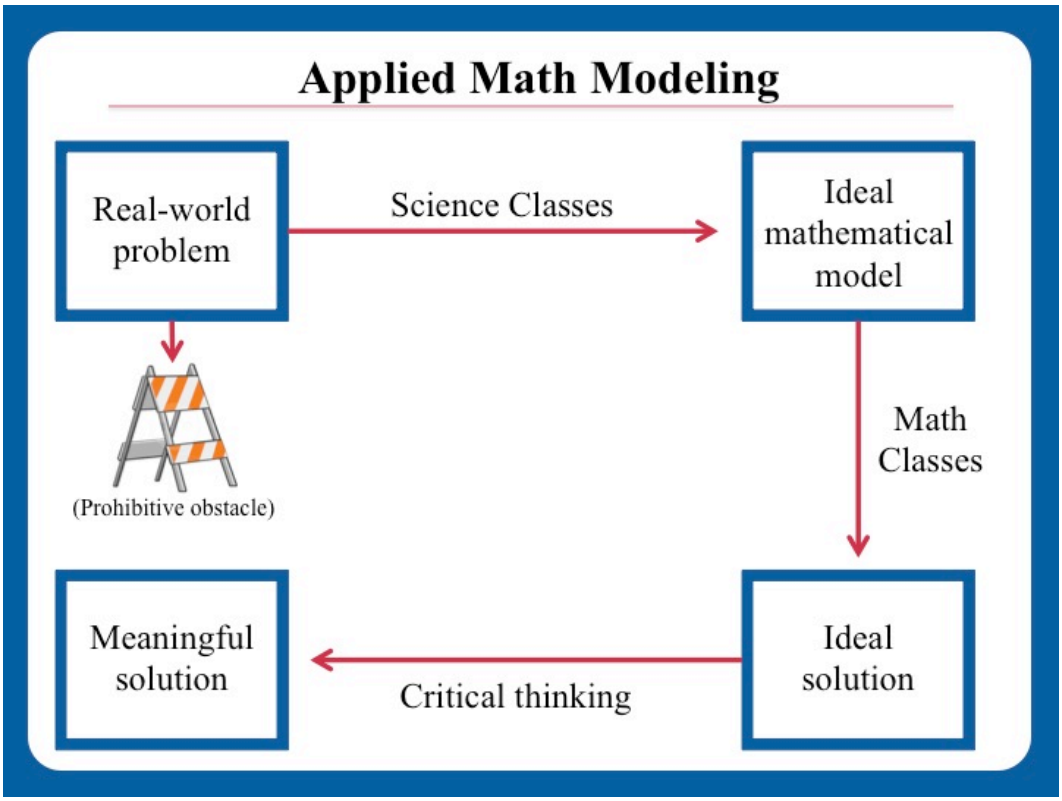
Welcome

Math 1D: Calculus IV — Spring 2018



Have you ever heard the phrase "math is everywhere?" This phrase describes the applied math modeling process. In this class, I hope to help you gain practice applying this modeling process to real-world problems that may not have recognized as valuable.

WELCOME TO CALCULUS IV!

Greetings and welcome to our class. My name is Jeff Anderson. I am honored to be your instructor. I am also very excited to act as your coach and mentor as you study Math 1D

My primary goal is to inspire, encourage, support, and guide you to create significant learning experiences during our 12 weeks together.

You can expect to feel welcome, respected, and valued in our classroom. I love engaging with my students and I promise to work hard to make our classroom a safe space for you to learn about math and yourself. I hope we can build a strong professional relationship this quarter as we work together. I am so excited to meet you!

~Jeffrey A. Anderson

How can I serve you?

I exist at this college to serve you. I want to speak with you individually at least once a week. Here is how to stay in contact with me:

- Speak with me before, during, or after class.
- Visit my Student (Office) Hours
  - Wednesday from10am – 11:40am in Rm 4141
  - Friday from 9am – 10:40am in Rm 4201
- Stop by my office in room 4141
- Call my phone: (650) 949 – 7116

OR (only in case of an emergency)

- Email me: andersonjeff@fhda.edu

A FOCUS ON LEARNING

WHAT IS LEARNING?

As I stated above, my main goal is to inspire, encourage, support, and guide you to create significant learning experiences in this class. To do this, we need to have a common understanding of what learning is. I would like us to define learning as follows:

> Learning is a *process* that leads to *change*, which occurs as a result of your experiences and increases your potential for improved performance and future learning. There are three critical components to this definition of learning:
>
> 1. Learning is a *process*, not a product. However, because this process takes place in your mind, I can only infer that it has occurred from work you produce or actions that you perform.
>
> 2. Learning involves *change* in your knowledge, beliefs, behaviors, or attitudes. This change unfolds over time and is not fleeting but rather has a lasting impact on how you think and act.
>
> 3. Learning is not something that I do to you. Rather, learning is something that *you do for yourself*. It is the direct result of how you interpret and respond to your experiences- conscious and unconscious, past and present.

Our entire class is structured to focus your energy on creating significant learning experiences in the context of studying multivariable calculus. Please prepare yourself to work hard, try new things, and have fun!

> "Learning results from what the student does and thinks and only from what the student does and thinks. The teacher can advance learning only by influencing what the student does to learn."
>
> –Herbert A. Simon

WHAT IS A SIGNIFICANT LEARNING EXPERIENCE?

For you to experience significant learning in this course, you will need to feel that what you do in this class is truly meaningful in your life. A learning environment that engenders this type of excitement requires you to do more than simply store factual information about the course content in your short term-memory.

Instead, my hope is that I can help you develop a belief that this class makes a difference in how you live and the kind of life you are capable of living. In other words, I hope that the learning you do in this class becomes part of how you think, what you want to do in your life, what you believe is true about yourself, and what you value. As the instructor of this class, I want to help you create experiences that enhance your ability to live your life more fully and meaningfully. This is what I mean when I say I want to inspire you to create significant learning experiences.

WHAT ARE THE CHARACTERISITCS OF SIGNIFICANT LEARNING EXPERIENCES?

