# CRITICAL THINKING


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| **Units** | 9.0 | **Instructor** | Professor David Emmanuel Gray |
| **Time** | Sunday, Tuesday, Thursday: 4:30PM–5:20PM | **Contact** | CMUQ 1039, degray@cmu.edu, @ProfessorDEG |
| **Location** | CMUQ 1064 | **Office Hours** | By appointment, or whenever my office door is open |
| **Website** | https://www.andrew.cmu.edu/user/degray/CT17/ | | |


## Course Overview

### Description

Most people like to think of themselves as logical. Telling someone "You are not being logical" is normally not a compliment. To be illogical is to be foolish, confused, muddled, irrational. But what does it mean to be logical? The word itself, 'logic', comes from the Greek word '*logos*', or reason, and logic can be broadly construed as the study of what counts as a good reason, and why it is good.

Understanding logic is important because we reason all the time. We try to figure out what might be true, reasoning on the basis of what we already know. Is it the aspirin or the glass of water with which it is swallowed that stops a headache? What are the odds that Qatar will win the 2020 World Cup? What would have happened had Donald Trump never been President of the United States? We reason about events occurring in time or space; we reason about knowledge and belief; we reason about moral responsibility and ethical behavior. We then try to persuade others of these things by giving them reasons.

Rather than examine all the different types of reasoning, this course focuses on a concern common to them all: identifying and evaluating arguments. We begin the course by informally examining the structure and components of an argument. We then clarify the structure of argumentation and learn how to organize an argument into a visual map called an argument diagram. Following that, we explore how modern propositional logic helps identify the logical form of many everyday claims and assess the validity of an argument. Then we consider classical categorical logic, which allows us to identify claims and assess arguments of a different sort. Throughout, you will discover ways that you can reason more logically about everyday issues.

### Objectives

By the end of this term, I expect that you will be able to:

- Deconstruct the inferential structure of an argument,
- Translate ordinary language statements into formal structures revealing their logical form,
- Assess when the premises of an argument entail its conclusion, and
- Avoid elements of illogical reasoning in your own thinking.

I have designed each course requirement with these objectives in mind.

### Readings

All readings are posted on the course website. You are expected to read all assigned material according to the class schedule on pages 3 and 4.

### Announcements & Other Communication

I will email important information to you throughout the semester, so please routinely check your CMU email address for updates. Otherwise, I am glad to answer your questions, discuss your work, or respond to your concerns. Please see me at my office hours or get in touch via email.

### Requirements & Grading

Classes will typically follow an interactive lecture format, with certain days set aside for in-class workshops. As a result, the quality of the course depends critically on your individual attention and participation. The purpose of us coming together as a class is to both learn and practice the skills of critical thinking together as a group.

I strongly encourage you to discuss the course's material and practice its skills outside of class with your fellow classmates, friends, and family, as well as with me. Even so, all your work must be done independently, unless otherwise noted. You are expected to be familiar with the university policies on cheating and plagiarism. If you have any questions, please ask; do not assume.

**Requirements** include participation, 13 problem sets, 11 quizzes, 3 unit exams, and 1 final exam. Please refer to page 2 for details.

The total possible score will vary from assignment to assignment. However, each assignment's raw score is normalized to a scale from 0 to 5. Unless you are notified of otherwise, the grading scale is as follows:

| | | | | | |
|---|---|---|---|---|---|
| 4.00–5.00 | A | 2.00–2.99 | C | 0.00–0.99 | R |
| 3.00–3.99 | B | 1.00–1.99 | D | | |

Your final course grade will be on the same 5-point scale, with each assignment weighted as indicated on page 2. A spreadsheet will be posted on the course website to help you keep track of your overall grade in the course.

If you wish to know how you are currently doing in more specific terms than what you can infer from this information, do not hesitate to meet with me.

