Introduction to Computer Programming (Java I)

CS 1323-020

Andrew H. Fagg
Symbiotic Computing Laboratory
University of Oklahoma

Teaching Assistant: Sarah Otts

What is Computer Science, Anyway?

What is Computer Science, Anyway?

Computer Science is the art/process of designing and implementing logical procedures for solving computational problems

What is Computer Science, Anyway?

Computer Science is the art/process of designing and implementing logical procedures for solving computational problems

What is Computer Science, Anyway?

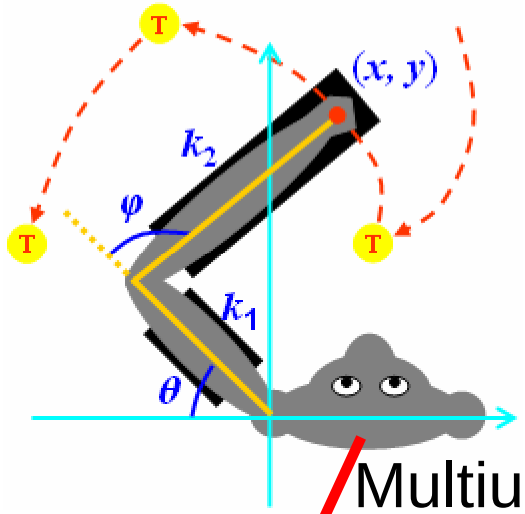
Computer Science is the art/process of designing and implementing logical procedures for solving computational problems

Problems that require the manipulation of information

Brain-Machine Interfaces

Estimate of intended movement

Command prosthetic arm



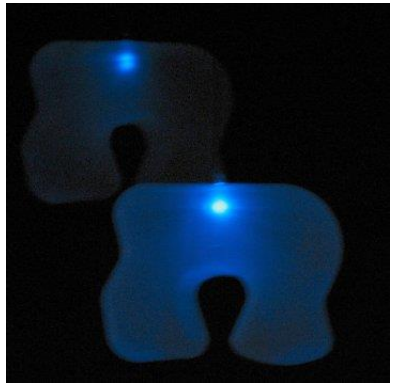
Multiunit recording

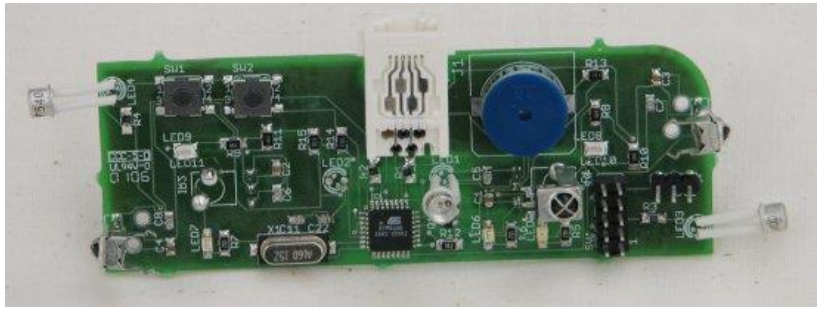
Predictive model

In collaboration with Nicholas G. Hatsopoulos and Lee E. Miller

Distributed Art

1000 sensor nodes





In collaboration with Adam Brown

Robotic Crawling Assistant for Infants at Risk for Cerebral Palsy

- Robot assistant: helps to support and transport the child
- Kinematic suit:
  - Capture limb and trunk positions
  - Recognize crawling-like movement patterns in real time
- Brain imaging:
  - Understanding what/how brain regions are involved in problem solving and movement
  - Understanding how the brain changes with development

Tools of Computer Science

Tools of Computer Science

- Mathematics
- Logic
- Physics
- Human perceptual and cognitive models
- Computer architectures
- Algorithms

…

- and Programming

Course Goals

At the end of the semester, you will be able to:

- analyze simple computing problems, and identify and define the requirements appropriate to their solution,
- design, implement, and evaluate a program to meet desired needs, and
- apply design and development principles in the construction of programs of varying complexity.

My Assumptions about You

- Some prior experience with a programming language (but not necessarily Java)
- Everyone has a laptop (per College of Engineering requirements)

Those with Substantial Java Experience…

E.g.:

- 1-semester of Java in another college program
- CS AP credits

… You should probably be taking CS 2334 instead of this class. To do this, you must take the 2334 placement exam:

- Location: Advance Standing Office at Cross-Main (325-1208)
- $25/credit (some scholarship recipient)
- Grading is very quick

Resources

- Course web page: http://www.cs.ou.edu/~fagg/classes/cs1323
  - Syllabus, schedule, assignments
- Top Hat: interactive class exercises & discussion board
- Turing's Code: on-line, interactive programming exercises
- Desire to Learn (D2L): announcements, discussion board, grade book
- Textbook: Java Programming: From the Ground Up (Bravaco and Simonson; McGraw-Hill, 1st edition). Electronic copy can be rented at CourseSmart.com
- Eclipse Interactive Development Environment (IDE): projects

Great news!

You're using Top Hat this term!

