# Welcome to SDS 293

## Contents



I am so excited that you'll be joining this educational journey through the theoretical aspects of machine learning! You are now, just by being here, a machine learning explorer and practitioner. This course will help us frame out exactly what that means and also what *machine learning* is.

> **Note**
>
> Your are now a machine learning practitioner and explorer!

## Official Course Description

In the era of "big data," statistical models are becoming increasingly sophisticated. This course begins with linear regression models and introduces students to a variety of techniques for learning from data, as well as principled methods for assessing and comparing models. Topics include bias-variance trade-off, resampling and cross-validation, linear model selection and regularization, classification and regression trees, bagging, boosting, random forests, support vector machines, generalized additive models, principal component analysis, unsupervised learning and k-means clustering. Emphasis is placed on statistical computing in a high-level language (e.g. R or Python).

### Motivating Questions

There are a few questions motivating our course work:

- What is Machine Learning?
- What roles do statistics and linear algebra play in machine learning?
- What habits of mind do we need to develop to become machine learning practitioners?

### Course Learning Objectives

By the end of the course, students will be able to...

1. Detail differences between supervised and unsupervised learning tasks and methods, as well as discuss the issues when dealing with large scale data
2. Compare machine learning models, and assess the efficacy of these techniques the context of task at hand and the assumptions underlying the models
3. Develop an appreciation for ethical implications of machine learning algorithms
4. Work collaboratively and reflectively to articulate details of machine learning techniques

## Course Philosophy

This course is designed to be a first course in Machine Learning, but one that also prepares students to read and evaluate current developments in machine learning. The ultimate goal of this course is that students can read machine learning papers from the top conferences (NeurIPS, ICML, ICLR, etc) and situate these papers among the big ideas of machine learning. The goal is not to understand every detail, but rather to review the introduction, motivation, and background for the proposed methods and be able to describe the high-level contributions of the proposed methods. Completing such a task is not as prescriptive nor as straightforward as completing a standard college course. There are turns and twists, failures and incremental progress, moments of confusion and bursts of clarity. This course seeks to begin your training in machine learning. Success in this course will be measured iteratively, placing emphasis on student's ownership of the learning process and a student's consistency of effort.

## Stretch Zone

Borrowing language from the 2019 Google J-term course, when learning in a classroom setting, at any moment, we exist in one of three zones: safe, stretch, or strain. A student in the safe zone is completely comfortable, and the course material is completely within what the student already knows. The strain zone is the complete opposite of the safe zone. A student in the strain zone feels completely overwhelmed with the material to the point where they can't find any meaningful connections between the current material and what the student already knows.

The material in this course is intellectually challenging. Several of the topics are ones that took me a long time to fully understand their subtleties. The goal for this course is to spend the vast majority of our time in the stretch zone. In this zone, the material is just beyond our current knowledge base and while we are a bit uncomfortable with the material, we can see possible paths to tie the new material into our existing knowledge. In other words, in this class, our brains should be stretching, but not straining.

At the end of each week, if you have not been surprised or challenged, or if you have no questions about the material, this could mean that you are in the safe or strain zones. If you find yourself exasperated or negative about the class, you may be in the strain zone. If you find yourself using words like "boring" or "easy", you are likely in the safe zone. If you are in either zone, please get in touch with me: in class, on slack, in an appointment, or send me an email. I want you to get the most out of this course, but I cannot make adjustments to the course if I do not have firsthand knowledge of what is going on.

# Syllabus

This webpage and the associated links together function as the syllabus. Everything that you need to know about the course is either here or linked from here.

The course syllabus is the most important document underlying the culture of our course and our classroom. I view my syllabus as a sacred document that both introduces and governs the course. In taking this view, I work to detail as much about the course as possible from the big picture ideas to the minute details of course policies. I believe that the first activity a student should do when beginning a course is to carefully read and examine the syllabus. In keeping with that belief, there are a few tasks in this document that will help us build our course community.

> **Note**
>
> Please read the syllabus this week and complete these tasks to help shape our community.
> If you have questions about the syllabus, please ask them on our class's first week's sli.do

This web version of the syllabus has a menu and search bar on the left, but the syllabus is also available as one pdf document.

# Course Acknowledgements

Parts of this course - including slides, activities, and notes - will be from a variety of sources. Materials will be appropriately attributed and will be used in keeping with copyright and fair use laws.