There are certain characteristics of a learning environment that lead to significant learning experiences. In particular, I hope you will find this class to be:

Engaging: An engaging class is one in which you feel energized and empowered to learn. In such a course, you are in charge of your learning experience. You direct and manage your individual learning processes and you actively take responsibility to create the experiences you desire. Moreover, you critically reflect on your learning processes, make changes to your strategies, and implement improvements to your study skills over time.

High energy: You can feel the vibes of a high-energy classroom the moment you walk in the door. Both you and the instructor bring a high level of energy into class during each in-class meeting. This implies that each day we meet, you feel awake, alert, engaged, challenged, and encouraged.

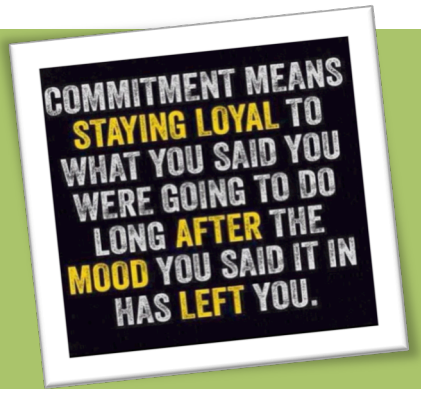
To support you in creating this type of environment, I will help you develop measurable academic goals for yourself and connect these goals with your daily participation in class. I will also encourage you to give your best effort throughout the quarter to achieve your goals. Please recognize that mistakes are a necessary part of your learning process as you master mastery this material. If and when you make mistakes in this class, I ask you to spend the time and energy you need to learn from your mistakes and improve your learning strategies.

WHAT ARE SOME POTENTIAL ROADBLOCKS TO CREATING SIGNIFICANT LEARNING EXPERIENCES?

In an 8am class focused on advanced calculus, you will need to be extra vigilant in your personal life to maintain a high energy level throughout the quarter. Please prioritize your physical, emotional, and mental health on a daily basis. My hope is that you come to class well rested (at least 7 hours of sleep each night) and that you eat a healthy breakfast at least 30 minutes before class begins. Moreover, I hope that you are fully awake and ready to engage at 8AM for each and every scheduled in-class meeting. I also hope you are able to take intermittent breaks throughout the week, get at least 150 minutes of physical exercise each week and stay balanced in your life. With this in mind, I want you to be aware that we face two huge challenges that are designed into this class:

Challenge 1: We are tasked with covering over 200 pages of deep mathematical theory in 12 weeks of class. Much of the theory we study in this course forms the basis of graduate-level applied mathematics including classes in fluid dynamics, partial differential equations, electrodynamics, and field theory.

Challenge 2: Our college system assumes that on the day you begin this course, you have fully mastered every topic from previous calculus classes and that you have no weaknesses on any topic from previous courses. Moreover, we generalize and abstract many topics from previous classes in subtle and creative ways. If you do have weakness from previous classes, you will have to spend extra time filling these in before you start in on the new material.



Here is a mantra you can recite to yourself each day throughout the quarter as you struggle to learn in this class:

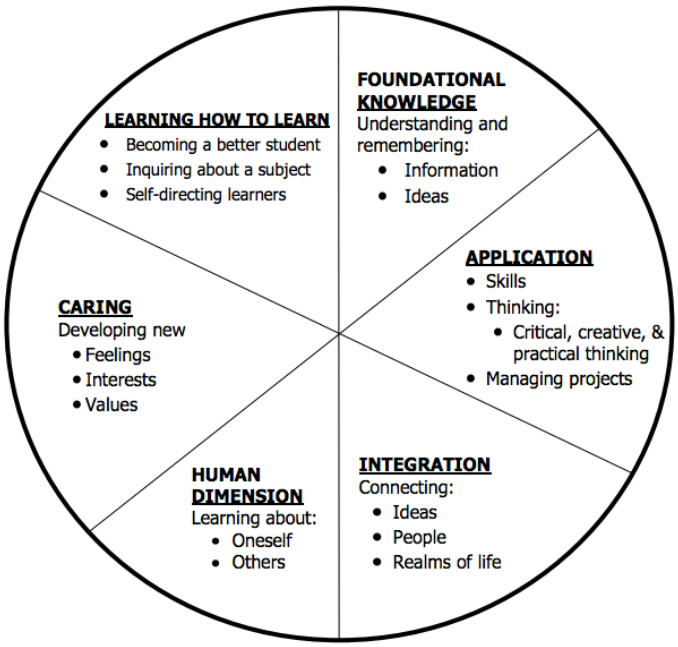
"Today, I promise to do my very best in this course. I commit myself to staying healthy and to giving my best effort to improving my learning processes. I will stay engaged with this material throughout the quarter. I know that by combining my best effort with effective study strategies, I can learn

WHAT ARE THE MAJOR CATEGORIES OF SIGNIFICANT LEARNING EXPERIENCES?

There are a variety of different types of learning that contributes to experiences in this class. Below is a synopsis of the most important categories of learning that we will focus on together.

Caring: Sometimes what you learn may change the degree to which you care about something. This may arise in new feelings, interests, or values. Any of these changes might indicate that you now care about something to a greater degree or in a different way than you did before the class started. When you care about what you are studying, you are much more likely to put the energy you need for learning and to making it part of your life. Without this care and excitement, you will not be able to create significant learning over time.

A TAXONOMY OF SIGNIFICANT LEARNING



Learning how to learn: In the course of your studies, you can learn new techniques to enhance your capacity to learn effectively and efficiently. You might learn how to be a better student, how to become a self-directed learner, or how to engage in in a particular kind of inquiry (like applied mathematical modeling or the scientific method). All of these constitute important forms of learning how to learn. This kind of study empowers you to continue learning in the future and to more effectively navigate the U.S. higher education system and many other systems in our society.

Foundational Knowledge: At the base of most kinds of learning is the need for you to know something. Knowing, as used here, refers to your ability to understand and remember specific information and ideas. In this class, it will be important that you have some valid basic knowledge of the integration theorems in multivariable calculus. You will also need to know something about how these theorems are used in applied mathematical modeling. Foundational knowledge provides basic understanding that is necessary for other kinds of learning.

Application: In addition to picking up facts and ideas, you will also learn how to engage in some new kind of actions. Learning how to engage in various forms of thinking (critical, creative, practical, logical, etc.) is an important form of application learning. This category also includes developing skills or learning to manage complex projects. Application learning allows other kinds of learning to become more useful.