Top Hat is a classroom response system that allows users to participate in class polls, quizzes, discussions, and more using their own devices.

With Top Hat you won't need to purchase any new hardware, you can simply submit responses using your laptop, web-enabled smartphone, tablet, or cell-phone with text messaging.

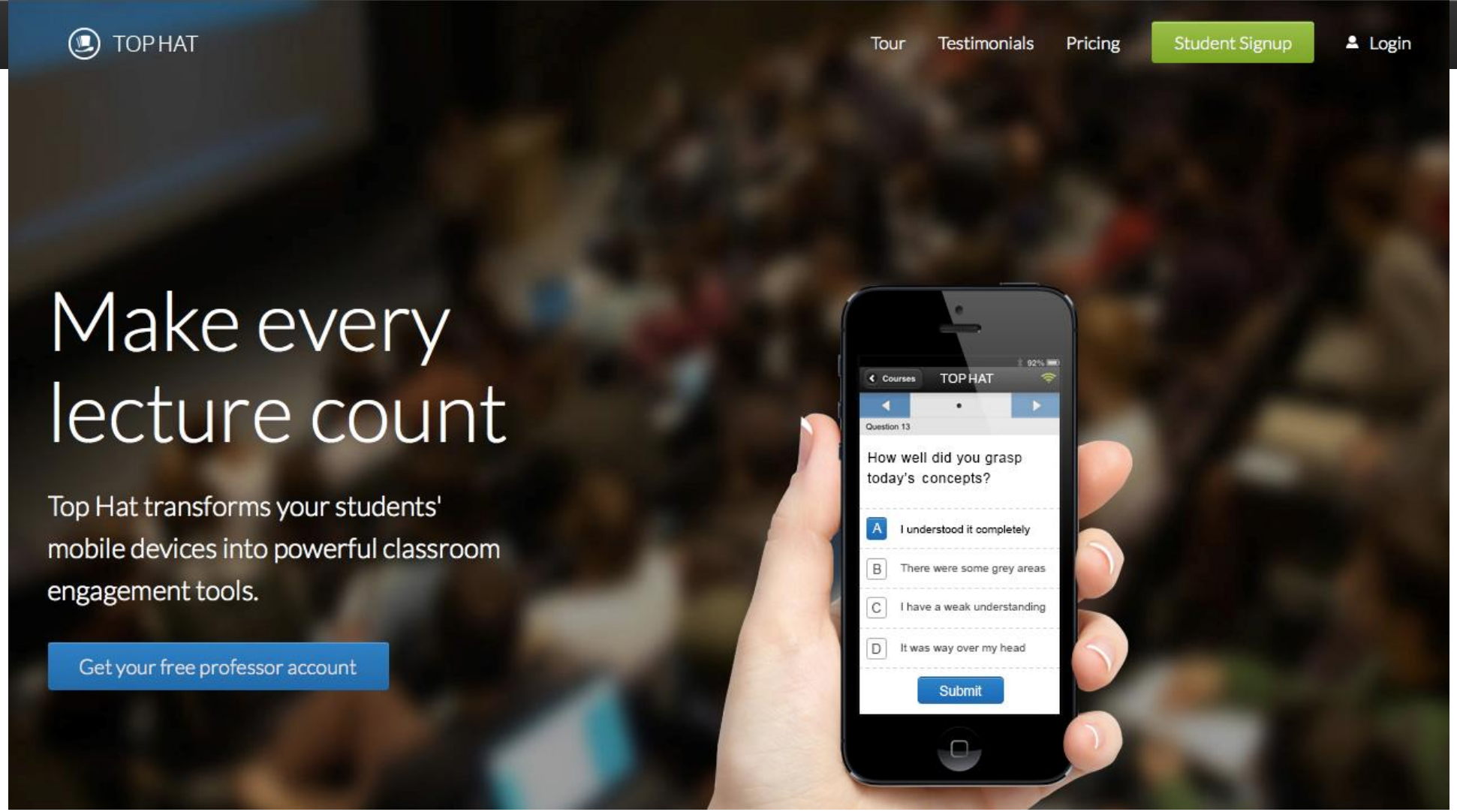
We're here to change your lecture experience!