### Participation & Attendance

This course is based on the principle of experiential learning, where you learn not only from me but from your discussions and interactions with your classmates. Indeed, like any activity, logical reasoning can only be learned through practice. Therefore, we will work in and out of class with a lot of examples. As such, participation and attendance are very important to your success in this class. See below for this course's strict absence policy below and on page 2 for more on how participation and attendance affect your grade.

### Late Assignment & Absence Policies

I do *not* accept late assignments, and you get *no* free absences. There is one exception: You and I agree on a reasonable accommodation *prior to* an assignment's due date or the day you miss class. I consider arrangements after the fact only in extraordinary, documented circumstances. See page 5 for more about such accommodations. Regardless, *students marked absent from more than five classes—whether these absences are excused or not—will automatically fail this course*. For these purposes, an absence from a workshop will count as two absences, since your absence will also negatively impact your classmates. So plan on attending all the workshops!

# Requirements

## Reading

Most days of class have an assigned reading (see the schedule on pages 3 and 4) that you are expected to have read and thought about *before* class. This allows us to devote more time to understanding and practicing the skills that the text is trying to teach rather than simply reviewing its contents. Hence, you need to do more than merely peruse the readings: you must endeavor to understand what they are trying to convey.
Keep in mind that reading this material is not like reading a novel or a textbook. There will be times when you must read slowly and carefully. Sometimes you may have to stop and think about things; and you should be prepared to go back and reread sections if necessary. In some cases, multiple readings of the entire text may be necessary. I expect that you take notes while you read, so that you can remember the text's main points. Finally, feel free to bring questions about the reading to class.

## Problem Sets

Each week, a problem set will be assigned, but it will be neither collected nor graded. The purpose of these problem sets is to allow you to practice the skills you are learning in class as much or as little as you would like. Solutions to most of these problems will be available, so you can check your answers or see me for help as necessary. I do highly encourage you to work on these problems, either individually or in a group with your classmates. You are personally accountable for mastering this material, however: the overwhelming majority of problems presented on quizzes and exams will be functionally identical to problems given on the problem sets. Past experience demonstrates that students who do not devote a significant amount of time to these problem sets do extremely poorly on the graded material.

## Participation (10% of Final Grade)

This course challenges each of us to share in the difficult process of understanding and evaluating the logical structures of arguments. As a result, class attendance and participation are very important in understanding and retaining the class material. Therefore, I will take attendance promptly at the start of each class at 4:30PM. If you are not sitting in your seat at that time, you will be marked absent. If you show up after that, then you will be marked as late. However, if you show up more than 10 minutes late, you remain marked as absent.

I expect that for each class meeting you show up on time prepared, take notes, pay close attention to what we are covering, ask questions when confused, positively help your partners during in-class workshops, and, by the end of class, grasp what we accomplished that day. However, I will also do my best to make our class meetings worthwhile and time well spent. I will also take special care to create environments in which you feel comfortable asking questions and expressing your confusions when they arise. To get the most out of our class meetings and workshops, *do not confuse this cooperative style of learning with mere conversation or informal, organized chatting.*

## Quizzes (20% of Final Grade)

Throughout the semester, there will be eleven short quizzes. Quizzes assess your proficiency with the skills you have been taught from the readings and have practiced on the problem sets and during the weekly in-class workshops. All quizzes are closed book and closed notes. Your overall quiz grade will be determined at the end of the semester by taking the average of your top eight quiz grades. This means that *your lowest three quiz grade will be dropped* in this calculation.