Integration: When you are able to see and understand the connections between different concepts and ideas, this is a very important kind of learning. Sometimes you make connections between specific ideas, between individual courses you have taken, between individual courses and larger fields of study, or between different realms in your life (e.g. between your school and employment or between your school and personal life). The act of making new connections gives you a new form of power, especially intellectual power.

Human dimension: When you learn something important about yourself, you might function and interact more effectively with the world around you. In this form of learning, you discover personal and social implications of what you have learned. What you learn or the way in which you learn sometimes gives you a new understanding about yourself (self-image), a new vision of what you want to become (self-ideal), or greater confidence that you can do something important. You can also acquire a better understanding of other people including how and why others act the way they do or how you can interact more effectively with others. This kind of learning helps give you a sense of the human significance of what you are learning.

WHICH OF THESE CATEGORIES OF SIGNIFICANT LEARNING IS MOST IMPORTANT?

When considering all of the categories of significant learning, I believe that **learning how to learn is by far the most important aspect of your time in this course**. For example, you might create a career for yourself in which you never need to use multivariable integration theorems in your future. Even if you create a career in which you do rely heavily on theory from this class, you will likely need to learn a bunch of ideas outside the context of this course to effectively solve problems using this theory. In either case, your future career will be filled with continual learning and reflection. This reality is very much part of the process of developing a meaningful career in the information age.

Only a as a lifelong learner will you be able to keep up with our society's explosive growth of knowledge, develop new skills that you may need to accomplish your goals, and explore new directions in your career. The need to consistently reflect on your circumstances, retool your professional credentials, and develop new skill sets is already the norm for our generation of adults and future generations to follow. The ability to learn effectively and to monitor your learning habits is fundamentally important as a basic economic survival skill.

With this in mind, I will ask you to focus heavily on lessons and practice activities designed to help you critically reflect on your learning. Many of the suggested exercises I will assign you provide guidance on how you can learn in the U.S. higher education system at a fairly high level. These lessons will help you develop yourself as an intentional, independent, self-regulated learner.

WHAT IS SELF-REGULATED LEARNING?

Self-regulated learning includes the monitoring and management of all cognitive processes that you use to learn. In order to effectively manage your learning processes, you will need awareness of and control over your emotions, motivations, behavior, and the environment you utilize to learn. You will need to actively address the following two major components of your life as a self-regulated learner:

Your Behavior: Self-regulated learners intentionally create systems of thought and action that

i. Develop self-discipline, self control, and self confidence
ii. Enable effective and efficient effort while learning
iii. Utilize strategic time management to accomplish learning goals
iv. Include help seeking habits to get support from more advanced learners

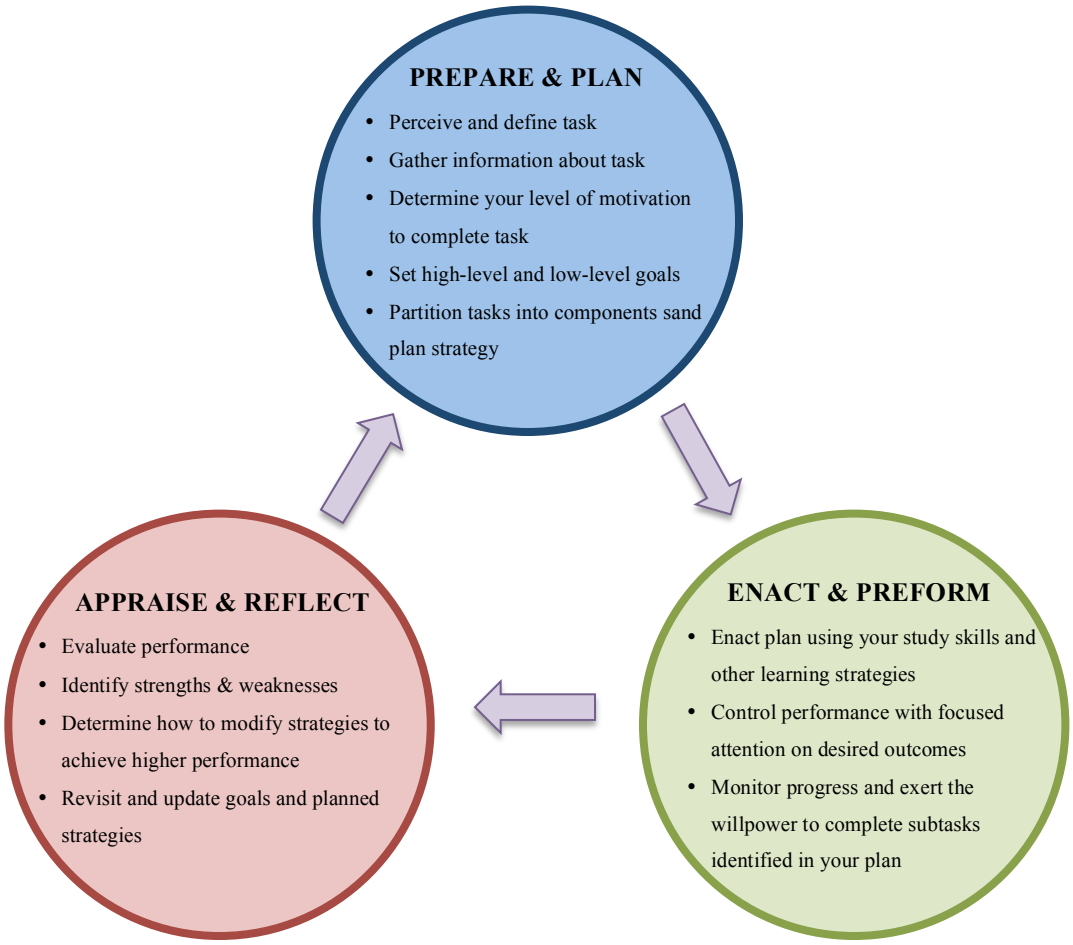
Your Environment: Self-regulated learners design a learning environment in that

i. Provides optimal sensory inputs for deep thought, including physical study space(s) with appropriate temperature, background sounds, lighting, and physical layout.
ii. Enables effective task management when working on aspects of a project or when managing different projects with overlapping due dates.
iii. Encompasses a value-based use of technology aligned with your goals.