Now, let's get you set up…

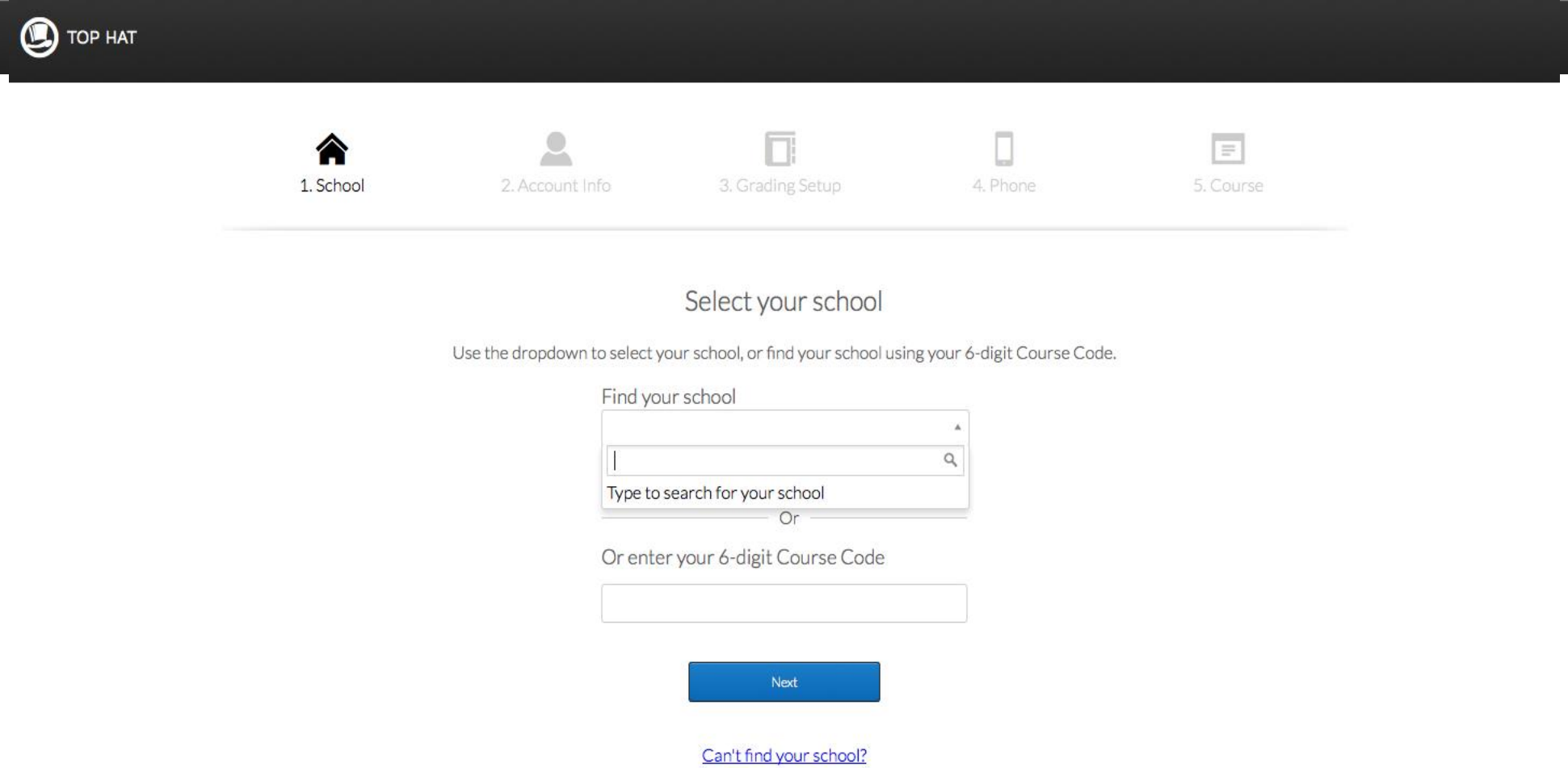
Registering your Top Hat Account

What you'll need to get signed up

- About 5 minutes of your time.
- A computer with internet access.
- One of the following:
  - A credit or debit card
  - A subscription code purchased from the bookstore or included with your textbook (if applicable).
- Your Student ID or other identifier used for grading.

