1 Course Description

1.1 MSU’s catalog description:

**Embedded Systems (3 hours):** Two hours lecture. Three hours laboratory. Advanced topics in embedded systems design using contemporary practice. Interrupt-driven, reactive, real-time, object-oriented, and distributed client/server embedded systems. **Prerequisite:** Grade of C or better in ECE 3243 or CSE 4153 and CSE 3324 and ECE 3724.

1.2 Required Texts

- ECE3724 parts kit
- any information at [http://www.ece.msstate.edu/courses/ece4723](http://www.ece.msstate.edu/courses/ece4723)

1.3 Recommended Texts


2 Attendance and Grading

You are expected to attend *all* classes and *all* labs in their entirety.

2.1 Drops/Withdrawals

If you decide to discontinue the course for *any* reason, please make an *official* drop or withdrawal. If you fail to officially drop or withdraw from a class which you are no longer attending, you will receive an *F* on your permanent transcript.

2.2 Assessments and grades

2.2.1 Grading

Your final course grade will be computed as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progress Exams (three)</td>
<td>24%</td>
<td>A</td>
</tr>
<tr>
<td>Lab</td>
<td>20%</td>
<td>B</td>
</tr>
<tr>
<td>Dissection</td>
<td>14%</td>
<td>C</td>
</tr>
<tr>
<td>Class/team participation</td>
<td>7%</td>
<td>D</td>
</tr>
<tr>
<td>Project</td>
<td>15%</td>
<td>E</td>
</tr>
<tr>
<td>Competency Exam</td>
<td>20%</td>
<td>F</td>
</tr>
</tbody>
</table>

\[
A = 90–100% \\
B = 80–90% \\
C = 70–80% \\
D = 60–70% \\
F = 0–60%
\]
Grades are *not* curved in this course! It is theoretically possible for everyone in the class to get an A (or F). Your performance depends on how well you do, not on how everyone else does.

While the exams scores are based on your individual effort, much of the other work in this course will be team-based. However, your team can influence your exam score. When everyone on your team understands the course material well, your team experience will be more productive and every team member will earn better grades. Therefore, it is in your best interest to help your classmates in every possible legal manner. To further enforce the statement above, there is a standing rule: Whenever every member on a team earns a score of 85% or better on an exam, each team member will receive an additional 5% points on their score.

*Did I remember to say that the competency exam is mandatory?*

### 2.2.2 Exams and other non–lab activities

There will be three progress exams and a comprehensive competency exam. Unless stated otherwise, all exams will be closed book, closed notes, and no calculators.

#### 2.2.3 Missed Exams

If you miss a progress exam with a *certified* medical excuse or *prior* instructor approval, the grade computation will be adjusted so that the remaining two (2) progress exams are worth 14% and the Competency Exam is worth 30%. If you miss a progress exam *without* a valid excuse, a zero (0) will be averaged into your grade. The Competency Exam may not be missed except for extreme circumstances.

#### 2.2.4 Labs

The laboratory TA for this semester is Lee Hathcock (*lah1@ece.msstate.edu*). Lee will provide additional details about the lab organization during your first lab meeting. Labs will start meeting the week of August 28th.

If you fail to hand in two or more labs you will be assigned an *F* in the course regardless of your class average. All labs will meet in Simrall 329.

All labs will involve approximately 30 minutes of lecture before starting, so **BE ON TIME!** Unless otherwise noted, labs will be due at the beginning of your assigned lab period one week after the lab was performed.

#### 2.2.5 Dissections

Each person must perform a dissection and prepare a dissection report as specified in the Dissection assignment. You selected dissection device must be proposed to the instructor and approval granted before beginning the dissection. Each student’s device must be unique.

#### 2.2.6 Cheating and other forms of dishonesty

I have no tolerance for cheating in any form. Academic dishonesty will *NOT* be tolerated and *NO WARNINGS* will be given. Academic dishonesty will result in an *F* in the course and the most severe sanctions allowed by Mississippi State University policy.

### 3 Teaming

Engineers rarely work alone. Your teaming skills (along with your communication skills) are often the most important skill a future employer wants from you. This class will require that you work in an engineering design team.

#### 3.1 Team roles

On the team assignments, the team will have a designated *coordinator* to keep everyone on task and makes sure everyone is involved, a *recorder* to prepare the final solution or report to turn in, and one or two *checkers* to verify the solution for correctness and make sure that everyone understands the solution and the strategies used to obtain it.

---

1 Your MSU ID card will provide access to the lab. Feel free to use the lab anytime. However, this room is also used by ECE 3724 Microprocessor lab sections. If an ECE 3724 lab section is scheduled, the ECE 3724 students have priority.
3.2 Teamwork

All students will be asked to submit evaluations of how well they and their teammates perform as team members. These evaluations are used in assigning individual scores. Malfunctioning teams must attempt to work out any problems themselves before approaching the instructor. If repeated attempts to improve team function (including instructor intervention) fail, a nonparticipant may be fired by unanimous consent of the rest of the team, and a team member doing essentially all of the work may quit. Individuals who quit or are fired must find a team of three unanimously willing to accept them; otherwise, they will receive zeros for the remainder of the team assignments.