As a self-regulated learner, you manage the entire spectrum of you learning experience by iteratively engaging in plan-act-reflect cycles (as described below).

WHAT ARE THE THREE PHASES OF SELF-REGULATED LEARNING?

One very useful way to think about the multiple dimensions of self-regulated learning is through the plan-act-reflect cycle, as illustrated below:



HOW IS SELF-REGULATED LEARNING RELATED TO METACOGNITION?

The term metacognition literally means cognition about cognition, or more informally, thinking about thinking. As a self-regulated learner, you will use metacognition to regulate your own cognition. In the context of this class, I want you to hone your potential to think, develop the skills you use to learn, and to actively evaluate your performance and strategies.

As you strengthen your understanding about your own learning processes, you will develop a heightened awareness about how you learn, create thoughtful and proactive study systems that enable you to consistently achieve your goals, and reduce the time it takes you to successfully complete problems or tasks. With this in mind, let's classify metacognition into two components:

1. Metacognitive knowledge: What you know about yourself and others as cognitive processors.
2. Metacognitive regulation: How you regulate cognition and learning experiences using skill sets to control your learning.

WHAT TYPES OF KNOWLEDGE COMPOSES SELF-REGULATED LEARNING?

Self-regulated learning includes the following types of knowledge:

> *Strategic knowledge*: This encompasses knowledge of different learning strategies and heuristics for different types of tasks; the steps and algorithms needed for solving problems and executing technical tasks; the need to plan, monitor, and evaluate your learning and thinking; and effective strategies for rehearsal (memorizing), elaborating (using learning devices such as summarizing, paraphrasing, and linking new knowledge to prior knowledge), and organizing of the material (such as concept mapping).
>
> *Knowledge about cognitive tasks*: This includes comprehending the directions (such as knowing what the verbs mean), accurately assessing the difficulty of a task, and deciding wisely which learning and thinking strategies to use and when to use these strategies.
>
> *Self-knowledge*: This entails knowing your strengths and weaknesses as a learner, accurately judging your command of the foundational knowledge in the course, and knowing what strategies work best for yourself to accomplish any tasks given in the course.

Self-control, self-discipline, perseverance, and determination in pursing long-term goals outweigh IQ as predictors of academic success in higher education. Also critical in academic achievement is the ability to delay gratification which is closely associated with self-efficacy beliefs and reassurances, intrinsic motivation, perceived tasks value, a "mastery" or "learning" goal orientation (as opposed to a performance goal orientation), help seeking, use of proven cognitive learning strategies (rehearsal, elaboration, organization, and metacognition), and control of study-related behavior and environment.

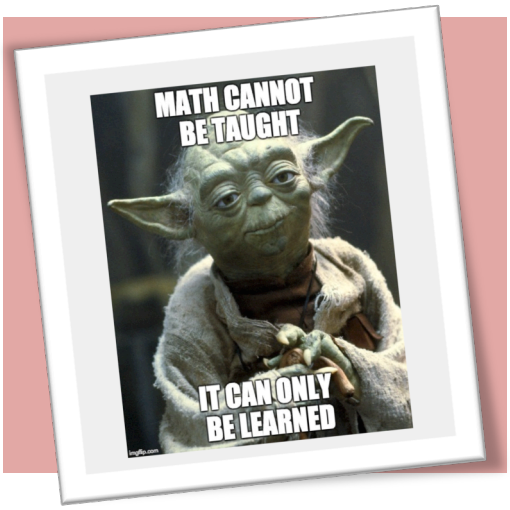
BUT ISN'T THIS CLASS SUPPOSED TO BE ABOUT MATH?

I believe that if you can develop powerful learning processes and combine these with a strong sense of purpose, you will be able to learn any topics in mathematics that you are interested in studying. In particular, I find that becoming a self-regulated learner an important precursor to successfully mastering mathematical theory in a way that supports your future career goals. Thus, I want to focus your energy on developing yourself as a self-regulated learner.

However, I recognize that we are formally tasked with learning the mathematical definitions, theorems, examples, and ideas that make up this course. In other words, we will be developing your learning skills in the context of building foundational knowledge, integrating this knowledge with other ideas you've studied, and applying this knowledge to various aspects of your life. With this in mind, there are some very useful ways to think about the study of mathematical ideas.

HOW CAN YOU BUILD FOUNDATIONAL KNOWLEDGE IN MATHEMATICS?

Remember that foundational knowledge refers to your ability to understand and remember specific information and ideas. Because foundational knowledge exists in your brain, the only way to build foundational knowledge is through experience and reflection. In fact, it is impossible for me (or any instructor) to teach you any particular piece of foundational knowledge within mathematics.



Instead, the only way for you to learn math and form foundational knowledge about mathematics is to creating your own mental map of each idea we study in this class. This involves analyzing each idea that we study and constructing a robust mental schema in your own mind to encode each idea. Such a process is iterative and challenging. Encoding each idea in your mind requires dedicated attention over various study sessions spanning multiple days of your life.

If you do this process well, your mental schema will support deep understanding of each idea and your ability to recall the various aspects of the idea when you need them. In order to understand how this process works, we need some useful terminology to discuss to the various aspects of building foundational knowledge in mathematics.

WHAT IS A CONCEPT DEFINITION?

Many people created most of the formal mathematics you study in this class over a long period of time. Multivariable calculus has been around for centuries and has been used to solve technical problems by many generations of scientific thinkers. Throughout this history, mathematicians and practitioners have refined the formal language used to encode the various ideas that you study in this class.

Throughout this history, the approaches to this theory that seemed to yield optimal results for young learners were repeated, emulated, and developed over generations. Similarly, less helpful language and approaches were usually abandoned. One of the major advantages that you have as a young learner of this theory is that you have access to a well-refined and coherent set of ideas that compose this class.

We will refer to a *concept definition* as a formal, logically coherent, verbal description including technical jargon that appears in a textbook or is provided to you by an instructor. The term concept definition may refer to a definition of a technical term. However it can also refer to theorem statements, descriptions of procedures, problem statements and associated solutions, or even statements of exercises to be completed by you, the student.