Quizzes will be given promptly at the start of class at 4:30PM and collected ten minutes later. If you come in late before they are collected, you will not be given extra time. If you come in after they are collected, you will have missed your chance to take the quiz. *So arrive promptly for class.* Quizzes are announced in advance on the course schedule, and cannot be made up. The reason that three of your quizzes are dropped is so you have the freedom to miss or do poorly on a quiz with no questions asked. To summarize: *there will be no make-up quizzes.*

## Unit Exams (45% of Final Grade)

There will be three fifty-minute unit exams. Each unit exam will test your understanding of the course material and the skills you have been practicing on problem sets, workshops, and quizzes. Unit exams are *not* cumulative, focusing just on the material and skills covered in class since the previous exam. However, be aware that certain key concepts, seen repeatedly in class and on the problem sets, will be relevant on all the exams and so should not be forgotten. All unit exams are closed book and closed notes. You overall unit exam grade will be determined at the end of the semester by taking the average of your three unit exam grades. This means that *no unit exam grades are dropped* in this calculation.

Like the quizzes, unit exams will be given promptly at the start of class at 4:30PM and collected at the end of class. If you come in late, you will not be given extra time. *So arrive promptly for the unit exams.* Alternative unit exams will only be administered in extraordinary, documented circumstances.

## Final Exam (25% of Final Grade)

During finals week, there will be one three-hour comprehensive final exam. This final exam will test your understanding of the course material and the skills you have been practicing on problem sets, workshops, and quizzes throughout the entire course. Therefore, the final exam *is* cumulative, focusing on all the material and skills covered in class. The final exam is closed book and closed notes.

### Note on the Grading of Quizzes & Exams

Your grades on quizzes and exams are determined based on *clarity* as well as correctness. You may submit a solution to a problem that, arguably, has all the components of a correct answer; but if I have to struggle to understand what you are saying, or read between the lines, or weed out false or irrelevant information, you are very unlikely to receive full credit.

In order to ensure that your work meets this standard of clarity, please pay careful attention to how I organize and structure my own solutions for the workshops and problem sets. When you are asked to solve those types of problems for a quiz or an exam, you should then format your own solutions in a similar manner.

