance is high, and I have heard from several students that they learned more in my class than in any other, which I take great pride in. I detail below separate contributions I made to each course I have taught.

The course Math 298 is a directed group study of fairly unique character. This course was envisioned by the applied math group to help prepare our incoming graduate students for their preliminary exams held in January. The course was meant to be a review of undergraduate material that is to be tested in the preliminary exams. The ambitious objective of this course is to level the field and bring all the incoming graduate students at a similar degree of competence in the 4 major topics considered (calculus, linear algebra, differential equations, and complex variables). I spend the first lecture of this course assessing the students' needs and abilities. Depending on the results of this assessment, the course may become a crash course into some topics, a review, or series of lectures given by students, interspaced with question and answers sessions. Because of the variety of topics to cover and student needs, Math 298 is a rather difficult course to teach as it requires unusual flexibility, and an ability to determine the best course of action for the entire class from a whole range of possibilities. I have been able to exercise the necessary leadership and flexibility to make this course a success, and when needed I have also been willing to spend the extra time to ensure all students ended getting the most out of this course. I should also mention that I am the only one who has ever taught this course at UC Merced.

In have taught vector calculus, Math 23, twice at U.C. Merced. When I first taught the class, no faculty had yet taught it, so I had to determine the optimal course format, and the contents we wanted to cover. I wanted to encourage attendance to discussion sections though, so I introduced quizzes that amount for 20% of the final grade to be taken in discussion sections. These quizzes consisted of 3 exam-level questions given in advance to the students. On quiz day, only one question is randomly chosen and asked (with no notes allowed). This forced the students to review a variety of subjects, while allowing the graders to provide useful feedback as they were grading only one question a week. I found this approach to yield good results, and several instructors who taught this course since have used it as well.

In the fall of 2007, I taught Math 24, a rather standard lower division course. A good structure for the course was already in place and I mostly kept it. I used a similar quiz system as I did in Math 23. During this course, students complained that the teaching assistants were not as useful as they could be. In addition to the weekly meeting I had with them, I then visited their discussion sections and provided constructive criticism to both. The students reported improvement in the discussion sections, although one of the teaching assistants proved under qualified and was let go at the end of the semester. I now have as a policy to visit the discussion sections of my teaching assistants early in the semester to help steer them in the right direction.

I have taught Math 122, an introduction to complex variables and rigorous mathematical thinking, three times over the last few years. While the contents have remained very similar, I believe I have greatly improved the manner in which it is presented. The first year I taught the class, the students seemed to misunderstand the usefulness of going over mathematical proofs. I had made no particular effort to justify their study, and the students' response was somewhat apathetic. To counter this, I later introduced a more applied project for students, and it was met with some enthusiasm. In 2009 however, I took great care to explain why it was important to go over those proofs: firstly to justify beyond any doubt the results obtained, and secondly to develop the conception of what a valid proof was, and thereby develop their critical sense. I also introduced a more direct method of testing their understanding of proofs. In exams, I give a complete proof where all the statements are correct, but with no justifications. I ask the students to justify each statement. This method, which I have not seen employed elsewhere, verifies directly whether or not they understand the idea of a proof, while avoiding the meaningless learning-by-heart of a few proofs. Lastly, to allow more opportunity for the students to go through examples, a discussion section was added in 2009, and worksheets were developed under my supervision by my teaching assistant, Haik Stepanian. I have since passed on my notes, homeworks, worksheets, and exams to Prof. Marcia, who has taught the course based on the materials I provided.

I taught an introduction to numerical analysis (Math 131) in the Fall 2008 and 2009. This is a large (60+) class for an upper division math course, and it is mostly attended by mechanical engineers. The objective of the course is to get students to be able to answer math questions using their own computer programs. I have modified the contents of the course to ensure that the students who do not go on to Math 132 would still have some exposure to numerical methods applicable to differential equations, as I consider this topic very likely to be encountered by engineers. I have also modified the syllabus to explicitly include the learning outcomes of this course. I found out that even though the vast majority of students have passed a programming course, they have virtually no programming skills at the onset of the class. Therefore, the first week of the course is now spent teaching them how to write basic programs in *matlab*. A large portion of their grades comes from weekly homeworks, and roughly half of those homeworks involve programming and analyzing the results. I have developed unique homework questions that allow students to go beyond what the text book teaches and connect concrete programming with theoretical concepts.