Each concept definition that we study in this class describes a set of underlying ideas in a succinct, non-circular manner. At the bachelors and masters degree level, experts provide to you almost every concept definition you will study[1]. The major challenge of the information age is not to gain access to the various concept definitions that compose a particular class. Instead, your task will be to fully analyze, digest, understand, and encode the many concept definitions that you must study to successfully complete a class. Thus, creating foundational knowledge in mathematics requires taking concept definitions created by experts and building mental representations of these ideas in your own mind. We will refer to such mental representations as *concept images*.

[1] Ph.D. candidates study unsolved problems in mathematics. In many cases, Ph.D. thesis and future research papers introduce new concept definitions associated with various components of unsolved problems.

A *concept image* is a mental scheme or neural network that exists in your mind and consists of

(A) everything that you have associated with a particular concept in your mind and

(B) what you are able to do with regards to that concept.

A concept image might include analogies that you have constructed to better understand an idea or various relationships between the specific idea you are studying and other concepts, examples, or nonexamples relating to this idea. Concept images may also include ways of solving problems, nontechnical verbal descriptions, or visual representations of the idea.

Note that a concept image does not necessarily include spatial visualizations or geometric interpretations of an idea as the term "image" might suggest. In fact, it is quite possible to have an effective concept image associated with a mathematical idea that does not include any spatial or visual diagram.

Unlike concept definitions that are given to you by others, you must actively work to construct concept images. When you construct an effective concept image of a certain mathematical idea, you "understand" that idea in its full glory. When you take an exam in a mathematics course, your instructors are attempting to measure the strength of your concept images associated with the various topics you've studied in that course.

Indeed, one of the most important indicators for understanding a concept is the ability to solve problems related to the concept. When solving a problem, you must know *both* what to do and why you need to do this. Moreover, you should be able to discuss, in detail, the interrelations between the problem you are solving and the core ideas you are using to generate your solution(s).

This ability to solve problems is nuanced and has many levels of proficiency. The interrelated components of your ability to problem solve using a particular concept image that you have constructed include:

(A) the ability to *remember*, not just memorize, the concept image

(B) the ability to *communicate* nuanced ideas in your own words completely and accurately

(C) the ability to *think in general terms* and identify the core ideas behind a concept image even if these ideas are abstracted away from specific examples that rely on that concept image.

(D) the ability to *connect* ideas and *integrate* new foundational knowledge with previously constructed foundational knowledge

In order to construct an effective concept image, you will need to develop each of these abilities relative to the mathematical idea you are studying.

Concept images exist in your mind: you must actively construct these to encode ideas with tools that help you understand and remember.

To creating foundational knowledge, or integrate and apply this knowledge, you must actively encode each concept definition within a robust concept images in your mind.

Concept definitions exist outside your mind in written text and other media used to store and transmit ideas to future generations of learners.

WHAT ARE CATEGORIES OF THOUGHT YOU CAN USE TO DEVELOP A CONCEPT IMAGE?

When constructing a concept image, there are at least five different categories of ideas that might be helpful to you while you encode a concept definition in your mind. These include

Verbal descriptions: Very often, a formal concept definition is written in highly technical jargon that may seem foreign upon first examination. When creating verbal descriptions to encode a concept definition, you must complete two related but independent tasks.

First, you must be able to summarize the concept definition in your own words entirely and completely. This process requires you to decode each technical word or phrase you encounter, create or access mental maps of each underlying idea, encode these in words that make sense to you, and synthesize a description of the concept definition that is entirely in your own words. In doing so you must be sure to address possible inaccuracies in with your encoding and to ensure that you have not lost any important information.

While encoding the idea in your own language is by far the hardest and most important part of creating verbal descriptions of a concept definition, if you plan on being a part of a community of working professionals who use this idea, it is also important that you learn to use the technical jargon correctly. This will require additional refinement of your description in which you learn how to use each technical term correctly and encode your understanding in the language of the field.

Visual description: Many concept definitions can be effectively encoded using meaningful visuals. Such visuals include but are not limited to graphs, images, diagrams, or maps that help to encode and interpret an idea geometrically or visually. Often when constructing a verbal description, it is useful to create an associated visual description with labels, comments, and explicit connections between the words you choose and a corresponding diagram..

Symbolic descriptions: Concept definitions in mathematics are also encoded using symbols and notation. There are two types of symbolic representations that might be helpful to you as you refine a concept image.

First, there is notation that others have created for you and that you decide to adopt. When studying mathematics in college, it can be quite wise to use the standard notation that your professor introduces. As an expert in the field, your instructor might have made many choices about notation that will help you avoid confusion without communicating to you why she made these choices. It can be very wise to adopt the notation your professor uses and ask for clarifications about why your teacher made these choices for notation during office hours.

On the other hand, there are some instances that you will want to create notation (variables, symbols, operations, etc.) for yourself. In this case, you need to be very careful to communicate the implied meaning of your notation to any person that grades your work.

Logical descriptions: Concept definitions in mathematics are often encoded using formal logical structures such as conditional statements, conditional statements, universal quantifiers, or existential quantifiers. The process of creating robust concept images often involves a detailed analysis of the logical structures implicitly stated in the concept definition.

Modeling descriptions: One of the most beautiful and frustrating dimensions of mathematical theory is that formal concept definitions are often abstracted away from the most powerful applications in which they arise. When encoding a concept definition, you can create nuanced meaning and deep understanding by identifying the idea with applied modeling scenarios in which the idea arises. This type of identification and integration empower you to map specific mathematical objects with experiences that you have in your daily life. Moreover, by doing so, you can start to make connections between your non-math classes, your career interests, and the formal theory to learn in class. This type of encoding can lead to much higher levels of motivation and an "intuitive" grasp of a concept definition within a framework that interests you. Such ideas can lead to concept images that are very "sticky" and form a bridge between your formal education, your social life, and your future career plans.

HOW WILL YOU KNOW IF YOU HAD SIGNIFICANT LEARNING EXPERIENCES?