# Course Logistics

## Class Meeting Times

The course meets three times per week on Mondays, Wednesdays, and Fridays in Sabin-Reed 301 from 9:25am to 10:15am. In supporting our course community, students should make every effort to be at our course meetings on time.

> **Note**
>
> For accessibility reasons, we kindly ask that you refrain from wearing any scented products in class.

### Attending Lecture

We are still in the midst of a global pandemic. In keeping with the COVID-19 Information laid out in Smith's Culture of Care, if you are ill and/or have *any* COVID symptoms, please do **not** come to *in-person* class. Instead, please log in onto our zoom back-up. The link can be found on our Moodle site and our slack space.

You do not need to email me to ask permission to come to class on zoom or in person. However, if you are not able to be in-person for 2 consecutive meetings, then we need to check in.

Similarly, do not come to student hours nor appointments if you are ill and/or have *any* COVID symptoms. Please use the gather to attend student hours virtually, and a zoom link can be provided for any in-person appointment.

> **Warning**
>
> Do **NOT** come to in-person class or student hours, if you are ill and/or have any COVID symptoms.

Failure to respect this policy will result in an email to both the class dean and your advisor.

### Pivoting Class Meetings

If I am unwell and/or experiencing any symptoms of COVID, class will be held on zoom. If this happens, I will send a slack message on the #general channel using the @everyone mention. Using @everyone should send an email to your inbox.

If the college pivorts to remote learning, the course should be able to remain largely remain unchanged. The structure of this course is similar to one that I used in Spring 2021 for *Modeling for Machine Learning*. That course was fully online, and students had positive comments on this format.

## Communication

In addition to our synchronous meetings, our class will make of electronic communication, including our class slack, email, and Moodle messages. These methods of communication represent differing levels of formality and collaboration:

- **Slack:** Our slack site is the ***primary form*** of course communication. It allows for us to share where we are stuck with a reading, idea, or assignment, and where we can add helpful hints, request study groups, or share interesting news articles. Slack is much less formal than email,

and salutations and signatures are not required. If you need to ask your instructor a question, this is the best place to do it either over a public channel or through direct message. **Please make a daily practice of checking slack as the primary form of communication for the course**

- **Email:** Email communication is more formal than slack. It should be used in the cases that 1) concern something personal including **accommodations forms,** 2) require attachments, or 3) involve a number of people (who should be copied on the email). We also will use email to confirm individual appointments. Emails to the instructor should include a salutation (ie. "Dear…") and a signature (ie. "Best/Cheers/Kindly…").
- **Slack Mentions:** When I need to communicate with the whole class on a time-sensitive manner, I will use the @everybody or @channel functionality in slack. Please check that your slack settings will notify you either via slack or email. If you are using the email notifications, please be sure that your email does not treat these messages as spam.
- **Slack Emojis:** At times, I will ask you to emoji a message to show that you have read the message. This is a quick way for you to signal that you read it. If there's something that you have a question about in a "please emoji" message, please use the threading function for that message or send me a direct message on slack.

> **Note**
>
> Please sign up for our slack site, add a profile picture, and introduce yourself with your name and a fun-fact about yourself on the #intros channel. After signing up, please determine how and where you will get notifications from slack.

Please note that on a typical workday, I leave my office just after 5:00pm. This means that emails and slack messages sent after 5:00pm will likely be received on the next business day. Similarly e-communication sent on the weekend will likely not be received until Monday.

## Course Resources

Machine learning is a rapidly evolving field. So, our course will gather together a number of readings and resources from different sources. The below list of course materials are the minimum that I believe that you need to be successful in the course. If you feel that there is something critical missing from this list, please let me know.

- Variety of book chapters noted on the detailed course schedule and available at the library
- Bound notebook for notes, ideas, and scratch work
- Highlighters in at least 2 colors
- Pens or pencils in at least 3 colors
- Course Texts:
  - Mathematics for Machine Learning by Deisenroth, Faisal, and Ong. Note that we are using the PDF of the printed book
  - Pattern Recognition and Machine Learning by Bishop
  - Model-Based Machine Learning (Early Access) by Winn with Bishop, Diethe, Guiver and Zaykov

> **Note**
>
> All of our books are freely available on the web (due to arrangements that the authors have made with their publishers), and thus cost $0 for students to read them. If you are having issues accessing the books, please let me know.