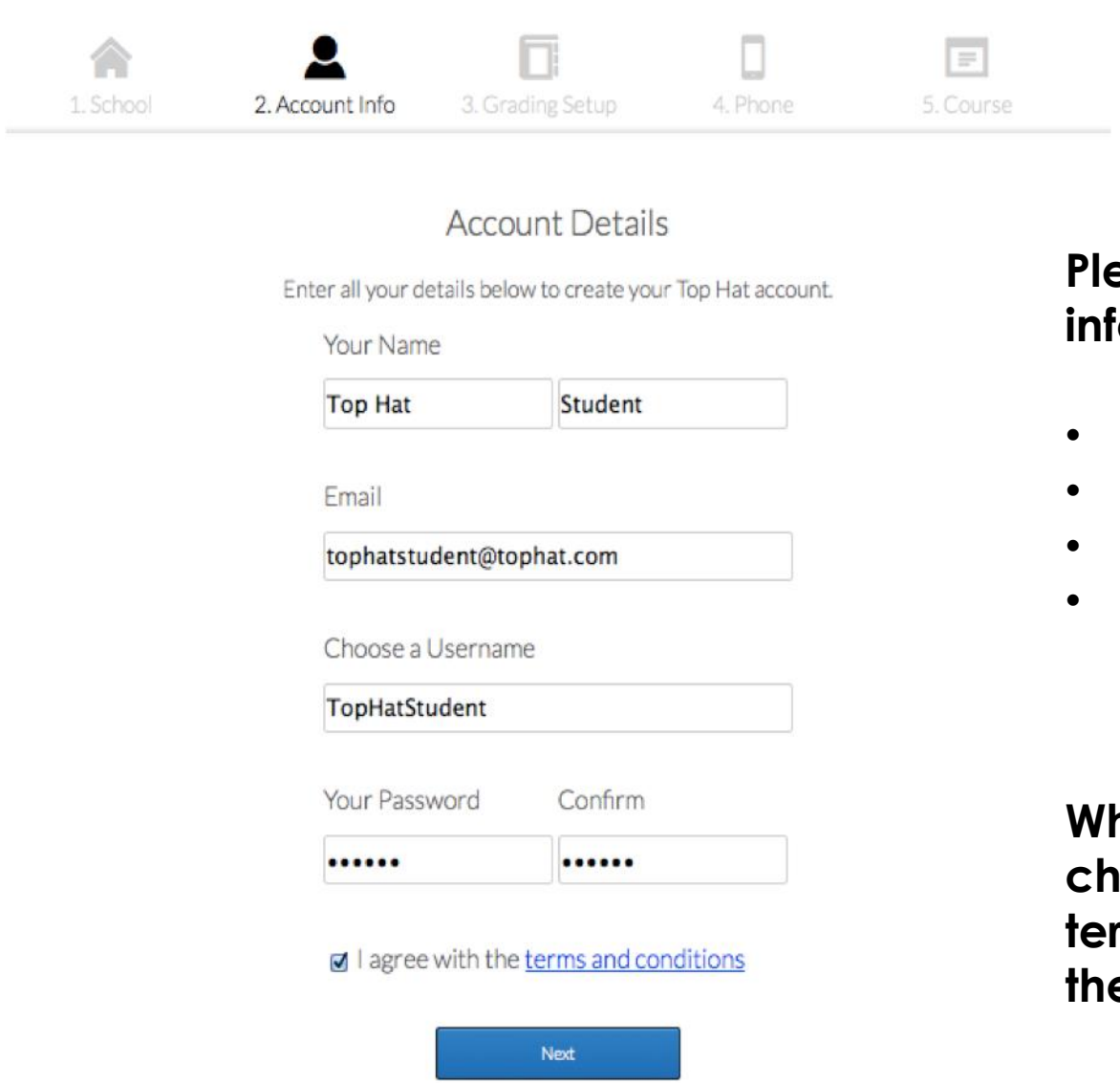


Open a web browser and navigate to www.tophat.com, then click the Student Signup button to get started.



- **Select your school from the list or enter the Top Hat course code provided by your instructor. The six-digit Top Hat course code can be found at the end of the web address for the course page.**

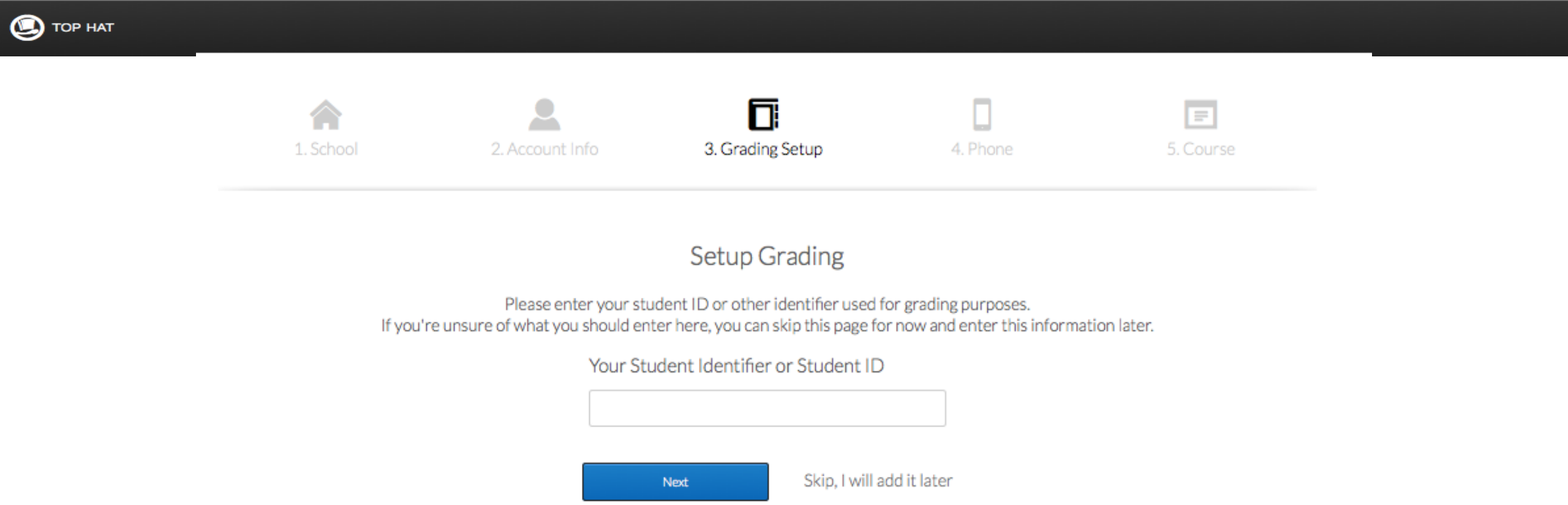
- **Our Course Code: 613731**



Please enter the following information:

- **Your Name**
- **Your University Email address**
- **Select a unique username**
- **Enter a password and confirm that you've entered it correctly.**

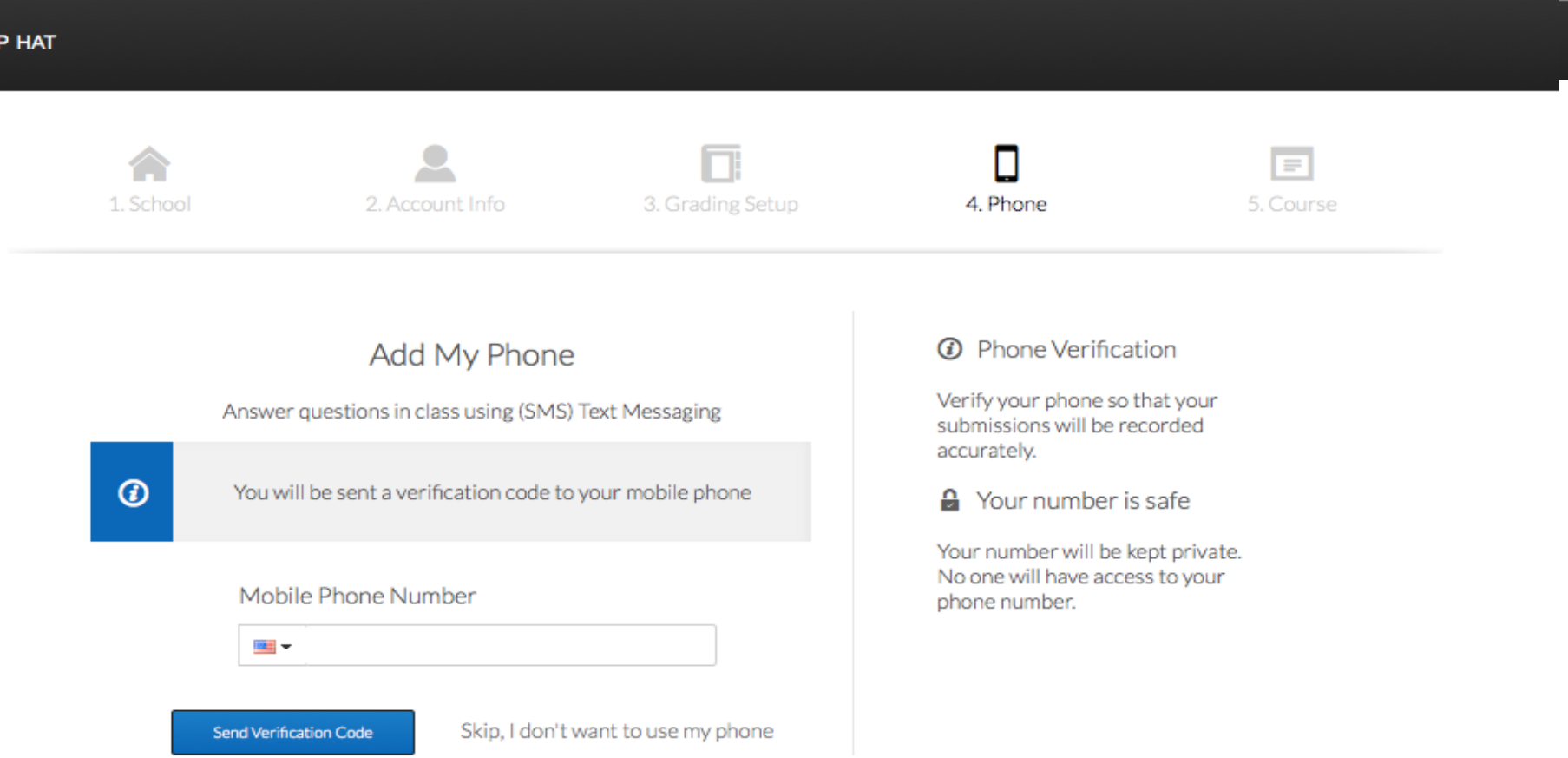
When you're finished, please check the box to agree to the terms and conditions, then click the Next button.



Enter your university Student ID (starts with “112”).

If you’re unsure of what to enter here, you can skip this page and change the information later by visiting your My Account page.