As you progress in this class this quarter, I will be asking you to critically reflect on your learning processes. One question I plan to ask you multiple times throughout the quarter is: "in what ways has your learning in this class been significant to you?" In order to help you answer this question, you can find some ideas about what significant learning might look like below. Significant learning might:

Result in lasting changes: Significant learning might result in fundamental changes in your foundational knowledge, attitudes, behaviors, values, or beliefs. Lasting changes continue to have an impact in your life long after the course is over and even after you have finished university.

Prepare you for your career: Significant learning might help you develop the knowledge, skills, and attitudes necessary for being effective in one or more professional fields.

Enhance your value: Significant learning might lead you to believe that what you have leaded has a high potential for being of value in your personal, social, civic, and work life, even after the course is over

Enhance your personal life: Significant learning might help you develop or enhance your ability to enjoy art, music, culture, and to create a thoughtful philosophy about life.

Enhance your social life: Know how to engage with others in more positive ways in both formal and informal relationships.

Engage your civic mind: Develop your readiness to participate in civic activities at one ore more levels including your local community, state government, national government, or international advocacy groups.

WHAT IS MY TEACHING PHILOSOPHY?

Now that we have discussed the definition of learning, the various aspects of significant learning, the ideas behind self-regulated learning, and the important aspects for building foundational knowledge, I'd like to share my teaching philosophy with you. I define my main responsibility as your mathematics teacher to support you, my student, in create significant learning experiences in this course. To do so, believe it is important for me to hold you to high standards of professional conduct and to high academic standards. I also believe that I am most effective as a math teacher when I can:

A. Facilitate a learning environment in which you, my student, are in charge of your own learning processes and in which you and I share responsibility for and control over your learning.
B. Deliver course content using techniques designed to maximize understanding and mastery.
C. Create learning activities that are based on research results from the science learning.
C. Provide ample support and targeted feedback to you.
E. Demonstrate a high level of enthusiasm for course content.

This syllabus is written to give you more insight into how I plan to achieve points A – E. I will also return to these ideas throughout the course as we work through this material as a team. I work hard to design each aspect of the course to map back to one of these five pillars of my teaching philosophy. This is how I define my role as an instructor and how I measure my performance in the classroom

WHAT ARE MY EXPECTATIONS OF MYSELF AS AN INSTRUCTOR IN THIS CLASS?

Significant learning is as challenging as it is satisfying. In this class, I will guide you to create, develop and refine a number of effective study techniques. I believe that professional teacher-student relationships are sacred and involved shared responsibility. Thus, I want to communicate the expectations I have for my own behavior in our classroom. Below I outline my expectations for my behavior during our time together.

TABLE 1: MY EXPECTATIONS FOR MYSELF AS AN INSTRUCTOR

Expectations for Instructor Behavior to be Emulated:	Expectations for Instructor Behavior to be Avoided:
A. Make a commitment to maintain a positive attitude and strive to give my best effort in this class	A. Avoid assigning work that results in mindless repetition and passive learning.
B. Be active, enthusiastic, and professional about facilitating student learning.	B. Avoid focusing only on math content at the expense of encouraging students to develop new study skills.
C. Be open to learning from each of my students.	C. Avoid creating policies that hinder student learning
D. Be open to student questions.	D. Avoid fixed mindset judgments about student ability
E. Be approachable in class and make it easy for students to find times ask questions and talk about learning needs.	E. Avoid the belief that my mastery of this material implies that this content is easy.
F. Listen carefully and respect students' ideas.	
G. Empathize with my students, be open to student feedback, and respond swiftly and effectively to student concerns.	F. Avoid making judgments about students' lives based on partial information.
H. Communicate clear expectations to students about in-class assessments and assignments	G. Avoid pop-quizzes and assessments that require material not directly contained in our lecture notes.
I. Be in-class at least 3 minutes before and after every scheduled in-class meeting.	
J. Be prepared for class	
K. Make a concerted effort to accommodate students' learning needs.	H. Avoid the use of email to communicate with students as much as possible
L. Protect the academic integrity of this class.	

I welcome your feedback and I know I can learn something new by understanding your ideas and experiences.

WHAT ARE MY EXPECTATIONS OF YOU AS A STUDENT IN THIS CLASS?

I hope your work to create significant learning experiences in this class will be both challenging and amazingly satisfying. I will guide you to create, develop, and refine a number of proactive study techniques. However, for me to be most effective as your teacher, I need your help.

In particular, there are specific types of behaviors that I need you to adopt and there are other habits that I need you to avoid. Because this is a team effort, I want to be very clear about my expectations for ideal student behavior so that you know what I expect of you.

TABLE 2: EXPECTATIONS FOR STUDENTS

Expectations for Student Behavior to be Emulated:	Expectations for Student Behavior to be Avoided:
A. Make a commitment to maintain a positive attitude and strive to give your absolute best effort to your work in this class. B. Actively and professionally manage your own learning processes. C. Be comfortable taking risks and trying new things. D. Listen carefully and respect others. E. Be willing to actively reflect on your progress and make changes to less-than-effective strategies. F. Be punctual for all in-class meetings. G. Be prepared for each in-class meeting.	
Remember: if you have any questions, concerns, or comments, please let me know right away. I welcome your feedback and I know I can learn something knew by understanding your perspective.	

Students are expected to be honest and ethical at all times in the pursuit of academic goals. Students, who are found to be in violation of the Honor Code, will receive a grade of zero on the assignment, quiz, or exam in question and may be referred for disciplinary action. For specific information that applies to all students at Foothill College, see "The Foothill College Academic Honor Code" available at http://www.foothill.edu/services/honor.php.

AT A GLANCE: LOGISTIC ASPECTS OF THIS COURSE

ATTENDANCE

Consistent attendance is a very important part of this course. I expect you to attend class regularly. Please

make a commitment to come to class on time every day on time and to be prepared to give you best effort to paying attention to lecture content.

If you have a planned absence, please speak with me about this in-person (NOT via email). If you have a recurring health issue that affects your daily attendance, please speak with me in-person about these issues as soon as possible**. If you are late or absent, you are responsible to gain access to that day's material from a friend in class. PLEASE DO NOT EMAIL ME for the notes.**

Course information?