There are also a wealth of machine learning resources online and at the Library. Please note that for anything denoted as an E-Book at the library, there are limits placed on how many people can view the source. Instead, you can download sections (or whole books) for a period of time directly from the library.

## Instructor Information

The instructor for this course is Katherine Kinnaird and I use she/her pronouns. My office is room 218 Bass Hall. The **best way** to reach me is on **slack.** If you need to email me, my email is kkinnaird@smith.edu.

### Student hours

My student hours are time blocked in my calendar for you! Please drop by either in person or virtually. During the first class, we will vote when my two scheduled office hours will be.

> **Note**
>
> Office hour timing to be voted on during the first week of classes

Below is an incomplete list of great reasons to hangout in gather before or after class or to make an appointment:

- You haven't had the chance to chat with me yet
- You want to see what my office looks like
- You have a question on a reading, assignment, or activity
- You heard that that my office mascot is a sheep
- You want to share about the course, your time at Smith, or about yourself
- You read something about machine learning, computer science, statistics, or math that you have questions about
- You are thinking about what you want to do after Smith

### Appointments

You are welcome and encouraged to make individual appointments with me. To make an appointment, please check my appointment calendar for appointment slots that are set aside each week.

> **Note**
>
> To book an appointment with me, go to my appointment calendar

# Course Structure

To prepare students to tackle the course's motivating questions - especially What habits of mind do we need to develop to become machine learning practitioners? - there are a variety of assignments in this course. Each week will be a mix of reading about machine learning topics, discussing and debating concepts, deriving machine learning theory from existing knowledge, and constant reflection about our learning and professional development. All due dates are posted on the Detailed Course Schedule and are due on the stated dates AOE (anywhere on earth).

> **Note**
>
> The Detailed Course Schedule lists the best by dates for the course. To view it, please log into your **Smith** account.

## Assignments

The work in this course can be broadly broken down into four types:

- **Routine Course Work,** including 12 labs, daily readings, and daily engagement journal
- **Problem Sets,** including 24 group problem sets and 11 individual starred problems

- **Professional development,** including two reflective writing assignments and persistent engagement with the course
- **Final Project** that teaches a recent machine learning paper to fellow Smithies (who are not in the course)

### Starred Problems

Each week, you will complete a starred problem. The goals of these problems are to 1) apply what we've discussed in class on your own and 2) reflect on your learning so far. To accomplish these goals, starred problems will all follow the same procedure:

1. Put away all course resources
2. Download that week's starred problem off moodle
3. Write your solution to the problem and upload it into moodle
4. Once properly uploaded, the instructor solution will appear
5. Compare your solution to the instructor solution
6. Complete a reflection worksheet about this problem and what you would like to review as a result of doing this problem

These problems are based on completion (ie. you get the credit or not) based on both your solution and the content of your reflection. This means that you can get the problem totally wrong and still get full credit if you take the time to honestly reflect on your progress. This assignment structure is based on an assignment structure from Smith's Engineering Program.

## Weekly flow for the course

Each week, you will have 2 group problem sets, a lab and an individual problem set due each week. Due to the calendar, we will have a change up to the weekly schedule following the thanksgiving break

### Weekly Schedule - Before Thanksgiving

Before the Thanksgiving break, the weekly flow will operate as follows:

| Day | Course Preparation and/or Activity | Due Date |
|---|---|---|
| Monday | Lab in class | GPsets from the previous week |
| Wednesday | GPset in class | Lab from Monday |
| Friday | GPset in class | Starred Problem |

### Weekly Schedule - After Thanksgiving

Before the Thanksgiving break, the weekly flow will operate as follows:

| Day | Course Preparation and/or Activity | Due Date |
|---|---|---|
| Monday | GPset in class | Lab from the previous week |
| Wednesday | GPset in class | Starred Problem |
| Friday | GPset in class | GPsets from this week |

> **Note**
>
> The Detailed Course Schedule lists the best by dates for the course. To view it, please log into your **Smith** account.

