CS15 2018 Course Missive

1 Introduction

Welcome to CS15, Introduction to Object-Oriented Programming and Computer Science! CS15 is a standalone course that focuses on introducing students to computer science (CS) through object-oriented design and programming in the Java language. Object-oriented programming is a widely-used paradigm in modern CS, focused on writing modular and reusable code.

The course covers methods and parameters before moving on to objects and classes, and the powers of inheritance, interfaces, and polymorphism. Object-oriented programming is then used to teach simple 2D graphics and graphical user interfaces, and the course finishes up with an overview of basic data structures such as arrays, array lists, stacks, queues and trees, and other important topics in computer science.

CS15 meets Fall semester on Tuesdays and Thursdays from 2:30 pm to 3:50 pm in DeCiccio Family Auditorium (Salomon 101). It is taught by Professor Andy van Dam with the assistance of 46 Undergraduate Teaching Assistants (UTAs), led by a team of 4 undergraduate Head TAs (HTAs). There are no prerequisites for CS15 and the course expects no prior programming experience and no math beyond basic algebra.

Anyone considering a concentration in Computer Science or contemplating taking other courses in the CS department may also wish to consider CS17 as a gateway course. Click here to see a comparison of the various introductory Computer Science classes offered at Brown

for both concentrators and non-concentrators. If you decide to continue in Computer Science after taking CS15, you will continue with CS16 in the spring.

1.1 Initial Mechanics

For CS15 internal registration, if you are even considering taking the course, we need you to register on banner before the first lab section so that you can be given a Brown CS account. If you are a RISD student or a graduate student interested in taking the course, you must email the HTAs at cs0150headtas@lists.brown.edu in order to complete this process (preferably before the first day of class or before midnight of that day).

You will need to complete the Collaboration Contract before handing in the first homework. If you have concerns about registration or if you miss the introductory section, please see the HTAs as soon as possible to ensure you obtain a department account.

CS15 is essentially a "laboratory course." The material can only be learned by doing the assignments. Therefore, audit credit is only given for students who complete the assignments up to and including Tetris. Just attending lectures is considered "vagabonding", not auditing. Anyone intending to audit must identify themselves to the HTAs by the add/drop deadline.

1.2 Commitment to Diversity and Inclusion

We want to stress that CS15 welcomes *everyone*. As an introductory CS course, CS15 can be very demanding and challenging for students. There may be additional barriers for students belonging to underrepresented groups in CS, and while we are trying our hardest to remove these (i.e., to be as inclusive to students as possible), we may not catch every systemic issue. We want *all* students to know that you shouldn't suffer in silence and should reach out if you feel the course or its policies are preventing you from succeeding or simply if there's something you think we can be doing better.

Our TAs have been trained to promote inclusivity but if you feel you have not been treated equitably by someone on the course staff, please contact either the HTAs, Prof. van Dam (the instructor), Ugur Cetintemel (Dept. Chair), Tom Doeppner (Vice Chair) or Laura Dobler (diversity & inclusion staff member).

We will also not tolerate any harassment or differential behavior between students based on race, gender identity, sexuality, ability, class or any other protected identity. What may seem like a harmless joke or comment can in fact contribute to someone feeling like they don't belong and turn them away from the field entirely. You, as a student, have the power to help make people feel included or excluded.

2 The Staff

2.1 The Professor

Professor Andries van Dam, known as Andy, has been at Brown since 1965. He helped start Computer Science at Brown and was the department's first chairperson. Andy is very informal and strongly encourages student feedback and class participation. His office is Room 465 of the CIT, and he will be holding office hours with the HTAs on Monday afternoons. These are not a replacement for TA hours but are for students to get to know their professor.

2.2 The TAs

Visit the staff page on the website to see this year's TAs. The TAs — all of whom are undergraduates at Brown who have done well in the course in prior years — have three main functions:
1. They evaluate and give critical feedback on your assignments.
2. They hold hours (and maintain a [Piazza](#) forum) to answer your questions. They are there to help with concepts or assignments, for clarification of points brought up in class and general questions about Java, the assignments, object-oriented programming, how the class is run, and computer science as a whole. You are strongly encouraged to get to know TAs, to seek help and advice from them, hear about their own struggles in the course, etc.
3. They lead weekly 90-minute sections.