I also developed and taught a new course, Math 91, which is a non-standard course I created to serve two purposes: 1) help our students bridge the gap between lower and upper division math courses and 2) promote the applied math major at the sophomore level. This one credit course is unique in that it is effectively a "sophomore seminar" course. In each weekly meeting, a new topic is presented, so as to cover a wide variety of mathematical fields. The students are assigned a short homework, and each student must also give a presentation at some point during the semester. From the student's assessment, I think this new addition was a success and served to increase their interests and competence in mathematics. One student mentioned that this was the best course he had ever taken. One important point to improve is its publicity, as enrollment has so far been disappointing.

During the Spring of 2011, I taught a 4 credit graduate class in Asymptotic and perturbations methods. As this class is only offered every other year, it was rather large, with 11 students. Most of the structure for the class had been well set by Prof. Kim, so I mostly followed it. My main contribution to the delivery of this class was to enhance the connection between it and numerical analysis the graduate students were also taking. In realistic research set-ups, asymptotic methods are used in combination with numerical ones, and I therefore strived to emphasize their complementary nature. In particular, I introduced homework questions that asked the students to make use of what they had learned in several of their previous courses to solve a more difficult problem, such as those they are likely to encounter in their research. While those problems were not the most popular with students, as they were difficult, I strongly believe they will greatly benefit from practicing those skills.

Finally, the independent study courses I taught to David Hambley, Ivan Navarro, and David Martin focused on fluid dynamics, and gave them a basis from which to launch into research. The first two students used this course to complete their capstone projects, which were an integral part of their Master's degree. I should mention that at first it was very uncertain whether either of those students would be able to graduate with a Masters degree. I therefore had to provide more guidance and encouragement than usual. The outcome was very positive, as both students graduated and are now working as lecturers here at U.C Merced. The third student, David Martin, has currently completed the second year of his Ph.D. and his research is taking off. We plan to present his first results at an upcoming conference in the fall of 2011. Through my experience with those students, I found that setting frequent deadlines is an excellent way to ensure a close monitoring of the student's efforts, and to encourage the student by rendering the progress made more explicit.

In summary, I developed the basic lecture notes, quizzes and homeworks for several courses since my arrival at UC Merced. In particular:

1. I am the only instructor to have taught Math 298, a mandatory course for our graduate students.
2. I developed the course Math 91 from scratch and have taught or co-taught it every year since.
3. I was the first faculty to teach Math 23 and Math 122, thus setting their structures.

4. I profoundly remodeled the course Math 131, and provided the basic structure to subsequent instructors.

5. I modernized the delivery of Math 223 by incorporating more integrated homework assignments that make use of computer generated solutions.

Overall, I think my teaching has been well received from students, and has served to educate them well. I believe I am developing a reputation as a tough but fair teacher, which I find very appropriate. My objective is not to be the most popular teacher, but to be the one who teaches them the most. To do so, I will continue to listen to the students' feedback and maintain the flexibility required to take their comments into account. However, I will continue to have high expectations from my students, and maintain a high academic standard in my classroom. My approach is to focus on developing a thorough understanding of the fundamentals, as I believe that a higher education can only be built over a strong foundation. A slimmed-down version of a syllabus for each of the courses I taught may be found below.

MATH 24: Intro. to Linear Algebra & Differential Equations - Syllabus *Fall Semester 2007*

COURSE GOAL. Learn the fundamentals of ordinary differential equations (ODEs) and linear algebra as it applies to ODEs. An important component of the course deals with modeling phenomena in terms of ODEs; it is essential for understanding ODEs and what they represent in real world phenomena.