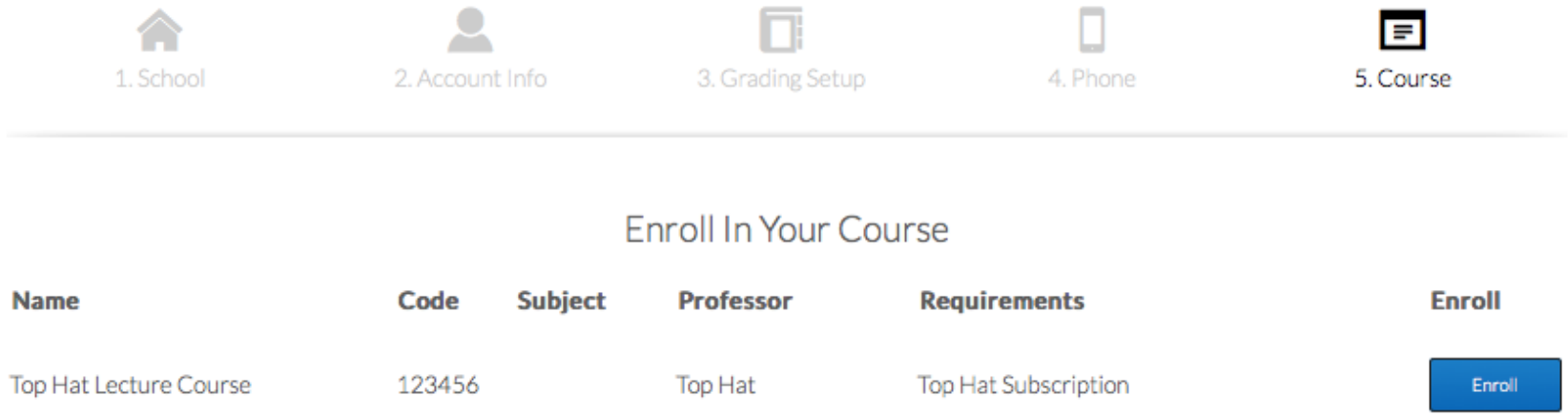
Once you’ve entered your Student ID, click the Next button to continue.



If you plan to use your cell phone to send text message responses, please enter your phone number beginning with the area code.

You will receive a verification code shortly that to confirm that your phone has been properly linked to your account.

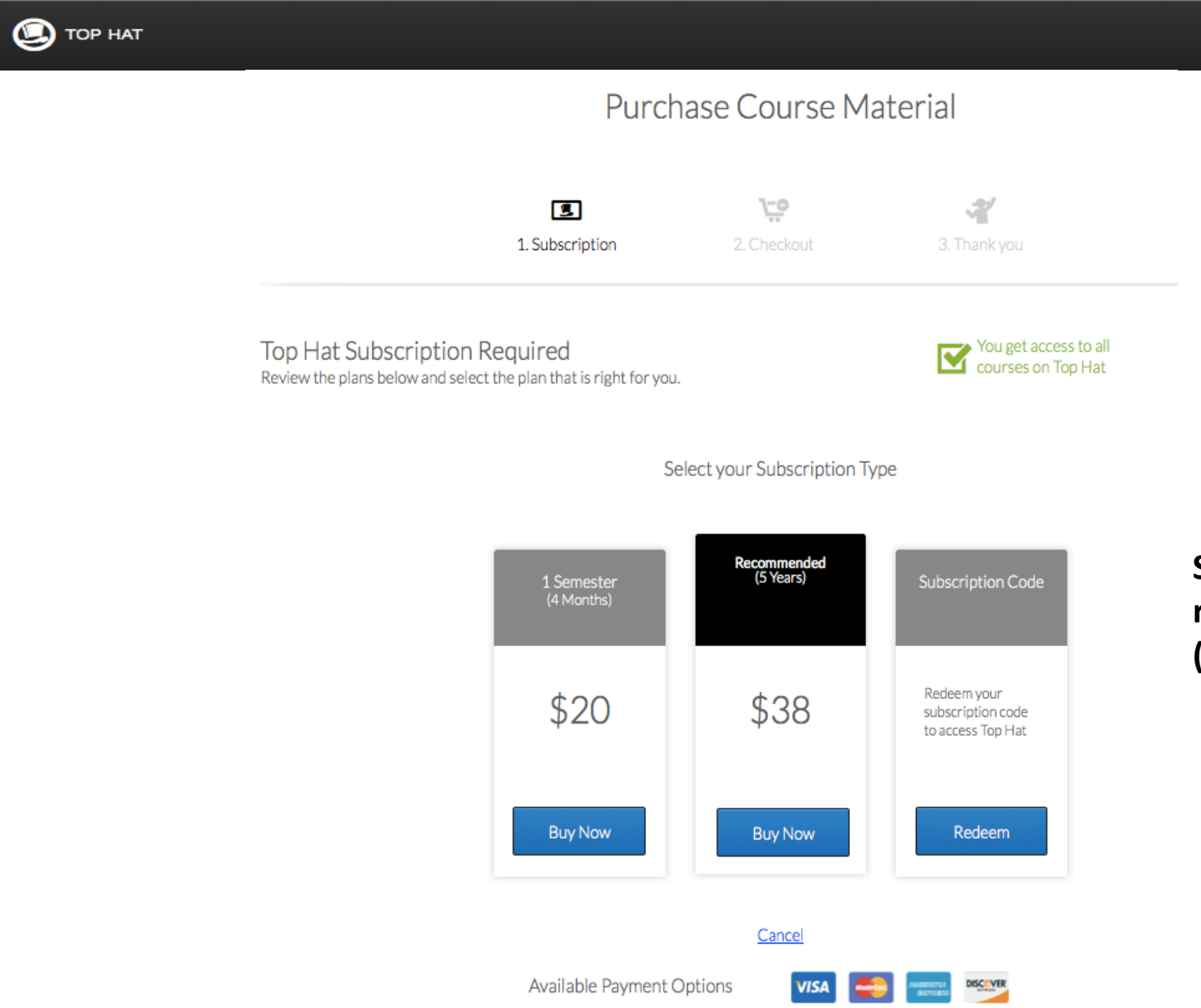
Enter the code that you receive and click the Next button.