# Schedule

| wk | Date | Topic/Readings | # Pages | Assignments |
|---|---|---|---|---|
| 1 | 8/20 (Sun) | **Course Introduction** | | Problem set #1 handed out. |
| | 8/22 (Tue) | **What is an Argument? (Unit #1)**<br>Copi, I. M., & Cohen, C. (2009). What Logic Is. In *Introduction to Logic* (13TH ed., p. 4). Saddle River, NJ: Pearson Prentice Hall.<br>Copi, I. M., & Cohen, C. (2009). Propositions and Arguments. In *Introduction to Logic* (13TH ed., pp. 4–6). Saddle River, NJ: Pearson Prentice Hall. | 6 | |
| | 8/24 (Thu) | **Workshop #1: Statement Classification** | | |
| 2 | 8/27 (Sun) | Vaughn, L. (2010). Claims and Reasons. In *The Power of Critical Thinking: Effective Reasoning About Ordinary and Extraordinary Claims* (3RD ed., pp. 9–10). Oxford: Oxford University Press.<br>Vaughn, L. (2010). Reasons and Arguments. In *The Power of Critical Thinking: Effective Reasoning About Ordinary and Extraordinary Claims* (3RD ed., pp. 10–17). Oxford: Oxford University Press. | 12 | **Quiz #1**, and<br>Problem set #2 handed out. |
| | 8/29 (Tue) | Vaughn, L. (2010). Arguments in the Rough. In *The Power of Critical Thinking: Effective Reasoning About Ordinary and Extraordinary Claims* (3RD ed., pp. 17–20). Oxford: Oxford University Press. | 5 | |
| | 8/31 (Thu) | **Workshop #2: Argument Parsing** | | |
| | 9/3–7 | **Eid Al-Adha Break** | | |
| 3 | 9/10 (Sun) | **Understanding an Argument (Unit #2)**<br>Vaughn, L. (2010). Diagramming Arguments. In *The Power of Critical Thinking: Effective Reasoning About Ordinary and Extraordinary Claims* (3RD ed., pp. 97–101). Oxford: Oxford University Press. | 7 | **Quiz #2**, and<br>Problem set #3 handed out. |
| | 9/12 (Tue) | Copi, I. M., & Cohen, C. (2009). Diagramming Arguments. In *Introduction to Logic* (13TH ed., pp. 41–48). Saddle River, NJ: Pearson Prentice Hall. | 9 | |
| | 9/14 (Thu) | **Workshop #3: Diagramming Arguments** | | |
| 4 | 9/17 (Sun) | Copi, I. M., & Cohen, C. (2009). Emotive Language, Neutral Language, and Disputes. In *Introduction to Logic* (13TH ed., pp. 79–81). Saddle River, NJ: Pearson Prentice Hall.<br>Copi, I. M., & Cohen, C. (2009). Disputes and Ambiguity. In *Introduction to Logic* (13TH ed., pp. 84–85). Saddle River, NJ: Pearson Prentice Hall. | 7 | **Quiz #3**, and<br>Problem set #4 handed out. |
| | 9/19 (Tue) | **Review of Informal Logical Reasoning (Units #1 & #2)** | | |
| | 9/21 (Thu) | | | **Unit exam #1.** |
| 5 | 9/24 (Sun) | **Assessing Arguments (Unit #3)**<br>Copi, I. M., & Cohen, C. (2009). Deductive and Inductive Arguments. In *Introduction to Logic* (13TH ed., pp. 26–30). Saddle River, NJ: Pearson Prentice Hall. | 6 | Problem set #5 handed out. |
| | 9/26 (Tue) | Copi, I. M., & Cohen, C. (2009). Validity and Truth. In *Introduction to Logic* (13TH ed., pp. 30–34). Saddle River, NJ: Pearson Prentice Hall. | 6 | |
| | 9/28 (Thu) | **Workshop #4: Creating Valid & Invalid Arguments** | | |
| 6 | 10/1 (Sun) | **Modern Propositional Logic (Unit #4)**<br>Vaughn, L. (2010). Connectives and Truth Values. In *The Power of Critical Thinking: Effective Reasoning About Ordinary and Extraordinary Claims* (3RD ed., pp. 218–228). Oxford: Oxford University Press. | 12 | **Quiz #4**, and<br>Problem set #6 handed out. |
| | 10/3 (Tue) | Vaughn, L. (2010). Connectives and Truth Values. In *The Power of Critical Thinking: Effective Reasoning About Ordinary and Extraordinary Claims* (3RD ed., pp. 218–228). Oxford: Oxford University Press. | 12 | |
| | 10/5 (Thu) | **Workshop #5: Translating Natural Language & Creating Truth Tables** | | |
| 7 | 10/8 (Sun) | Vaughn, L. (2010). Checking for Validity. In *The Power of Critical Thinking: Effective Reasoning About Ordinary and Extraordinary Claims* (3RD ed., pp. 231–238). Oxford: Oxford University Press. | 9 | **Quiz #5**, and<br>Problem set #7 handed out. |
| | 10/10 (Tue) | Vaughn, L. (2010). Argument Patterns. In *The Power of Critical Thinking: Effective Reasoning About Ordinary and Extraordinary Claims* (3RD ed., pp. 88–93). Oxford: Oxford University Press. | 7 | |
| | 10/12 (Thu) | **Workshop #6: Assessing Arguments with Truth Tables** | | |