All TAs grade programs, hold TA hours, lab, and section, and have other assorted duties. The HTAs (who were TAs in previous years) are responsible for the organization and administration of the course, and work closely with Andy on all aspects of the course. They also supervise the TAs in grading programming assignments to ensure consistent grading, which is aided by detailed rubrics for each assignment that discuss common mistakes as well as if and how to deduct points for them. See also section 6 on Grading.

3 Course Material

All course materials can be found on the course website (cs.brown.edu/courses/cs015). Slides for the lectures are released the day before, and recordings of the lectures are posted the following class. Assignments and labs are also posted on the site when they are released. Piazza, our online Q&A forum, will also be updated regularly with assignment clarifications and pinned posts relating to frequently-asked questions.

3.1 Lectures

CS15 lectures are Tuesday and Thursday, 2:30pm - 3:50pm. You are expected to attend all class hours. A copy of the lecture slides will also be accessible online, from the CS15 homepage. You are responsible for everything said in class.

In case you do need to miss lecture, there are ways of catching up. In particular, you can use the CS15 website to download Andy's notes and the lecture recording for every lecture.

The course uses iClicker quiz questions to allow students to actively engage with material during lecture. These questions can be answered online or using an app, both of which are available on the [iClicker website](). You will need access to one of these by the second lecture. If you are unable to use either method, you can pick up an iClicker device from the IT Service Center on the 5th floor of Page-Robinson Hall. iClicker responses will be graded on a 0-3 scale, where a correct response receives 3 points, an incorrect response 2, and no response 0. These responses will, in total, be worth 5% of your grade. The scores from your lowest 6 lectures will be dropped and not included in your final grade.

3.2 Handouts & Emails

We post most of the handouts and course materials on the website and the TAs will also send out emails containing useful administrative information and assignment clarifications to the class email list.

Just as you are expected to keep up with course readings in literature courses, so too are you expected to keep up with course materials and communications in this course. Please read everything thoroughly because much of it is essential to your success in this course.

3.3 Projects

CS15 has 7 programming assignments throughout the semester, culminating in a final project. The last 5 projects will include a required design discussion which will meet during your weekly section time.

3.4 Homeworks

CS15 also has 2 written homeworks at the start of the semester to help solidify lecture topics. These must be typed and handed in as a PDF. Like projects, homeworks must be submitted electronically through a handin script (which you will learn about). If PDFs are emailed to us instead of handed in properly through the handin script, we will deduct 25% if emailed prior to the deadline, and give no credit if emailed after the deadline.

4 Section

Sections will alternate between design discussions and labs. One week you might have a design section, the following week you might have a lab section, and so forth. The section schedule is as follows:

Week	Dates	Lab or Section

Week 1	9/5 - 9/8	N/A
Week 2	9/9 - 9/15	Welcome Section
Week 3	9/16 - 9/22	Lab 1
Week 4	9/23 - 9/29	Lab 2
Week 5	9/30- 10/6	Fruit Ninja Design and Debugging Section
Week 6	10/7 - 10/13	Lab 4
Week 7	10/14 - 10/20	Lab 5
Week 8	10/21 - 10/27	Doodle Jump Design Section
Week 9	10/28 - 11/3	Lab 7
Week 10	11/4 - 11/10	Tetris Design Section
Week 11	11/11 - 11/17	Data Structures and Algorithms Design Section
Week 12	11/18 - 11/24	N/A
Week 13	11/25 - 12/1	Final Project Design Section

The section TAs will reach out to their sections at the beginning of each week to remind them of which type of section will be held. The time of your section as well as the TAs and students that you are with during section will not change; however, the physical location of the section might vary depending on the type of section (ex: your lab section might be held in the SunLab at 1:00 pm on Thursdays and your design section might be held in Sayles Hall at 1:00 pm on Thursdays).

4.1 Lab Section

CS15 includes 5 mandatory 90-minute lab assignments. In lab sections, students will complete small programming assignments collaboratively with other students in their lab section, as well as with TA support.