Topics covered. Solution of first-order ODE's by analytical, graphical and numerical methods; Linear ODE's, especially second order with constant coefficients; Undetermined coefficients and variation of parameters; Sinusoidal and exponential signals: oscillations, damping, resonance; Linear algebra: Gaussian Elimination, basis and dimension, eigenvalues and eigenvectors, complex exponentials; Nonlinear phenomena: limit cycles and chaos.

Textbooks. *Differential Equations and Linear Algebra*, 2nd edition, by Farlow, Hall, McDill and West. We will cover most of Chapters 1-7.

Discussion sections. In discussion sections, you will develop and practice your problem solving skills by working with your classmates to solve challenging problems. *Your presence in the discussion sections is crucial as this is were most students actually* **learn** *the material.* Also all the quizzes (worth 20% of your grade) will be administered in discussion.

Quizzes. Quizzes will be given in the first 15 minutes of most discussion sections. These quizzes will be graded as if they were exam questions. A list of three potential quiz questions will be posted the week before each quiz. Each quiz will require students to answer one, randomly selected, posted questions. It is highly recommended that you work out solutions to all three potential questions in advance, on your own or in groups. However, no notes will be allowed during quizzes. The lowest grade obtained in the quizzes will be dropped when computing your final grade.

Homework. Homework will be assigned almost every Friday during lectures and be due the following Friday at the start of the lecture. *Late homework will not be accepted nor graded.* Graded homework will be returned during the discussion section.

Exams. There will be two unit exams and a ccomprehensive final. The unit exams will be given during lectures the on **Friday October** 19^{th} and **Friday November** 30^{th}. These will be 50 minutes exams. To avoid disturbances over this short examination period, students will not be permitted to enter the room late or to leave early. The final exam date, time and place will be announced shortly.

Grade determination. Your final grade in the course will be based on homework assignments (10%, 1% per

HW), quizzes (20%, dropping the worst quiz out of the 10 administered), two unit exams (each worth 20%), and a cumulative final exam (30%). If you obtain 90% of the total points, you will definitely receive an A in the course. If you obtain less than 55% of the total points, you will definitely receive an F. For everything in between, letter grades will be determined depending on the specific distribution of grades obtained.

MATH 122: Applied Math. methods II: Complex Variables - Syllabus *Spring 2009*

COURSE GOAL. Develop an ability to understand and express abstract and logically organized mathematical thought through the study of functions complex variables.
Instructor. François Blanchette (e-mail: fblanchette@ucmerced.edu)

Learning outcomes

1. Know the basic properties of functions of complex variables.
2. Be able to use the Residue theorem to solve real integrals.
3. Understand the representation of complex functions as mappings form $\mathbb{R}^2$ to $\mathbb{R}^2$.
4. Recognize and formulate correct mathematical proofs.

Lectures. Lectures will introduce new concepts, emphasize important aspects of the theory, and provide examples.

Discussion sections. Discussion sections will help review concepts introduced in lectures and most importantly allow you to solved problems in collaboration with your peers and under the supervision of the discussion leader.

Textbook. *Complex Variables and Applications* , 8th ed. (7th acceptable too), by Churchill & Brown, edited by McGraw-Hill, 2008, Chapters 1 through 10.

Topics covered. Complex plane, functions of one complex variable, limits, differentiability, contour integration, Taylor and Laurent Series, Poles, Cauchy Residue Theorem, applications to real integrals, mappings, harmonic functions, Poisson formula.

Homework. Homework will be assigned almost every week during lectures (11 assignments in all) and will be due the following week at the start of lecture. Late homework will not be accepted nor graded, so you should turn in whatever you have completed by the due date. Homeworks will be graded by Mr. Haik Stepanian. You are encouraged to work in groups. However, **all work turned in must be your own**. At the end of your written homework, you must identify explicitly all individuals with whom you worked for each problem. You must also **list explicitly any outside sources employed** (e.g. websites, Mathematica, book other than the textbook, etc.) for each problem you solve. This does not mean that you are allowed to copy a solution should you find it posted elsewhere.