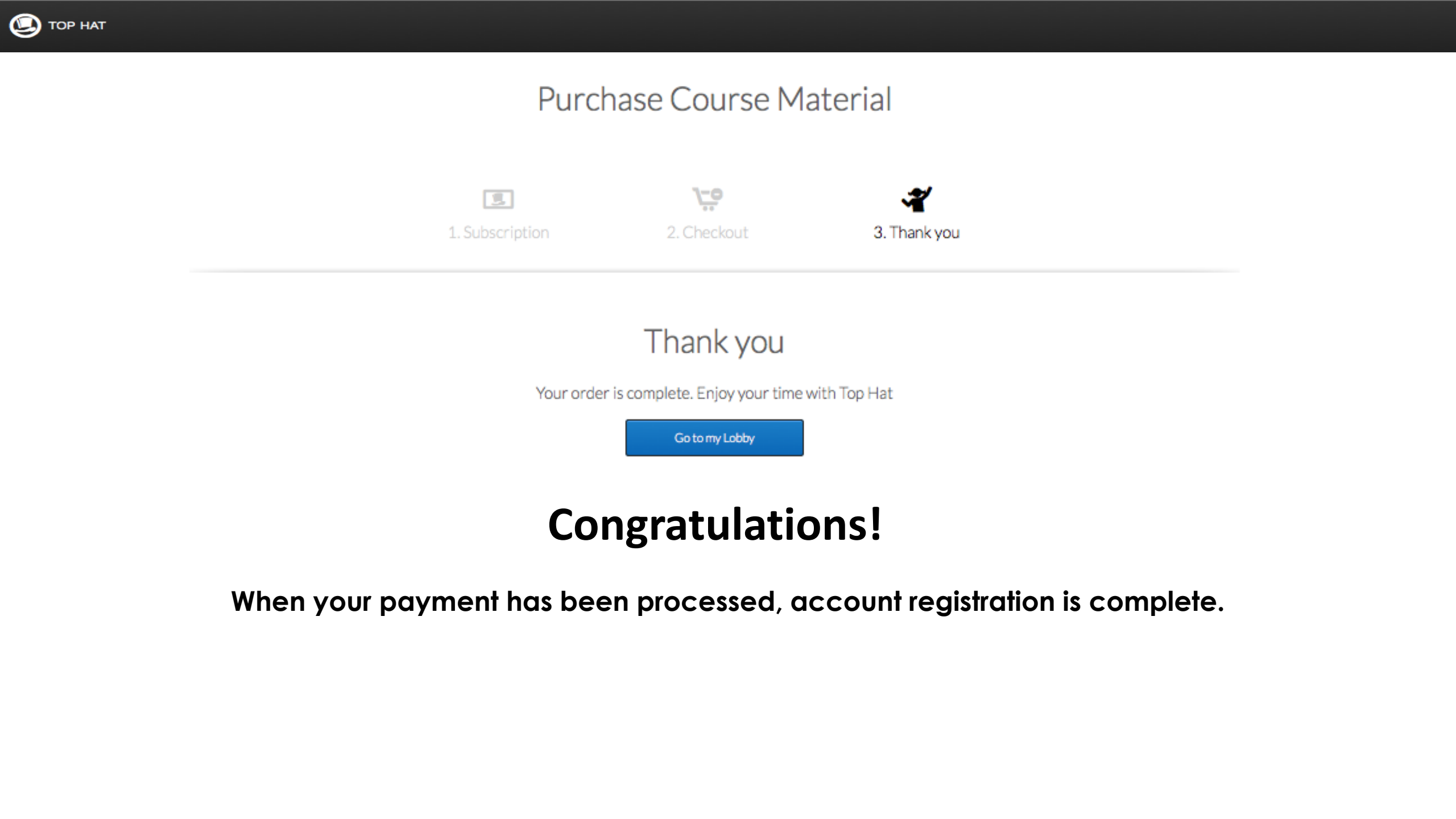
Select your first course from the list and click the Enroll button.

If you need to add more courses later, you select them in the Lobby.

If you're unable to find the course you're looking for, please email support@tophat.com



Select your Subscription Type or redeem your Subscription Code (if applicable)



Congratulations!

When your payment has been processed, account registration is complete.

Need help? We can take care of that!

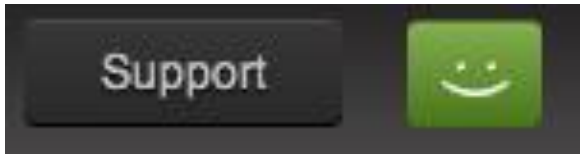
If you run into any trouble, don't bug your professor about it. We'll get you sorted out.