Labs are designed to provide an environment where students can practice coding in Java and using Linux machines with the supervision of their section TAs. They will review lecture concepts and allow you to practice applying them. In addition to programming and Java syntax, labs will include topics such as good program design, debugging tools and skills, and basic algorithms.

To get credit for a lab, you must complete the assignment and get it checked off by a TA during your lab section. If you do not finish a lab by the end of your lab section, you may finish on it on your own and ask a TA to check you off *within the first 15 minutes* of your next section. Attendance will not be taken weekly; as long as you are checked off at the beginning of the following lab section, you will receive full credit. Otherwise, you will receive no credit.

If you cannot attend the lab section that you are signed up for, you must email both your lab TAs and the TAs of the lab into which you would like to switch. You must obtain this permission before the start of each week's labs — meaning before the Tuesday of each week.

All labs will meet in the Sunlab (CIT 143), on the first floor of the CIT. The Sunlab is also one of the spaces available for you to work on your assignments, and is filled with CS department Linux machines.

4.2 Design Section

There will be a 90 minute design section for each assignment, starting with FruitNinja. Cartoon, as it is a project with looser requirements, will have a required 20 minute individual check-in with one of your section TAs instead of a group discussion. Design sections will help students prepare for projects with TA-led discussion of design options and tradeoffs, as well as exploration of relevant concepts. It will also be an opportunity for students to ask TAs clarifying project and conceptual questions. Each section will be comprised of two TAs and around ten students.

50% of the design section grade will be based on participation in the discussion; the other 50% will be based on a written mini-assignment, which will be handed in before the discussion. Mini-assignments are not very time-intensive and will prepare you for the discussion. They will be due at midnight on the Monday before each discussion section and can be found on the website along with more detailed deadlines. These are graded similarly to homeworks; you will not receive credit for your mini-assignment if it is not handed in on-time.

5 How to be Successful in CS15

While CS15 is challenging, there are many things you can do to stay on top of the work for the course.

5.1 TA Hours

CS15 is unusual both in the amount of day-to-day work involved and in the amount of personalized help available. With one TA for approximately every 8 students, this course offers a great deal of help to those who use the TA system wisely. In particular, we offer nearly 200 TA hours per week where you can get one-on-one help.

Read our TA hours policies (mandatory reading) for information on how to go to hours and a few important [policies we have for TA hours](#).

Please keep in mind that it is not acceptable to ask a TA a course-related question outside of their regularly scheduled hours, labs, and sections. Follow common sense and do not ask a TA to do your work for you, and make sure to look through handouts, lectures, emails, and Piazza posts before asking questions that might be answered there.

If you have concerns about the class, or are thinking about dropping it, we encourage you to talk to a HTA first. Learning to program can be overwhelming at first, so sometimes that little extra help can make it all click. If you cannot make one of their TA hours, feel free to set up an appointment by emailing the HTAs.

5.2 Piazza

Piazza is an online Q&A forum where students can ask questions and get answers from TAs. We encourage you to use Piazza in a similar manner as TA hours—to ask general concept-oriented questions as well as clarifying questions for assignment specifications. Piazza will function as a place to crowdsource common questions for the benefit of the entire class.

Refer to the Collaboration Policy for guidelines on using Piazza. Instructions on accessing the site will be sent out in the first week of class.

5.3 Help Slides

For most projects, help slides will be posted on the website with useful tips and hints for the project. These will be released after the start of the project, in many cases after the last design discussion, and will often contain important information about project design or implementation.

TAs may also offer optional help sessions for miscellaneous computer science topics, for example, how to work locally from your laptop.

5.4 The Pace: Keeping Up

In general, CS15 and other programming courses require that you start working consistently from the time an assignment is handed out. This will prevent you from getting paralysed by unexpected bugs, hardware or software problems, a crowded lab, or long lines at TA hours. TA hours have reasonably short waits until the last days before an assignment is due. Long lines are typically the result of students waiting too long to get started on an assignment and not allowing for lost time due to chasing and fixing non-trivial bugs.