# **Schedule** (Continued)

| wk | Date | Topic/Readings | # Pages | Assignments |
|---|---|---|---|---|
| 8 | 10/15 (Sun) | **Natural Deduction (Unit #5)**<br>Copi, I. M., & Cohen, C. (2009). The Elementary Valid Argument Forms. In *Introduction to Logic* (13TH ed., pp. 375–379). Saddle River, NJ: Pearson Prentice Hall. | 6 | **Quiz #6**, and<br>Problem set #8 handed out. |
| | 10/17 (Tue) | Copi, I. M., & Cohen, C. (2009). Formal Proofs of Validity Exhibited. In *Introduction to Logic* (13TH ed., pp. 380–382). Saddle River, NJ: Pearson Prentice Hall. | 4 | |
| | 10/19 (Thu) | **Workshop #7: Identifying Valid Argument Forms** | | |
| 9 | 10/22 (Sun) | Copi, I. M., & Cohen, C. (2009). Constructing Formal Proofs of Validity. In *Introduction to Logic* (13TH ed., pp. 383–385). Saddle River, NJ: Pearson Prentice Hall. | 4 | **Quiz #7**, and<br>Problem set #9 handed out. |
| | 10/24 (Tue) | Copi, I. M., & Cohen, C. (2009). Constructing More Extended Formal Proofs. In *Introduction to Logic* (13TH ed., pp. 386–390). Saddle River, NJ: Pearson Prentice Hall. | 6 | |
| | 10/26 (Thu) | **Workshop #8: Natural Deduction** | | |
| 10 | 10/29 (Sun) | Copi, I. M., & Cohen, C. (2009). Constructing More Extended Formal Proofs. In *Introduction to Logic* (13TH ed., pp. 386–390). Saddle River, NJ: Pearson Prentice Hall. | 6 | **Quiz #8**, and<br>Problem set #10 handed out. |
| | 10/31 (Tue) | **Review of Modern Symbolic Logic (Units #3, #4, & #5)** | | |
| | 11/2 (Thu) | | | **Unit exam #2.** |
| 11 | 11/5 (Sun) | **Classic Categorical Logic (Unit #6)**<br>Copi, I. M., & Cohen, C. (2009). Classes and Categorical Propositions. In *Introduction to Logic* (13TH ed., pp. 181–182). Saddle River, NJ: Pearson Prentice Hall.<br>Copi, I. M., & Cohen, C. (2009). The Four Kinds of Categorical Propositions. In *Introduction to Logic* (13TH ed., pp. 182–186). Saddle River, NJ: Pearson Prentice Hall.<br>Copi, I. M., & Cohen, C. (2009). Quality, Quantity, and Distribution. In *Introduction to Logic* (13TH ed., pp. 187–192). Saddle River, NJ: Pearson Prentice Hall. | 16 | Problem set #11 handed out. |
| | 11/7 (Tue) | Vaughn, L. (2010). Statements and Classes. In *The Power of Critical Thinking: Effective Reasoning About Ordinary and Extraordinary Claims* (3RD ed., pp. 252–255). Oxford: Oxford University Press.<br>Vaughn, L. (2010). Translations and Standard Form. In *The Power of Critical Thinking: Effective Reasoning About Ordinary and Extraordinary Claims* (3RD ed., pp. 256–262). Oxford: Oxford University Press.<br>Vaughn, L. (2010). Diagramming Categorical Statements. In *The Power of Critical Thinking: Effective Reasoning About Ordinary and Extraordinary Claims* (3RD ed., pp. 264–268). Oxford: Oxford University Press. | 19 | |
| | 11/9 (Thu) | **Workshop #9: Analyzing Categorical Statements** | | |
| 12 | 11/12 (Sun) | Copi, I. M., & Cohen, C. (2009). The Traditional Square of Opposition. In *Introduction to Logic* (13TH ed., pp. 193–197). Saddle River, NJ: Pearson Prentice Hall. | 6 | **Quiz #9**, and<br>Problem set #12 handed out. |
| | 11/14 (Tue) | Copi, I. M., & Cohen, C. (2009). Further Immediate Inferences. In *Introduction to Logic* (13TH ed., pp. 198–205). Saddle River, NJ: Pearson Prentice Hall. | 9 | |
| | 11/16 (Thu) | **Workshop #10: Inferences with Categorical Statements** | | |
| 13 | 11/19 (Sun) | Copi, I. M., & Cohen, C. (2009). Standard-Form Categorical Syllogisms. In *Introduction to Logic* (13TH ed., pp. 224–228). Saddle River, NJ: Pearson Prentice Hall. | 7 | **Quiz #10**, and<br>Problem set #13 handed out. |
| | 11/21 (Tue) | Vaughn, L. (2010). Sizing Up Categorical Syllogisms. In *The Power of Critical Thinking: Effective Reasoning About Ordinary and Extraordinary Claims* (3RD ed., pp. 269–276). Oxford: Oxford University Press. | 9 | |
| | 11/23 (Thu) | **Workshop #11: Assessing Categorical Syllogisms** | | |
| 14 | 11/26 (Sun) | **Review of Classic Categorical Logic (Unit #6)** | | **Quiz #11.** |
| | 11/28 (Tue) | | | **Unit exam #3.** |
| | 11/30 (Thu) | **Review for Final Exam** | | |
| | TBA | | | **Final exam.** |