Exams. There will be one midterm exam and a ccomprehensive final. The midterm exam will be given during lecture on Wednesday March 18th and will be an 80 minutes exam. The final exam date, time and place will be announced shortly. If you are sick the day of the exam, please bring a note from your doctor verifying your illness. A special needs room for people with documented disabilities will be provided for each exam. See your instructor and the course web page for more information.

Grade determination. Your final grade in the course will be based on homework assignments (45 % for homeworks, the worst homework grade will be dropped, 4.5 % per HW), midterm exam (15 %), and a cumulative final exam (40 %). If you obtain 90 % of the total points, you will definitely receive an A in the course. If you obtain less than 55 % of the total points, you will definitely receive an F. For everything in between, letter grades will be determined depending on the specific distribution of grades obtained.

MATH 131: Numerical Analysis I - Syllabus *Fall Semester 2008*

COURSE GOAL. To enable students to answer mathematical problems using numerical tools.
Instructor. François Blanchette (e-mail: fblanchette@ucmerced.edu)

Learning outcomes Given a reasonable mathematical problem, graduates from Math 131 should be able to:

1. Devise an algorithm to solve it numerically.
2. Implement this algorithm.
3. Analyze an algorithm's accuracy, efficiency and convergence properties.
4. Describe classic techniques and recognize common pitfalls in numerical analysis.

Lectures. Lectures will introduce new concepts, emphasize important aspects of the theory, describe methods used to solved common problems, focusing on outcomes 3, and 4.

Discussion sections. Discussion sections will help review concepts introduced in lectures and most importantly develop your programming skills, focusing on outcomes 1 and 2.

Textbook. *Numerical Analysis* , 8th ed., by Burden & Faires, edited by Brooks & Cole 2001, Chapters 1 through 7, focuses on all outcomes.

Topics covered. Computer arithmetic, solutions of one algebraic equation, interpolation and polynomial approximation, numerical differentiation and integration, initial value problem differential equations, direct solution of linear systems, iterative techniques in linear algebra (Chap 1-7).

Homework. Homework will focus on outcomes 1, 2, and 3 and be assigned nearly every Monday during lectures and be due the following Monday before 4 pm. Late homework will be penalized at a rate of 25% penalty for each day late. Parts of the homework assignment will ask you to submit computer programs.

Exams. There will be two unit exams and a ccomprehensive final. All exams will focus on outcomes 1, 3, and 4. The unit exams will be given during lectures the on Friday October 3^{rd} and Friday November 21^{st}. These will be 50 minutes exams. To avoid disturbances over this short examination period, students will not be permitted to enter the room late or to leave early.

Grade determination. A combination of the 11 homework assignments (50%, the worst homework grade will be dropped), two unit exams (each worth 12.5%), and one cumulative final exam (25%).

Programming. All required programming will be done in Matlab, Matlab student version, or its free alternative Octave. Matlab can be found on computers in rooms COB 281, KL 202 and KL 208.

MATH 91: Topics in Applied Mathematics - Syllabus *Spring Semester 2009*

COURSE GOAL. Present students with preview of advanced mathematics.
Instructor. François Blanchette (e-mail: fblanchette@ucmerced.edu)

Learning outcomes

1. Understand the main idea behind a variety of mathematical topics.
2. Be able to express mathematics clearly both in writing and verbally.
3. Appreciate the breadth, usefulness and elegance of mathematics.

Lectures. Lectures will introduce new concepts, present an overview of a topic and give examples of its applicability.

Textbook. There are no textbooks for this class, but access to a calculus textbook is recommended.

Topics covered. Logic operators, set theory, numerical estimation of functions, proof techniques, random walks, transforms, real numbers, series solutions to differential equations, graph theory, image processing, math softwares, large scale simulations.