STARTING EARLY IS THE KEY TO SUCCESSFUL PROGRAMMING.

Assignments are closely spaced, and each assignment uses concepts from previous work. This makes it very difficult to fall behind on one assignment and still complete the next one. We will rarely give extensions and only for truly extenuating circumstances such as medical or family problems; **the pressure of other courses is not one**. We will grant extensions or incompletes in the course only if formally approved by a dean.

Because assignments are released many days to weeks in advance of deadlines, we won't grant exemptions for religious holidays. We will do our very best to get assignments released sufficiently early so that those of you who will be away or unable to work can still meet the deadline.

6 Grading

Your grade in this course will be based solely on your performance on the assignments, as there are no tests, quizzes, papers, or final exams. Assignments are weighted, with the more difficult and important assignments due later in the semester. In order to receive a grade on an assignment, your handin must meet our specifications for submission — for homeworks, this means a PDF submitted through our handin script, and for projects, this means Java code that compiles and runs on department machines. Once your work has been graded by a TA, with supervision from the HTAs, you will receive a grade report, with comments, by email.

6.1 Grade Complaints and Late Work

Any questions or complaints regarding grading must first be addressed to the TA who graded your particular assignment, by email or at their hours. No other TA can answer questions pertaining to your specific grade. If you are unable to resolve an issue with a TA, you may take your concerns to the HTAs, and then to Andy if your problem is still not resolved. On a related note, TAs who graded you are happy to discuss your programs with you further at their hours, after they have been graded.

You should not be overly concerned with initial grades, which are weighted very low in this course, but we encourage you to seek out help if a trend of low grades continues.

6.2 Minimum Functionality Requirement

To pass CS15, you must complete each of the 7 programming projects with at least "minimum functionality" (MF), meaning you'll have to hand in an acceptable version by the end of the semester. Requirements for meeting MF for each project are detailed on each project handout. If you do not meet MF the first time (you will be notified when grades are sent out), you will

have to re-submit a working version by the end of the semester to pass, even if your absolute grade is high enough to pass (you must obviously also have a passing final grade to pass the course). Note that only meeting MF requirements will not be enough to earn full credit on a project.

6.3 Grading Standards

As we stated before, your final grade will be based upon assignment and section scores. Cutoffs will not be determined until the end of the semester. Grades are not based on a "curve" and the vast majority of grades are A. If you are on the borderline between letter grades, Andy will take into account in assigning your final grade whether you have consistently handed in assignments and answered iClicker questions, a general upward trend throughout the semester, and a strong finish. To reiterate: in addition to these grades, students will receive course credit only if they submit minimally functional versions of all assigned projects.

Your grade for a particular assignment is determined by how well it meets the standards set in the course and the assignment specifications, not simply by whether or not it works. Part of the art of programming involves a structured, disciplined approach to solving problems. Conventions for programming are stated explicitly in the CS15 Style Guide and in lecture slides through examples. For each project, a large part of the grade will be based on design and style.

The table below shows the approximate relative weight of each assignment used in calculating the final grade. The weights may change slightly over the semester.

Assignment - Weight
HW1 - 1%
AndyBot - 2%
HW2 - 1%
LiteBrite - 5%
Fruit Ninja - 8%
Cartoon - 10%
DoodleJump - 13%
Tetris - 18%
Final Project - 25%
Sections (Labs and Design) - 12%
iClicker - 5%
Total - 100%

6.4 Early Handin Incentive

Students who hand in their projects by the "Early Deadline" listed on the handout will receive extra credit worth 2 points on the final grade of the assignment.

We will only count the last handin that you submit. If you hand in early and then revise your program and hand in on time or late, your early handin will be ignored.

Early hand-ins are not expected as "normal" so don't feel pressured into doing them; we would much rather see a well-designed, fully functional on-time hand-in than an early one that is not up to this standard.

Note: Programming assignments that are not submitted through our electronic handin script will receive no credit.

Written homeworks and AndyBot do not have early deadlines.