Here's how to reach us:

email: support@tophat.com

http://support.tophat.com

Or click the support button:



You're all set! Now grab your devices, class is in session!

Our Use of Top Hat

- Attendance (this week)
- Quick in-class exercises
  - Grading: component for participation & a component for correctness
- Dynamic feedback on the lecture
- Parallel discussion moderated by our TA
  - Some questions will then be addressed in the lecture

Turing's Craft

- Interactive programming exercises
- We will use this for homework assignments
- $25 subscription fee for the semester

Turing's Craft Registration

1) Go to www.tcgo1.com OR www.tcgo2.com
2) Click "Register for CodeLab"
3) choose "I am a student in a course ..." and click CONTINUE
4) enter the Section Access Code:

   OKLA-15604-CFHZ-22

   and click CONTINUE
5) continue filling out the forms being careful to enter
   a VALID email address and first and last names
   (these will appear in the professor's roster)

Software Installation: Eclipse IDE

- Video instructions (see schedule page for Thursday, Aug 20 for links)
- Lab help sessions: Tuesday, Aug 19 in Sarkeys M207. Choose one session:
  - 8:30 – 10:20
  - 12:30 – 2:20
  - 2:30 – 4:20

  (these sessions are being offered by the TAs of the other section of this class, please be patient)
- Office hours: mine or Sarah's

Project 0 (to be assigned on Wednesday) will use Eclipse

Office Hours

- Instructor (DEH 248)
  - M 1-2:30
  - Tu 10-11:30 (still in flux)
- Teaching Assistant (DEH 115)
  - W & Th 10-11

We also accept other appointments where possible

What is My Job?

Learning is a Two-Way Street

- I can only take you so far by talking at you. You also need to:
  - Ask questions
  - Try things
  - Fail

- Learning to succeed in the bigger world means learning to deal with new situations where you don't have all of the information up front. You need to learn how to:
  - Figure out what you do & do not know about a problem/solution
  - Figure out how to marshal the resources around you to fill in those unknowns

Flipped Class Structure

- Schedule for each day lists readings and videos. You are responsible for this material **before** you walk into class that day.
- In-class time will be dedicated to:
  - Performing graded in-class exercises that rely on the day's material
  - Discussing the material in greater detail
  - Working through deeper examples

  - You should come to class ready with questions & ready to participate in the discussions

Channels of Communication

- Lecture
- Top Hat: real-time discussion during lecture
- Class email list: time-critical messages to the class
- Desire2Learn news
- Desire2Learn discussion group: you may post questions (and answers)
- Private email or office hours for non-public questions/discussions

Grading

- In-class exercises (Top Hat): 15%
- 11 Homework (Turing's Craft + paper): 15% (dropping lowest)
- 10 Projects (Eclipse + D2L): 30% (dropping lowest)
- 3 exams: 20% (dropping lowest)
- Final exam: 20%

- Grades will be posted on the Desire2Learn

Exams

- Assigned seating
- No electronic devices
- Grading questions must be addressed before the returned exams leave the classroom

Homework

- Individual work
- Many assignments will rely on Turing's Craft
  - Grading is automatic & you may attempt solutions multiple times
- Other assignments will be paper based
  - Hand in to instructor or TA
- Due at 2pm on the due date

Projects

- Individual work
- Use Eclipse IDE
- Hand-in: D2L
- Evaluation: short code reviews with me or our TA
  - Immediate feedback
  - You will know the essence of your grade following the review
- Due at 2pm on the due date

Late Policies

- Homework assignments must be handed in at the designated date/time
- Projects have some leeway:
  - 0-24 hrs: 20% penalty
  - 24-48 hrs: 40% penalty
  - 48+ hrs: 100% penalty

Classroom Conduct

Classroom Conduct

- Ask plenty of questions
- Contribute to the discussions
- Be positive and constructive (this extends to our discussion groups)

- Limit cell phone and laptop use to Top Hat interaction

Academic Conduct/Misconduct

- All work must be your own: no looking at or copying solutions from other students or from the net
- General discussion is OK (i.e., the fundamental skills that we are learning in class)
- Secure your data
- Students may report incidences of misconduct directly to the Integrity Council (integrity.ou.edu)
- We use program scanning tools to identify shared code and code drawn from the net

- When in doubt: ask me or our TA

A Final Note …

- We are dedicated to helping you succeed in this course & to prepare you for the next courses in your program
- Both Sarah and I have many other obligations, so please help us make the best use of our time with you
  - Don't be afraid to try things first (it is really hard to break your computer with a program). Don't be afraid to fail sometimes
  - Do your reading before asking questions
  - Use the discussion board on D2L where possible
  - Be as specific as you can about your questions

  - We are happy to help you outside of office hours, but please respect the fact that we may be engaged in other tasks

Next Time

Preparation:

- Install Eclipse
- Register for Turing's Craft
- Textbook readings
- Videos

Topic: Primitive data types