# Policies

## Reasonable Accommodations

I recognize that you are a human being with occasional human problems associated with human finitude. Illness, family emergencies, job interviews, other professors, and so on will inevitably lead to legitimate conflicts over your time. If you expect that you will miss class or be unable to turn in an assignment on time, please notify me (either in class or via email) *in advance* and we can agree on a reasonable accommodation. Please recognize that most reasonable accommodations still carry a penalty: your grade on the assignment may be reduced (since you may be given more time than your classmates), or you may have to do additional work not required of your classmates. So when proposing a reasonable accommodation be prepared to state what you take to be a fair penalty for that accommodation. I will then decide whether to accept or reject your proposal. Any arrangements after the fact will only be considered in extraordinary, documented circumstances.

## Challenging an Assignment Grade

Please recognize that I am human also: mistakes may occasionally occur when grading your assignments. Therefore, you have *one week* after an assignment is handed back to challenge its grade. To do so, you must return the assignment to me along with a clearly written explanation of your reason for challenging its grade. I promptly and seriously consider all such requests and meet with you, if necessary, to resolve them. Assignments without a written explanation will not be considered. After one week, no challenges will be accepted. Of course, if you are not satisfied with your grade, I encourage you to talk with me to learn how to improve on future assignments.

## Photography & Recording Etiquette

To maintain an open academic environment I ask you to refrain from taking photographs or making audio and/or video recordings during class.

## Mobile Phones, Laptops & Related Technologies

Student interactions with portable technology devices can harm the dynamics of the classroom. Unless I tell you otherwise, you must silence mobile phones prior to class and not use them during class. *All laptops should be closed unless you have made prior arrangements with me and have demonstrated that using a laptop is necessary for your learning.*

## Students with Disabilities

In compliance with university policy and equal access laws, I am available to discuss appropriate academic accommodations that you may require as a student with a disability. Request for academic accommodations should be made during the first week of the term, except for unusual circumstances, so arrangements can be made. Students are required to register for disability verification and for determination of reasonable academic accommodations. For more information, visit

http://www.cmu.edu/hr/eos/disability/students/index.html

## Sexual Harassment Policy

It is the policy of the university that no male or female member of the university community (i.e., students, faculty, administrators, or staff) may sexually harass any other member of the community. For more information on Carnegie Mellon University's sexual harassment policy, visit

http://www.cmu.edu/policies/documents/SA_SH.htm

## Academic Integrity

Academic integrity is embodied by commitments to honesty, respect, trust, diligence, and rigor in the pursuit of knowledge. As a student in this class, academic integrity means following all directions on assignments, clearly distinguishing your own original work from the work done by others in your assignments, and seeking help whenever you are struggling. See page 7 for the academic honor code for this course.

In this class, the most common violation of academic integrity involve cheating on an exam or quiz by copying the answers from a neighbor or by using an unauthorized "cheat sheet". Exams and quizzes assess your proficiency with the skills this class conveys, so you must do them on your own. In real life, you may have a logic textbook to refer to when assessing an argument, but my goal is to train you better than that. I want you to internalize the skills that you are learning, being able to quickly and efficiency employ the tools of informal and formal logical analysis. So ultimately you should not need a logic textbook to help you. This will make it far more likely that your reading and writing skills retain their logical edge.