### Workload

According to federal standards, each four-credit course should equate to at least 180 hours of work over the semester. If you are taking 16 credits, that equates to 720 hours of work over the 15 weeks of the semester, from the first day of classes until the end of the final exam period. In the case of this

course, you will spend nearly 12 hours each week on my class alone (including our three hours of class meetings per week).[1]

In considering the work for this course, I believe that the approximate 9 hours per week *outside* of class will breakdown something along these lines:

- 4 hours of class prep (working on the readings, posting questions, etc)
- 1 hour per week of lab wrap up
- 1 hour per week of GPset wrap up
- 2 hours per week on preparing and completing the starred problem
- 1 hour of "flex time" used to supplement any of the above areas and/or go to student hours

Notice that there is an hour of flex time. This is to accommodate weeks were you might want to spend more time on an assignment or a reading. For example, you might spend extra time working on a group pset or coming to student hours to discuss a reading.

If you find that the time you are spending on this class is a lot more than 9 hours per week *outside* of class or a lot less, let's check in.

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[1] Each of our 50 minute meetings is "counted" as 60 minutes. Since we meet 3 times per week, our "in-class contact time" is counted as 3 hours.

# Resources Supporting SDS 293

Here is a list of additional resources supporting our class. Information about your instructor can be found on the logistics page.

## Inclusivity for all students

Smith is committed to providing support services and reasonable accommodations to all students with disabilities. Please inform me early in the term if there are aspects of the course that need to be modified to serve your learning, health, or person. You may speak with me after class, during student hours, or during an appointment. To request an accommodation, please register with the Disability Services Office at the beginning of the semester. To begin the process, either call 413-585-2071 or email ods@smith.edu.

Students in need of short-term academic advice or support can contact your class dean in the Dean of the College office. If you require some accommodation for religious or cultural purposes, please do not hesitate to let me know.

## Spinelli Center

The Spinelli Center for Quantitative Learning is a resource to support students as they take STEM courses and as they engage in other quantitative work. To see the list of available peer tutors and other resources available at the Spinelli Center, please consult their website.

## Jacobson Center

Smith has an additional resource for writing support: the Jacobson Center for Writing, Teaching & Learning make an appointment to take your work to the Jacobson Center on their website. In particular, you may choose to bring your work to Peer Writing Tutors Elisabeth Nesmith or Elina Gordon-Halpern, both SDS majors who tutor for the Jacobson Center. Contact Sara Eddy (seddy@smith.edu) for more information about their schedules or how to make an appointment.

The above language about the Jacobson Center was adapted from language from Sara Eddy. Used with permission

## Library

The library has a wealth of resources on Machine Learning. I invite you to check them out!

> **Note**
>
> Please note that for anything denoted as an E-Book at the library, there are limits placed on how many people can view the source. Instead, you can download sections (or whole books) for a period of time directly from the library.

# Academic Integrity

Nothing is held more dear to a researcher than their integrity. To researchers, the most precious commodity is our ideas. While some researchers build tangible items that can be protected by patents, many researchers' products are ideas and theories, which are less likely to be protected under things like patents. Instead, it is academic integrity that governs our research communities, protecting our ideas from being stolen. The system of academic integrity relies on researchers trusting each other to be honest and to act with integrity.

## Honor Code

Being at a school with an Honor Code, like Smith, is a special privilege. The Honor Code goes beyond inviting students to act with integrity, instead it welcomes students as equal participants of the learning community, imbuing students with the same level of trust that we extend to our collaborators and colleagues. The Smith College Honor Code, established in 1944, and as stated in the Student Handbook, says:

> Smith College expects all students to be honest and committed to the principles of academic and intellectual integrity in their preparation and submission of course work and examinations. Students and faculty at Smith are part of an academic community defined by its commitment to scholarship, which depends on scrupulous and attentive acknowledgement of all sources of information, and honest and respectful use of college resources.

This trust bestowed to students in the Honor Code is the same trust that exists in and among researchers within a research community, the same trust that exists between me and my collaborators. Simply put, at Smith, under the Honor Code, I trust that you will each act with integrity, citing sources when you celebrate others' ideas and noting who you work with when collaborating.

This trust manifests in how assignments are created, in how work is completed, and in how we resolve instances where the trust has been broken. At an Honor Code school, assignments are created knowing that while there are resources online that can offer complete solutions, you are trusted to not seek out such complete resources and that if you do stumble on a solution guide, you will not use it. Under an Honor Code, students are expected to keep careful notes about the resources that they consult and the people that they collaborate with. We get to assume that the work handed in by a student is the creation of that student. Lastly, when there are violations of the Honor Code, the resolution is determined by a committee established by the community and trusted to seek restoration of the whole community's trust through education and action.