Homework. Brief homeworks (1 question) will be assigned after every lecture. They will largely be graded on whether or not a serious attempt was made at solving the problem. **Particular attention will be given to the logical structure of your assignments.**

Presentation. Every student will be required to prepare a 5-10 minute presentation of a mathematical problem of his/her choice or suggested by the instructor. Whenever possible, the subject should correlate with what we are doing in class, although it is not necessary. The presentations should be sufficiently prepared as to be comparable in style to the lecture of a professor. The topic chosen may be anything that you find interesting, involves mathematics, and goes beyond lower division math course (Math 21-24 and math 32).

Grade determination. Your presentation will receive a Pass/No Pass grade. If you receive a No pass grade, you will be required to give a second presentation. Each homework will be given a Pass/No pass grade. If no more than 2 homeworks receive a failing grade, you will pass this class.

MATH 298: Directed Group Study - Syllabus *Fall Semester 2008*

COURSE GOAL. To enable students to adequately prepare for their preliminary exams held in January by reviewing undergraduate material.
Instructor. François Blanchette (e-mail: fblanchette@ucmerced.edu)

Learning outcomes

1. Have a working knowledge of Calculus.
2. Have a working knowledge of Differential Equations.
3. Have a working knowledge of Linear Algebra.
4. Have a working knowledge of Complex Variables.

Lectures. Lectures will review material, delve deeper on difficult topics and allow for lots of questions. You should come prepared with questions regarding the material we have covered thus far. On topics where students are more familiar, you may be the ones giving lectures.

Recommended Textbook (equivalent textbooks may well be used)
Calculus, J. Stewart, any edition.
Linear Algebra and Its Applications , G. Strang, any edition, Chapters 1-6.
Elementary Differential Equations and Boundary Value Problems, Boyce & Diprima, any edition.
Complex Variables and Applications, Churchill & Brown, any edition.

Topics covered. We will cover, briefly, the following: Calculus, including vector calculus and the divergence, Stokes and Green's theorems. Linear Algebra, including complex matrices and positive definite matrices. Differential equations, first and second order, systems of linear equations, and interpretations of vector fields. Complex variables, analytic functions, mappings, residue theorem. The emphasis in all these topics will be on understanding the principles at work and on being able to use these tools to solve problems, and not on deriving the results themselves. A more detailed list of topics will be provided in class.

Grade determination. Your grade will be entirely determined based on your participation in class. In particular, you may be asked to present a topic to the class, and you will certainly be asked to answer questions at the board. If your participation is not satisfactory, you will be given a warning during the semester. If the situation does not improve, you will receive a second and last warning.

You are STRONGLY encouraged to work in groups to review the numerous topics covered in this class. You will have to study for severals dozens of hours to prepare your preliminary exams, and this is better done with a friend or more. You are also STRONGLY encourage to begin reviewing early (Aug 28th is a good day to start), particularly the topics you are not comfortable with. And ask lots of questions.

MATH 23: Multi-variable Calculus - Syllabus *Fall Semester 2010*

COURSE GOAL. To develop the ability to perform calculus on functions of several variables, and to understand the meaning of a variety of calculus operations in a scientific and engineering context.
Instructor. François Blanchette (e-mail: fblanchette@ucmerced.edu)

Learning outcomes

1. Manipulate vectors to perform geometrical calculations in three dimensions.
2. Calculate and interpret derivatives in up to three dimensions.
3. Integrate functions of several variables over curves and surfaces.
4. Use Green's theorem and the Divergence theorem to compute integrals.

Lectures will introduce new concepts, emphasize important aspects of the theory, and provide examples.

Discussions will help review concepts introduced in lectures and most importantly allow you to solved problems in collaboration with your peers and under the supervision of the discussion leader. Quizzes will be given during almost every discussion.

Office hours allow students to get answers to their questions on a one-on-one basis. It is the secret weapon of students seeking to improve!