Furthermore, keep in mind that your lowest three quizzes are dropped and the 5-point grading scale for this course is generous. Together, all this gives you the opportunity to make mistakes and still do well—as long as you learn from those mistakes! So these should help reduce the temptation to cheat, which comes with far higher penalties.

While I treat violations of academic integrity on a case-by-case basis, there are some basic patterns I follow. When I suspect a violation, I first meet with the student for an explanation. If I remain convinced that there is a violation, I write letters to the Assistant Dean for Student Affairs and the Coordinator of Community Standards indicating that the student in question cheated on an assignment. Beyond that, I typically impose a penalty that exceeds the penalty of not having done the assignment at all. For instance, the penalty for cheating on an exam is worse than for not having taken that exam at all. Cheating on a quiz will result in a negative score that will not be dropped.

Cheating is also a violation of the community standards at Carnegie Mellon University. As such, there may be further penalties imposed by a University Academic Review Board. For more information, visit

http://www.cmu.edu/student-affairs/theword/acad_standards/index.html

http://www.cmu.edu/student-affairs/theword/comm_standards/standards.html

If you ever find yourself tempted to violate these standards of academic integrity, please seek an alternative course of action. Email me for a reasonable accommodation, or turn in partially completed work. I assure you that the impact on you will be far gentler in these ways.

# Advice on How to Succeed in this Class

For some students, this logic class can be quite intimidating. However, several of my former students claim to have "cracked" the course, figuring out how to do extremely well. Given that they earned A$^{+}$'s, I am inclined to believe them! Since I am absolutely convinced that anyone can do well in this course—provided he or she is willing to put in the hard work—I asked these students to share their wisdom and tips for success. I have collected and organized their responses below.

| Do this . . . | Don't do that . . . |
|---|---|
| Keep up with the reading. It shows the material from a different perspective. | Skip the readings, expecting to learn everything from lecture and workshops. |
| Practice the material a lot, even if it means redoing problem sets. No one can do this stuff naturally. | Expect to do well by just skimming the material before a quiz or exam. |
| Make sure you can confidently solve the last five questions of the relevant problem set before a quiz, and the relevant problem sets before an exam. | Think that because the problem sets are not graded that there is no reason to spend time on them. |
| Do easier problem set questions before workshop, and the more difficult ones after the workshop (during the weekend to prepare for the quiz). | |
| Make sure to always compare your answers to the solutions provided. If you get the wrong answer, make a note so that you don't make the same mistake again. If you don't understand the solution, seek help right away! | |
| Notice the way the professor words and organizes his answers on the slides and problem set solutions. Then you'll know precisely what he is looking for during quizzes and exams! | Just answer the questions in any old way you feel like, leaving it for the professor to figure out what your convoluted solutions indicate. |
| Always arrive to class on time. Never ever be absent. Otherwise, you miss a lot of material and it can be very difficult to get caught up on your own at home. | Miss class or show up late. |
| Treat the lecture slides like a notebook. Listen carefully to the professor and take down extra notes on the margins of your slides. Date the slides and put them in order in some kind of file/folder. This helps so much for quiz/exam preparation. | Doodle on your slides.<br>Leave your slides in the classroom for the cleaners. |
| Concentrate during class, and especially workshops, each slide has vital information it is trying to convey. | Talk with your neighbors or plan your weekend. |
| Listen to the questions others ask in class because the professor usually provides an answer helpful for everyone. | Nap while the professor is answering questions. |
| Take your time in solving the problems during the workshops, there are no prizes for finishing first. | Rush through the problems, so you can gossip with your workshop partner about your weekend plans. |
| Use the workshops as an opportunity to further practice your skills in ungraded conditions. If you finish the workshop problems early, use the extra time to practice on the problem sets. | |
| Seek help from your partner if you need it; be kind to your partner and help them do better too. | Ignore your partner, and just do all the problems by yourself. |
| Quickly look over all the questions and problems on the exam before answering them. This will allow you to identify the easy parts (where you will then start) and the hard parts (which you can save for last). | Just start answering the questions without any plan or organization, hoping that you will somehow finish it all on time. |
| If you get stuck on a problem or a question, just move on to the next one. You can always come back later and finish it. | Obsess over that one question that you don't understand and neglect to finish the rest of the quiz or exam. |
| Always try to give at least a partial answer to each question. No answer is always a 0, but a partial answer usually earns some partial credit. | Skip questions completely. |
| Save time to review your answers after finishing a quiz or an exam. There is often something you will miss! | Stare off into space once you've completed a quiz, or bolt from the room immediately when done with an exam. |
| If you have any questions or concerns, see the professor or the CAs. | Think you are too busy or proud to seek help. |
| Seek help right away when you encounter any area of weakness. Concepts build upon each other, so ignoring a problem initially will only make you more confused later. | Think you can just get help the morning before the exam. |
| Remember you are not a robot and that there are exceptions to every rule. | Memorize everything without understanding the underlying concepts. |
| Have fun! Everyone is initially scared of all the symbols and arrows, but being scared is not going to help you learn any better. | Moan and groan about how hard the material, the class, the professor, the CAs, your parents, the world, and so on, is on you. Post these complaints on Twitter, where your professor and CAs will see them. |