Course Title:	Math 1D
Section:	03
CRN:	40950
Class times:	Mon./Wed. 8AM – 9:50AM Fri: 8AM – 8:50AM
Location:	Room 4603
Prerequisites:	C or better in Math 1C
Website:	http://www.appliedlinearalgebra.com/blog/for-students/welcome-to-math-1d

REQUIRED MATERIALS

□ **Multivariable Calculus (2nd Edition) with MyMathLab Access** by Briggs, Cochran, and Gillett

ISBN-10: 0-32-195434-3	Foothill Bookstore Pricing for New Book[2]:	$159.00
ISBN-13: 978-0-32-196515-8	Online Access Code with e-text:	$103.95

□ **Graphing Calculator**

You can use a graphing calculator on exams. I recommend the TI–83 (Plus) or TI–84 (Plus). Calculators that perform symbolic operations (TI–89 or TI-NSpire) are not allowed.

□ **Internet Access and Printer**

You also need daily internet access and access to a printer (preferably a duplex printer that can print on both sides of the page). You will likely want to access to our etudes course site on a daily basis for useful resources.

IN-CLASS WORK

At the start of most classes, I will post a warm-up poll using the COLYTX app that we will download on the first day of class. Your responses to this poll will count as attendance and participation for that day's class. During our in-class meetings, I will use lecture as my primary "teaching" tool in this class. The "Math 1D Tentative Calendar" document includes a detailed list of the focus of each class meeting. During lecture, I present important definitions, theorems, examples, modeling techniques and sequences of logical steps to support important ideas in class. More about how to make the most of lectures can be found in the document "Study Skills HW 3: Create a Lecture Notes System".

SUGGESTED (UNGRADED) HOMEWORK PROBLEMS

At the end of each set of lesson notes, you will find a list of suggested problem. After you finish rewriting the second draft of your in-class lecture notes, I recommend that you work to solve these problems. Many of these problems will be designed to help you prepare for our warm-up exercises and in-class exams. I will NOT collect solutions to these problems and thus no grade will be assigned for your work.

[2] Quoted price valid as of 09/20/2017

WORK OUTSIDE OF CLASS

I expect you to spend time studying outside of class to learn the material presented during in-class lessons. I suggest you to spend your time rewriting your notes, finishing online homework, working on suggested problems and preparing for exams. The table below gives a rough estimate of how much time you should expect to spend in this class. Please carefully evaluate your ability to earn your desired grade based on your understanding of all of your time commitments this quarter.

Desired Grade	Academic Hours In-Class Per Week	Active Study Hours Out-of-Class Per Week	Minimum Total Weekly Time Commitment	Minimum Suggested # of Office Hours Visits per Quarter
A	5	20	25 hours	3
B	5	15	20 hours	2
C	5	10	15 hours	1

In the table able, one academic hour is 50 min of in class time followed by a 10 min break. One active study hour is 50 min of active study combine with a 10 min break. Active study is achieved through focused reflection on the course material. You can find out more about active study habits in the documents "How to Make the Most of Lectures in your College STEM Classes" and "How to Make the Most of Online Homework" available to you via a link to "Study Skills Worksheets" on our course homepage. This 5-unit course meets for 5 academic hours per week. If you want to or need to pass Math 1C, you should plan to spend a minimum of TEN HOURS PER WEEK working on this course outside of class. If you do not have this much time to spend on Math 1C this quarter, I encourage you to drop this class and re-enroll when you have more time.

GRADING POLICIES

You will complete a short project toward **the end of the next term** when we learn about inferential statistics. But I will ask you to start thinking about ways in which this class can contribute to a question you've always had about the outside world and will later be able to answer with statistics! The table below shows the categories and associated weights I use to calculate your final percent score. For each grade category, I calculate your category percent scores as the ratio of the number of points you've earned over the total number of points possible in that category.

Grade Category	**Weight**
Exam 1	30%
Exam 2	30%
Final exam	40%

Your course grade will be determined as shown below. A grade of D or lower is not considered satisfactory completion of this course and will not satisfy the prerequisite requirements for other courses.

Final Percent Score Range	Course Grade
98 – 100	A+
93 – 97	A
90 – 92	A-
88 – 89	B+
83 – 87	B
80 – 82	B-
78 – 79	C+
70 – 77	C
60 – 69	D
0 – 59	F

After final grades have been assigned, I will only change a grade if I have made a clerical error in calculating the final percent score. Please check your final grade by the Friday of the third week after the quarter ends. Contact me immediately if you think there is an error. Please do NOT email me with requests to change the grade you earned to a different grade (either lower or higher). I will not respond to such emails.

CLASSROOM ETIQUETTE

Emails from Jeff: I have posted most important information for this class on our course homepage. However, if I notice you are not in class, I may send you an email to check in. If you receive such an email from me, please respond. In your response, please let me know if you are safe, when I can expect to see you back in class, and any details you'd like to share (please be brief).

In-Person Help: I prefer to work with you in-person, NOT via email. The best times to speak with me are before, during or after in-class meetings. I also make appointment during office hours. I prefer to deal with all of the following issues in-person, NOT via email: enrollment, attendance, your grade, exams, in-class content, homework problems, learning needs, special circumstances, scheduling issues, office hour appointments, DRC accomodations, letters of recommendation and almost all other issues that come up.

Emails to Jeff: The only issue I prefer to receive emails about are unplanned absences. If an emergency makes it difficult for you to attend class on time, please send me a brief email as soon as you are able to. Please title the subject of this email "Math 1C Attendance." In this email, please let me know if you are safe, when I can expect to see you back in class, and any details you'd like to share with me (be brief: 1 – 4 sentences are usually sufficient). Be sure to include your name. Please do NOT email me to discuss your grade. I ONLY discuss your grade and progress in person.

Office Hours: If you plan to attend office hours, please make an appointment. You can find open appointment times on the list of office hour appointments that I bring to class. Most office hour appointments last about 15 minutes. If you are unable to attend any of my regularly scheduled office hour appointments, please speak to me about this in person. I will do my best to schedule an appointment with you at a different time.

I enjoy working with students during office hours. We can use office hours to elaborate on concepts that you are struggling with, help you develop a strategy for getting the grade you want, answer questions you have about attending Foothill College or discuss your future plans. For more about how to take advantage of my office hours, please see the "How to Make the Most of Office Hours" handout available on our course homepage.

