

# tips for exam 1

Exam 1 will consist of a written portion and a computer portion.

## Part 1: Written Portion

Allowed Materials:	Calculator (without wireless capability), pencil or pen
What Topics Will the Exam Cover?	The instructors will do their best to see how well you understand <u>everything</u> covered in classes 1 through 9 (notes, homework, Arduino reference, classroom discussions, . . .).
Format:	Expect a variety of problem types, such as: <ul style="list-style-type: none"> <li>• short answer problems (fill in the blank, multiple-choice, labeling, . . .)</li> <li>• discussion problems</li> <li>• worked-out analytical problems (like circuits problems)</li> <li>• problems that involve interpreting and/or correcting Arduino sketches and commands</li> </ul>
How Should I Study?	<p>Go through the notes that you printed from the web and annotated in class. This will help you to do well on the short-answer and discussion problems. You should also review the circuit drawings and Arduino commands described in class and on the Arduino website (like the LED circuit, the photoresistor circuit, and the whisker circuit). Practice drawing the circuits and writing the arguments of the Arduino commands from memory (for loops, defining pins, writing to pins, reading pins, . . .).</p> <p>A good portion of the exam will focus on your ability to solve problems that require algebraic manipulation of equations and/or calculations. Reworking the problems covered in class and on the homework (along with reviewing the fundamental concepts presented in the notes) will prepare you for this part of the exam. Just because we haven't worked a problem lately that was covered earlier in the quarter doesn't mean it won't be on the exam.</p>
Tips for Worked Out Problems:	For problems that require algebraic manipulation of equations or calculations, you must show all of your work to receive credit; no credit will be awarded for simply writing down the right answer. Always provide the governing equations that you plan to use to solve the problem (such as $V = IR$ ); instructors will often award some partial credit just for just showing that you know the equation(s) needed to solve a problem. Be neat and present your solution in a logical manner. The instructor may not award points for a solution that is difficult to follow / decipher. However, partial credit will not be awarded for multiple choice problems that require an analytical solution.

When you have finished the written portion, you will turn it in and pick up part 2 of the exam.

## Part 2: Computer Portion

Allowed Materials:	Calculator and computer, robot, multimeter, pen or pencil
Software:	<ul style="list-style-type: none"> <li>• Arduino software</li> <li>• Spreadsheet package that allows you to do everything covered in class and on the homework. Microsoft Excel is recommended.</li> <li>• Mathcad</li> </ul>
Boe-Bot Setup:	<p>You should bring your robot to class configured so that the following features are active:</p> <ul style="list-style-type: none"> <li>• one switch</li> <li>• One LED (the built-in LED 13 is OK)</li> <li>• a photoresistor</li> </ul>
Can I Use Existing Files on My Computer?	<p><b>Robot:</b> You may be asked to program your robot to make it perform in a certain way. You CAN bring up old programs that YOU have written this quarter that are stored on your computer. You may use the language reference that you downloaded for homework.</p> <p><b>Excel and Mathcad:</b> You must start all problems from scratch (you may not complete the problem by modifying an existing file). You may use the “Help” facilities of either of these programs during the exam.</p>
How Will the Exam Work	<p>You will be asked to solve various problems using your laptop and robot. In some cases, you will be asked to write down information on your paper (such as a numerical result or a command that you used). When you have finished all or part of a given problem, you need to raise your hand, and the instructor will come by to check your work. The instructor will initial your work and make notes on your paper detailing how far you were able to get.</p>

### Exam Rules:

- No cheating (see the honor code referenced from the course syllabus).
- Your cell phone must be turned off (you can't use it at all, not even as a watch).
- You may not refer to any printed/written materials during any part of the exam (closed book and notes).
- All wireless communication on your computer must be turned off prior to beginning the exam (wireless internet, peer-to-peer wireless communication technologies, etc.). When asked, you must show your instructor the status of your wireless capabilities. Operation of wireless technologies or cameras during the exam will result in a grade of zero on the exam and will be reported to the University Honor Council.
- You may not share a calculator with another student during the exam.