6.5 Extra Credit

Those of you who may have extra time and a strong interest in computer science are welcome to augment your **already working** programs with extra credit extensions. Later project handouts will include a list of possible extra credit extensions that you should keep in mind when designing your programs (but you can invent your own, too). Extra credit is only to be done after the original assignment has been fully completed - if you have not met the requirements, you will not receive extra credit. Extra credit may not redefine the original assignment. Additionally, priority is given at TA hours to students trying to complete minimum functionality. Do not expect to be seen for extra credit questions at busy times.

Make sure to document anything you believe is extra credit in your README. Extra credit is capped at 10 points per project.

6.6 Late Policy, Extensions, Incompletes, and Complaints

For written assignments, our late policy is that no handins will be accepted after the due date printed on the assignment. There are no "late days" for these assignments.

Our late policy for programming assignments is as follows:

- Most projects have a "late deadline," posted on the assignment handout on the website. Programs handed in after the due date but before the late deadline will be penalized 8% of the possible points for that assignment. (A late submission of a program that would have received 94 out of 100 points would instead receive 86 points.) They will also not be eligible for extra credit.
- You are entitled to one "free" late pass during the semester. The late pass allows you to turn in one program by the late date without penalty, though you will still not be eligible for extra credit on the assignment. Note that you CANNOT use your late pass on the final project. At the end of the semester, we will apply your late pass to the program for which it will be most beneficial to your grade.

- Anything handed in after the late deadline will receive an NC. Late passes will not be accepted.
- Assignments without a late deadline must be handed in by the regular deadline, otherwise they will receive an NC.

All due dates in this course will be rigorously enforced according to the mechanics described above. If you need an extension on an assignment for medical reasons or other circumstances beyond your control, you should contact the HTAs as early as possible before the assignment is due. No extensions will be granted on the day a program is due, barring a dean's note. We will only grant extensions due to sickness, injury, or serious personal or family problems. If you feel uncomfortable discussing the exact circumstances with an HTA, please email Andy who may want to see you in person. We also require an official note (in email) from Health Services, your doctor, or a dean.

Incompletes in the course will only be given to a student if they have formal permission from a dean.

If at any time you have complaints about policy or feel you have been treated unfairly, by all means, contact an HTA. If the HTAs are unable to resolve your problem, please feel free to see Andy about what's bothering you. We know we have a lot of policies, and they all have reasons behind them, so please ask us if you don't understand why we have a certain policy.

6.7 Retake Policy

We offer a retake option for those who do not pass the course. You can find it here (link).

7 Collaboration

Please read our Collaboration Policy carefully and be prepared to complete the Collaboration Contract in your first lab. This policy is **extremely important**; read the document in its entirety to make sure you understand our policy and to minimize your chances of breaking it.

8 Graduate Students

We welcome graduate students in CS15. Per the policy of the graduate school, such students must complete additional portions of each assignment in order to receive credit for the course. In CS15, this means that graduate students must complete at least 4 of the suggested "Bells and Whistles" options on each assignment after Fruit Ninja. Note that the "Bells and Whistles" policy for CS15 (section 6.5) still applies to graduate projects: you must still turn in a functional project to receive credit. You should also expect that at hours, TAs will prioritize questions about achieving minimum functionality, not adding "Bells and Whistles".

9 Changes and Feedback

CS15 is a constantly evolving course. Changes are made every year in order to adapt both to technological advancements, which are inevitable in the field, and to student concerns and needs. We will email out several surveys throughout the semester, and we really appreciate your constructive criticism on any topic. In short, if you don't tell us, we will assume everything is just fine, which may not be an accurate impression - so if you have any problems, please speak up!

10 CS15 is "Intense Fun"

Yes, our course is a lot of work but we hope you'll agree with us that it is also immensely satisfying to learn how to craft programs that work and can benefit and amuse both the creator and other potential users. You'll have a chance to exercise your creativity in concrete ways to create usable artifacts, an invaluable skill. We hope that you have a great time creating fun (and well-designed) games and enjoy the course! We are so excited to meet all of you, help you through CS15, and perform skits for you all. Every member of the staff has had fond memories of taking this course, so we wish you just as enjoyable a semester as we had! See you all in class :)