Cell Phones: You are welcome to use your cell phone as a learning resource while in class. If you are not using your cell phone as a learning resource, I expect your cell phones to be silent and put away during in-class meetings. If you are expecting an emergency call, you may set your phone to vibrate. Please respect your colleagues in the classroom by minimizing texting and email use in class. Of course, no cell phone use is allowed on in-class exams. On exam days, I will ask you to place your cell phones in airplane mode, put this device away in your bag, close your bag completely and place your bag under your seat.

Laptops: You are welcome to use your laptop as a learning resources while in class. If you are not using your laptop as a learning resource, I expect your laptop to closed and put away during class. No laptops or tablets are allowed during in-class exams.

End of Class: I do my best to dismiss class on time. Please do not start pack up your belongings or make noise before I dismiss class. Such behavior is disruptive.

CAMPUS RESOURCES AND OTHER INFORMATION

HOW DRC ACCOMODATIONS WORK?

We at Foothill College view students with different learning needs as an important part of our campus community and we are committed to providing excellent learning opportunities for all students. Foothill College's Disability Resource Center (DRC) is the campus office that collaborates with students who have documented learning disabilities. In doing so, the DRC provides and arranges reasonable accommodations for such students.

- If you have, or think you have any attention, learning, chronic health, mental health, sensory, or physical disability, please contact the DRC to discuss what our campus can do to arrange reasonable accommodations that will help you achieve your learning goals. To contact DRC, you may:
  - Visit the DRC in Building 5400 of Student Resource Center during the following hours:
    - Monday & Tuesdays: 8:00am – 7:00pm
    - Wed & Thursdays: 8:00am – 5:00pm
    - Friday from 8:00am – 3:00pm
  - Email DRC at drc@foothill.edu
  - Call DRC at (650) 949-7017 to make an appointment.
  - Visit the DRC website at http://www.foothill.edu/drc/

- If you are registered with DRC and have accommodations set by a DRC counselor, please use Clockwork to send me (your instructor) your accommodation letter. Please also privately contact me early in the quarter to discuss your needs and review how your accommodations will be applied.

- Please be aware that if you are a student who needs accommodated test proctoring, you must meet appointment booking deadlines at the Testing Center, which are as follows:
  - In-Class Exams must be booked at least three (3) business days/weekdays in advance of the instructor approved exam date/time.
  - Finals exams must be scheduled seven (7) business days/weekdays in advance of the instructor approved exam date/time.
  - Failure to meet appointment booking deadlines will result in the forfeit of testing accommodations. In this case, you will be required to take your exam in class.
  - Please contact the DRC if you need help accessing your Clockwork account via MyPortal.

- Foothill's DRC strives to provide accommodations in a reasonable and timely manner. Please be aware that some accommodations may take additional time to arrange. We encourage you to work with the DRC and your instructor as early in the quarter as possible so that we may ensure that your learning experience is accessible and successful.

HOW DO LATE ADDS WORK?

Students not officially enrolled prior to the first day of the course will need an add code to add this class. I reserve the right to limit the number of add codes that I hand out based on class needs. On the first day of class, I distribute add codes on a first-come, first-serve basis.

WHAT IS AN INSTRUCTOR DROP AND WHEN MIGHT THIS HAPPEN?

An instructor drop occurs when I, as an instructor, officially drop a student from this course. As the instructor of record, I have the ability to do this at any time to any student via MyPortal. However, I very rarely use instructor drops in my classes. In fact, I promise not to use an instructor drop on any student who is

A. Actively participating in this class

B. Consistently and clearly communicating with me

C. Demonstrating an earnest effort to meet my expectations for ideal student behavior

However, in rare cases, I work with a student that is not able to actively participate in this class. In such case, I reserve the right to drop such a student from this course. This may occur in any of the following circumstances:

A. You are absent during the first week of class.

B. You have excessive unexcused absences (three ore more)

C. You are no longer actively participating in this class.

With this in mind, I encourage you to pay strict attention to the drop dates listed on Foothill's website or listed in you MyPortal account page. It is your responsibility, as a student, to drop all classes in which you are is no longer actively participating. Do not assume I will automatically drop you if you stop participating in this class. Students who remain enrolled in this class beyond the published withdrawal date, as stated in the class schedule, will receive a letter grade in this class. The date to drop without it showing up on your transcripts is the end of the second week of classes.

Religious Holidays: If you have a religious holiday or observance during the quarter that conflict with class, please speak with me in person by the end of the first week of class.

Disasters: If a natural disaster, or any other occurrence, closes the campus, I will make adjustments to any existing calendars and assignments at our next class meeting when the campus reopens. If the campus closing interferes with an in-class exam it will be given at the next class meeting. If the natural disaster interferes with the final exam, it will be canceled, and your final grade will be based on your existing scores.

Emergency Info: I value your saftey and the safety of all Foothill students and employees. I encourage you to be prepared for an emergency. To do so, please:

- Keep your permanent address and emergency contact info current in MyPortal.
- Sign-up to receive Foothill College emergency text alerts in MyPortal.
- Know the safe evacuation routes from each of your classrooms. Emergency evacuation routes are posted in all classrooms.
- Listen for and follow instructions from Foothill College or other designated authorities. Within the classroom, follow your instructor's instructions.
- Pre-program your cell phone with the emergency phone number for the FHDA Police Department: (408) 924-8000. This will ensure a faster response time
- Report suspicious activities and objects immediately to the FHDA Police.

Final Thoughts: I believe that you can succeed in this course. I do NOT believe there is such a thing as a math person. Instead, I believe that:

- When you learn how to solve new problems, you are growing your math brain.
- If you catch yourself saying "I'm not a math person' just add the word 'yet' to the end of the sentence.
- The feeling of math being hard is the feeling of your brain growing.
- The point of all the work you do in this class isn't to understand everything right away. The point is to grow your understanding, step-by-step.

Please be patient with yourself if you do not immediately see how to solve a problem. Try each assigned problem, make lots of mistakes, ask lots of questions and learn from your mistakes. Most of all, try to have fun learning and expanding the frontiers of your skills.