Sample Syllabus

ME 348: Circuit Analysis, Instrumentation, and Statistics

Syllabus for Fall 2020

NOTE: This information is subject to change with notice on Canvas from Dr. Pangborn.

Last updated 9/7/20

Lectures: Delivered synchronously on Zoom, M/W/F 2:30-3:20 PM
Also available asynchronously via recordings posted to Canvas

Labs: Part 1 (~2 hours weekly)
Performed synchronously over Zoom as a team at scheduled lab section times

Part 2 (~45 minutes weekly)
Performed individually, either by scheduling a time to work in 237 Reber or by watching a video posted to Canvas

Materials: See information about required materials on Canvas; no textbook required

Prerequisites: MATH 251, PHYS 212

Instructor: Dr. Herschel Pangborn, Assistant Professor of Mechanical Engineering
Office Hours: Held on Zoom, Wednesdays from 3:30-5:30 PM (or by appointment)
Contact Info: Please send messages through Canvas

TAs: See Canvas for a list of instructors/TAs and their office hours

Course Description:

This course is required for all mechanical engineering students and is taken in the junior year. It serves as an introduction to the fundamental principles of circuit analysis, instrumentation and measurement, as well as statistics. The course includes a 3-hour-per-week, hands-on laboratory where students explore the concepts taught in the lecture. For many students this is the first time they have actual hands-on experience with electronics and measurement equipment, such as oscilloscopes, breadboards, function generators, digital data acquisition systems, integrated circuits strain gages, displacement meters, thermocouples, tachometers, dynamometers, filters, volume flow meters, velocity meters, pressure transducers, etc. Students learn not only how to use these devices in the lab, but also the fundamental principles of their operation. Statistical analysis is integrated into the course, especially in the hands-on laboratories, where statistics is used to analyze and interpret acquired data.

Course Content:

The course is divided roughly in thirds: 1/3 circuit analysis, 1/3 instrumentation, and 1/3 statistics. A detailed schedule of lecture topics, learning modules, labs, and homework is available on Canvas.

Electronic Communication Platforms:

- We will use Canvas for:
  - Posting documents and links (including learning modules, lecture notes and recordings, homework assignments, homework solutions, and lab manuals)
  - Electronic submission of all graded assignments
  - Individual communication between you and instructors/TAs
You are highly encouraged to check Canvas frequently during this course, and to have Canvas notifications forwarded to your email address.

- We will use Zoom for:
  - Synchronous lectures
  - Part 1 of labs (see further details below)
  - Office hours
  - Links for all the above are/will be posted to Canvas.

- We will use Poll Everywhere as a self-check for your understanding of lecture material.

- We will use Piazza as a forum for you to ask and answer questions about course material. This could include questions about lectures, homework, labs, etc. You are encouraged to post questions and to collaborate in responding to these questions. The course instructors and TAs will also monitor and provide answers on this forum. Providing numerical answers or rote formulas for graded problems on this forum will be considered a violation of academic integrity. The goal is to help each other learn, NOT to help each other get the “right” answer without learning. A link to the Piazza site for the course can be found on Canvas.

- We will use CATME to form your teams and to do periodic team evaluations. You will receive an email from CATME with further details.

- You are highly encouraged to use Microsoft Teams to communicate with your lab/homework team and to simultaneously “co-edit” documents in Word and Excel. See Canvas for further details on how to use these in your team.

**Required Course Materials:**

Your required course materials consist of (1) the components in the "Student Kit" developed by Arduino, and (2) a SparkFun ADXL 337 accelerometer breakout board with header pins soldered on. More information about ordering this equipment is available on Canvas. You will need this equipment by the second week of classes.

**Arduino IDE and MATLAB/Simulink:**

We will be interfacing electrical hardware with the Arduino IDE and MATLAB/Simulink software for both remote labs and homework. All software used in the course is available to you for free, and instructions for downloading these will be included in the labs where necessary. We will be using MATLAB version R2020a in this course.

Some students may not have a personal computer that meets MATLAB’s minimum specification requirements. This is a good example of a situation where effective collaboration in your teams will be important. Teams can pool resources and skills to achieve more collectively than they could achieve individually. That might mean that team members whose PCs can run MATLAB take the lead on some sections of the labs, while others will take the lead elsewhere.