Topics covered Vector manipulation, Partial derivatives, chain rule, optimization, multiple integrals, line and surface integrals, Green's Theorem, and the Divergence Theorem.

Textbooks *Calculus*, 6th ed., by James Stewart. We will cover Chapters 13 through 17.

Homework will be assigned almost every week during lectures (13 assignments in all) and will be due the following week. **You are to turn in homework by the due date in the mailbox of your discussion leader, located in AOB 117.** Late homework will not be accepted nor graded. You are encouraged to work in groups. However, **all work turned in must be your own**. At the end of your written homework, you must identify explicitly all individuals with whom you worked for each problem and list explicitly any outside sources employed (e.g. websites, Mathematica, book other than the textbook, etc.). This does not mean that you are allowed to copy a solution should you find it posted elsewhere.

Quizzes will be given in the first 15 minutes of most discussion sections. These quizzes will be graded as if they were exam questions. Three exam-type questions will be provided approximately one week in advance for you to study. The quiz will consist of one question randomly chosen from the three questions provided. It is highly recommended that you work out solutions to all three potential questions in advance, on your own or in groups. However, no notes will be allowed during quizzes. The lowest two grades obtained in the quizzes will be dropped when computing your final grade.

Exams: There will be two midterm exams and a ccomprehensive final. The unit exams will be given during lectures the on Wednesday, Oct. 13 and Wednesday, Dec. 1. These will be 50 minutes exams. To avoid disturbances over this short examination period, students will not be permitted to enter the room late or to leave early. The final exam will be on Dec. 15, at 8am, in a room to be announced.

Grade determination Your letter grade in the course will be based on homework assignments (10%, lowest two grades dropped), quizzes (20%, lowest two grades dropped), two midterm exams (15% each), and a cumulative final exam (40%).

MATH 223: Asymptotics - Syllabus *Spring 2011*

COURSE GOAL. Learn the fundamentals of asymptotic analysis and perturbation methods so that you may use them in theoretical research.
Instructors. François Blanchette (e-mail: fblanchette@ucmerced.edu)

Learning outcomes By the end of the class, you should be able to:

1. Have a working knowledge of infinite series and power series as solutions to differential equations.
2. Recognize the advantages and limitations of asymptotic approximations to challenging mathematical problems.
3. Compute asymptotic approximation of integrals.
4. Compute perturbation solutions to complex differential equations.

Discussion sections. F, 1pm – 1:50pm in room COB 274. There are as many TAs as there are students registered in this class.

Topics covered: There are three main topics in this course

1. Power Series solutions to differential equations
   (a) About an ordinary point
   (b) About a regular singular point (Frobenius method)
   (c) About an irregular singular point.
2. Asymptotic approximations of integrals
   (a) Approximate Integration by parts
   (b) Laplace's method and Watson's Lemma
   (c) Method of stationary phase
   (d) Method of steepest descent
3. Perturbations methods for differential equations
   (a) Non-dimensionalization and scaling
   (b) Regular perturbation expansions
   (c) Singular perturbation expansions (Boundary layers, WKB, multiple scales, averaging)

Textbook. The required textbook is:
Advanced Mathematical Methods for Scientists and Engineers, by Bender and Orszag (Springer-Verlag, New York, 1999).

Homework. There will be roughly bi-weekly homeworks throughout the semester. You may work on the homework in pairs, but each student must turn in his or her own individual work.

Exams. There will be a take-home final exam at the end of the semester. No midterm exam will be administered.

Grade determination. Your grade will be determined based on your homeworks (50%), your participation in class (10%) and your final exam result (40%). Letter grades will not correspond strictly to any fixed numerical scale, but rather will loosely correspond to:
A indicates that you have understood every major concept in the class
B indicates that you have understood most major concepts in the class
C indicates that you have understood only some of the major concepts in the class
D indicates that you have no real understanding of most of the major concepts in the class
F indicates that you have gained virtually no understanding in this class.