I regard the Honor Code with deep and profound respect. Being an educator at an Honor Code school means we begin from a place of trust without any underlying suspicion of our students. Simply put, we - instructors and students - work from the assumption that all are acting in good faith and with the utmost integrity. This is an assumption that cannot be made at a school without an Honor code, and it is why it is a privilege to be both an instructor and a student at Smith under the Honor Code.

## Honor Code Practicalities

The work you submit should be your own and created by you, unless explicitly listed as a group assignment. With the exception of the starred problems, I do encourage you to ask for help from your peers or myself when you have questions; however, copying is never allowed. The line between

copying and helping is subtle. Below are a few guidelines:

- Do not share nor give your work with other students; instead, offer to discuss the big ideas of the task at hand.
- Do not look at someone else's work (including online solutions); instead, ask if you could talk with them about your ideas and share where you are getting stuck.
- Acknowledge those you talk or work with at the top of **every** assignment. I will not dock points for getting acknowledged help from others. If you generate a solution or an argument with someone, in addition to acknowledging that person, recreate the solution or argument on your own in your own words.

If you think you may have crossed the line between helping and copying, please talk to me. Do not let me discover that the line was crossed. If a violation of the Honor Code is suspected, the student will be informed and will be given the opportunity to meet with the instructor. As recommended by the Academic Honor Board and in keeping with Smith tradition, the student will be given time to self-report, and after such time, the suspected violation will be reported to the Academic Honor Board by the instructor.

If you are unsure about how Smith's Honor Code applies to our course, please consult with me or a class dean. We are happy to discuss the Honor Code with you.

### Creation vs. Curation

In my role as your instructor, I am **curating** resources for you that I feel are best for the teaching and learning of machine learning. In this process of curation, I will give credit to those whose materials I have used and I will only use materials as allowable by copyright and fair use.

In this course, you will be asked to **create** solutions for group problem sets and for the final project. In these acts of creation, you are demonstrating you most current understanding of the concepts in our course. This course will give you lots of chances to demonstrate what you know and lots of flexibility.

I am aware that there is a tension between the curation that I am modeling and the creation that is being asked of you. My goal is to provide the best resources to you, which requires reading and sorting through many sources (curation). Your goal is to learn as much machine learning as deeply as possible, which requires a lot of practice, trying out machine learning ideas, reflecting on your attempts, and trying again (creation).

# Assessment

Just like beginning a project, we begin this course with nothing completed yet; similarly, we begin the semester with no points, just yet. As assignments are assigned and returned we will slowly build points towards the 1000 possible points. In keeping with this philosophy, each assignment adds to your total score. In more traditional courses, one might begin with 100% and have their grade slowly chipped down to a final score. Instead in this course, we are building our grades up in concert with our knowledge about machine learning. View each assignment as a reflection of the depth of your machine learning knowledge base.

## Grading Practicalities

The 1000 possible points for the course are distributed as follows:

1. **Group Problem Sets:** 522 total points -
    - 24 group problem sets, each with 18 possible points, for a max total of 342
    - 12 individual starred problems, each with 18 possible points,for a max total of 180
2. **Routine Course Work:** 306 total points -
    - 12 Lab assignments, each with 9 possible points, for a max total of 90
    - Daily engagement journal for a total of 216 points
3. **Final Project:** 100 total points with an optional checkpoint

4. **Professional development:** 72 total points -
    - Two Reflective Writing assignments, each with 12 possible points
    - Class engagement in person and on slack, for a total of 48 possible points

## Types of grading

There will be three kinds of grading for this course: 1) rubrics, 2) on completion, and 3) with student input.

1. The following assignments will fall under typical rubric grading: group problem sets, your engagement journal, and the final project. Depending on the assignment, detailed rubrics may be issued before the assignment is submitted, while in other cases only general outlines will be given in advance of the assignment.
2. The following assignments will be graded on completion: the labs, the individual starred problems, and reflective writing assignments. Note that completion here means that the work was completed in good faith. The act of turning in something does not guarantee a score of completion. But any work that is clearly done in good faith will be marked as complete and will earn full marks.
3. The class engagement part of the course will be graded with student input. In the sixth week of the course and during the last week of classes, you will be asked to complete a self-evaluation of your class engagement in context of the class engagement list. Your self-evaluations will be a critical part of determining this section of your grade, but not the only determining factor.