4 Help for the needy

I am primarily interested in helping you to understand and learn a subject which is both complicated and important for people heading into electrical and computer engineering. Don’t be surprised to hear me egging you on to be prepared for classes, to study harder for exams, and to learn how to study. I do not bite and my bark is pretty minimal, so I hope dearly that you all ask questions and attend some office hours. Please come by if you need help! You are strongly encouraged to discuss any academic (or personal) questions with me during scheduled office hours or by e-mail.

Additionally, MSU does have tutoring services as well as a series of study–skills classes every semester. I strongly recommend that every student go to the classes, and seek out a tutor if needed. Don’t let pride or anxiety keep you out of these classes. Problems you may have now will only get worse as the semester goes on if you don’t get the help when it’s available. I cannot overemphasize how helpful these skills classes can be for everyone!

Any students who believes they may need accommodations in this class are encouraged to contact Student Support Services in Montgomery Hall at (662) 325-3335, as soon as possible to better ensure such accommodations are implemented in a timely fashion. If Student Support Services has a prescribed course of action for you with regard to this class, please visit me during office hours so we can make the proper arrangements.

5 Miscellaneous

5.1 Tools

The lab will involve a good deal of prototyping, PCB stuffing, and testing. As tools tend to disappear in the lab environment, the laboratory will not provide basic electronics hand tools. You may wish to obtain a locking plastic "fishing tackle" box in which to store your tools and parts.

Students often ask me what I have in my electronics toolbox, so here is my basic inventory: (You do not need to purchase the tools on this list; it is provided strictly for instructional purposes.)

- basic digital multimeter
- anti-static wrist strap
- nut drivers (3/16” and 1/4” )
- spare parts tube or small tackle box
- breadboard wires
- eletrical tape, heatshrink tubing, zip ties
- needle nose pliers
- IC extractor
- tweezers and/or three-prong parts "grabber"
- 2 standard screwdrivers (1/8 and 3/8 inch blades)
• 3 phillips screwdrivers (#0, #1, #2)
• jeweler’s screwdriver set
• side cutters
• wire strippers (designed for small electrical wires, AWG 20 and smaller)

To create the “deluxe” electronics toolkit, consider getting

• Torx drivers (T10 and T15 recommended most)
• bent needle nose, long nose, and flat nose pliers
• diagonal cutters
• electronics soldering iron (with good temperature control) with several replacement fine tips (Weller irons are a little more expensive, but will last much longer than the cheaper brands.)
• solder, small gage, between 0.38-0.56 mm (“Multicore 5-core” is one of the best.)
• desoldering braid in various widths between 0.6-3.3 mm (“EasyBraid One-Step” is one of the best.)
• desoldering vacuum hand pump
• small wrench/socket set
• IDC cable/socket crimper
• basic wirewrap tool
• quality handheld full-function multimeter (Fluke is the “gold standard” here.)

5.2 Personal communication devices

Turn off all cell phones and pagers before coming to class. It is very disrespectful to your fellow classmates and me for your phone to ring during our learning time together.

6 Important University Dates

The following schedule is tentative; this schedule is subject to change as circumstances dictate. The labs, in particular, are undergoing revision. Please keep yourself updated by visiting the class web site and noting the assignments for each week!

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 17</td>
<td></td>
<td>Classes begin</td>
</tr>
<tr>
<td>August 23</td>
<td></td>
<td>Last day for registration</td>
</tr>
<tr>
<td>August 30</td>
<td></td>
<td>Last day for dropping a course without a grade</td>
</tr>
<tr>
<td>September 1</td>
<td>11:59 PM</td>
<td>DISSECTION PROPOSALS DUE</td>
</tr>
<tr>
<td>September 4</td>
<td></td>
<td>University holiday (Labor Day)</td>
</tr>
<tr>
<td>September 20</td>
<td></td>
<td>PROGRESS EXAM #1</td>
</tr>
<tr>
<td>September 28</td>
<td></td>
<td>Last day to drop a class with a “W” grade</td>
</tr>
<tr>
<td>October 2-3</td>
<td></td>
<td>University holiday (Fall Break)</td>
</tr>
<tr>
<td>October 13</td>
<td></td>
<td>Last day to apply for a degree</td>
</tr>
<tr>
<td>October 25</td>
<td></td>
<td>PROGRESS EXAM #2</td>
</tr>
<tr>
<td>November 14</td>
<td></td>
<td>Last day to withdraw from University</td>
</tr>
<tr>
<td>November 17</td>
<td>11:59 PM</td>
<td>DISSECTION REPORTS DUE</td>
</tr>
<tr>
<td>November 20</td>
<td></td>
<td>PROGRESS EXAM #3</td>
</tr>
<tr>
<td>November 22-26</td>
<td></td>
<td>University holiday (Thanksgiving)</td>
</tr>
<tr>
<td>Monday, December 4, 2006</td>
<td>8:00–11:00 AM</td>
<td>COMPETENCY EXAM</td>
</tr>
</tbody>
</table>

Did I remember to say that the competency exam is mandatory?