# Academic Honor Code for Critical Thinking

## The Carnegie Mellon Code

Students at Carnegie Mellon, because they are members of an academic community dedicated to the achievement of excellence, are expected to meet the highest standards of personal, ethical and moral conduct possible.

These standards require personal integrity, a commitment to honesty without compromise, as well as truth without equivocation and a willingness to place the good of the community above the good of the self. Obligations once undertaken must be met, commitments kept.

As members of the Carnegie Mellon community, individuals are expected to uphold the standards of the community in addition to holding others accountable for said standards. It is rare that the life of a student in an academic community can be so private that it will not affect the community as a whole or that the above standards do not apply.

The discovery, advancement and communication of knowledge are not possible without a commitment to these standards. Creativity cannot exist without acknowledgment of the creativity of others. New knowledge cannot be developed without credit for prior knowledge. Without the ability to trust that these principles will be observed, an academic community cannot exist.

The commitment of its faculty, staff and students to these standards contributes to the high respect in which the Carnegie Mellon degree is held. Students must not destroy that respect by their failure to meet these standards. Students who cannot meet them should voluntarily withdraw from the university.

## Student Responsibilities

An important purpose of this course's academic honor code is to prevent any student(s) from gaining an unfair advantage over other students through academic misconduct. Academic misconduct is any act that does or could improperly distort student grades or other academic records. Such acts include the following:

- Possessing, using, or exchanging improperly acquired written or verbal information in the preparation of any examination or other assignment included in the course;
- Substitution for, or unauthorized collaboration with, another student or person in the commission of course requirements;
- Submission of material that is wholly or substantially identical to that created or published by another person or persons, without adequate citations; and
- False claims of performance or work that has been submitted by the student.

While these acts constitute assured instances of academic misconduct, other acts of academic misconduct may be defined by the professor as necessary.

Each student in this class must also sign an honor agreement affirming their commitment to uphold this honor code. This agreement may reappear on assignments to remind students of their responsibilities.

## Faculty Responsibilities

The course instructor is expected to create an environment where honesty flourishes. In creating this environment, the professor is expected to do the following:

- Make known to the class as specifically as possible what constitutes appropriate academic conduct as well as what comprises academic misconduct;
- Avoid the reuse of old quizzes and exams;
- Create different copies of the same quiz or exam; and
- Include a section containing the academic integrity policy in the course syllabus.

The course instructor is also expected to provide clarification to any student questions concerning any of the above.