### Translating to the "real world"

This course iterates on each concept, pushing your knowledge to grow with each activity. This kind of iterative work is critical for learning new things and developing facility with them. The assignments scaffold as follows:

- **Reading and Prep work for class** - This is your first contact with the material. Just like meeting a person for the first time, you should pay attention to the big picture pieces, but not fuss over learning each detail perfectly. Instead, note questions in your engagement journal that you want to ask the next time you come into contact with the material.
- **In class meetings and Labs** - The course is designed to be largely hands on. Each class meeting will be mostly working on something: problem sets and/or labs. Problem sets are largely "pen and paper" while labs are in Rmarkdown. Both are intended to be playgrounds for learning the material; so take tons of notes, make mistakes, and try again! This is our second contact with the material, and just like meeting a person for the second time, you should have follow-up questions about the material
- **Individual Work** - Once we've read about the material and worked on highly structured activities, it is time to practice deploying concepts on your own from end to end. Our course has a weekly starred problem that is one step beyond the class activities in difficulty, and has a reflective learning component built in.
- **Final Projects** - After three different interactions with each concept, it is time to see where these concepts occur in the wild. The ultimate goal of the course is that you can read, situate, and discuss current papers in machine learning. In your final projects, you will create a small lesson to teach a recent paper to your fellow machine learning explorers. The primary goal of this project is to take the concepts from class and do something that stretches your knowledge.

Similarly, I have built the grading structure for this course to be more similar to how I experience the "real world" that is with systems built in to allow for life to happen. These systems come in a few forms:

- For the labs, group problem sets, and individual starred problems, the number of possible points is more than the maximum that I will use in my final computation. For example, there are 414 possible points for group problem sets, but yet, I will do my computation out of 342 points. This means that you can decide to not hand in 4 group problem sets for any reason. It could be

because you are ill, you forgot about it, or you had too much work for your other courses. Note that pre-planned "dropping" of assignments should be used sparingly because we can not predict when life will happen (ie. illness, etc).
- For the final project, there is a checkpoint assignment that is completely optional, but if you complete it, you will be guaranteed at least 80 (of 100 possible) points. Missing the checkpoint is not a big deal, but can offer security to those with challenging finals periods. Additionally, the engagement journal will have prompts to help you brainstorm towards your final project.

These systems attempt to match my experience of being in the "real world." Assignments under the first system (ie. labs, group problem sets, and individual starred problems), you need to do about 80% of them well to get full credit for 100% in that portion of the grade. This matches my daily life where I can physically get to about 80% of my to-do list. Under the second system, it is often easier to edit a draft than to start from a blank page, and having small deadlines (where the reward is quick feedback) gives structure to larger projects.

While I do believe that each assignment for this course is important, I also believe that the college structure does not always allow you to practice "real world" decisions such as balancing your health with your work. So while I will not tell you to hand in an assignment or to not hand one in, I would love to listen to you practicing making these decisions.

### Due Dates

Each week, there are three deadlines:

1. Labs
2. Starred Problems
3. Group Psets

All work is **due at 9am** on the date listed on the Detailed Course Schedule. This is a great moment to note these dates your system for keeping track of your work (ie. planner, calendar, etc). (If you want to really stretch here, do this for all assignments in all your courses.)

#### Flexibility

In general, work should not be late. Later course content builds on previous content, and if one is spending time on an assignment that is passed due, then there is less time for the next assignment. Additionally the grading for this course has a number of flexibility systems in place, and I encourage that you take advantage of them as needed.

This all being said, there's a pandemic, and life is not normal. If you find yourself in need of a bit more time, send me a brief slack message at least a day before the work is due. In your message include 1) what flexibility systems you've already used, 2) why it is important to your learning that you get an extension, 3) propose a new due date for yourself, and 4) why the proposed extension will not hinder your ability to get the next assignment done on time. Your message should be no more than seven sentences long.

## Letter grades:

Traditional letter grades will be assigned using the below listed minimum points:

| Letter Grade | Number of points |
|---|---|
| A | 950 - 1000 pts |
| A- | 900 - 949 pts |
| B | 800 - 899 pts |
| C | 700 - 799 pts |
| D | 600 - 699 pts |

At the instructor's discretion, these grade cutoffs may be lowered at the end of the semester, but they will never be raised. Cut-offs not stated here for the pluses and minuses will be determined at the end of the semester.

By Katherine M. Kinnaird