**Learning Modules:**

No textbook is required for this course. However, every week of lecture will have corresponding “learning module” documents. Closely reading these learning modules in advance of the lectures each week will be critical to your success in the course. The lectures will focus on supplementing the learning modules by highlighting key points and solving example problems. Reading the learning modules before class is NOT optional, and the lectures are NOT a replacement for the learning modules. The reading schedule is posted on Canvas.

Because ME 348 is being taught for the first time this semester and many of the learning modules are being used for the first time, we are offering a special “bounty on typos.” Extra credit points will be awarded to
any student who is the first to notify Dr. Pangborn of any typo (e.g., incorrect symbol in an equation) that appears in a learning module OR lecture.

Reference Material:

Again, no textbook is required for this course. However, students looking for additional reference material beyond the learning modules may find the following texts helpful:

- Practical Electrical Engineering by Sergey N. Makarov, Reinhold Ludwig, and Stephen J. Bitar
- Measurement and Instrumentation by Alan S. Morris and Reza Langari
- System Dynamics by Katsuhiko Ogata

Lectures:

Lectures will be delivered synchronously on Zoom, M/W/F 2:30-3:20 PM and also available asynchronously via recordings posted to Canvas. You are strongly encouraged to attend the lectures synchronously, except under extenuating circumstances, for example if your time zone makes attending the lectures at their scheduled time a burden.

Some equations and examples will be written into the slides during lectures. The unannotated version of lectures will be uploaded to Canvas approximately 24 hours before class, and the annotated versions will be uploaded shortly after class.

During every lecture, at least one poll using the “Poll Everywhere” software will be given as a self-check of your understanding of course material. Responding to these polls is worth 5% of your final grade. To receive full points for this, you must respond to at least 85% of these polls. Your will get “credit” for a response regardless of whether your answer is correct or not. The polls will remain active for 24 hours after lecture so that students watching asynchronously have sufficient time to respond. You must be logged into Poll Everywhere using your Penn State email address and use the link on Canvas to add yourself to the “group” for our class, otherwise we will not be able to give you credit for your responses.

Teams:

We will use a CATME survey to assign you to a team of 3-4 students by lab section. The primary function of the team will be to accomplish the weekly homework assignments and labs. Any other functions of the team will be determined by the team members. We will be using teams in ME 348 for two reasons:

1. The literature on engineering education repeatedly shows that students learn better when working with each other than when working in isolation or competing against each other.

2. Working in teams is the principal work mode for most engineers in the real world. Therefore, students need to develop skills in working on teams, including small group communications.

You will be asked to complete periodic team evaluations so that our course instructors and TAs can make sure we’re doing everything we can to help your team succeed. Each team should do its own work on homework and labs. Unapproved exchange of rote answers with other team members will be treated as an academic integrity violation. However, all students in the class are encouraged to help each other learn using approved forums, e.g., over Piazza (see above) and during office hours.
Homework:

Homework will be assigned weekly in this course. Unless otherwise announced, homework is due at 11:59 pm on the Friday of each week. No late homework will be accepted, barring extenuating circumstances at the discretion of the instructors.

Before meeting in teams to work on the homework together, every student must make a significant attempt to solve every problem on their own. To confirm that this was done, the recorder will receive each team member’s written work from their individual attempt and append this to the uploaded PDF, following the team’s final answers.

In accomplishing the homework assignments, the following roles will be performed by team members. These roles will rotate among team members on each assignment.

- **Coordinator** – The coordinator will make sure that all team members know their responsibilities and understand all problem solutions.

- **Recorder** – The recorder will prepare the team’s final answers. Once all other team members are satisfied with them, the recorder will submit these as a PDF to Canvas by the due date, with the required cover page. To make logistics easier for the graders, only the recorder should upload the team’s final document to Canvas.

- **Checker(s)** – The checker(s) will check the answers for accuracy and proper formatting before the assignments are handed in. A team with 4 students will have two checkers.

Every homework assignment will be submitted with a cover page listing all participating team members and their designated roles. If a team member does not participate, then that person’s name should not appear on the cover page.

Pre-Laboratory Assignments:

Prior to each lab, you are required to complete a brief pre-laboratory (“prelab”) assignment that will prepare you to complete the lab. This is to be completed individually by each student (i.e., without collaboration with your team or other students) and submitted as a PDF to Canvas at 11:59 pm on the Monday of the week in which that lab is being performed (unless otherwise announced). This is worth 10-20% of each student’s lab grade. No late prelabs will be accepted, barring extenuating circumstances at the discretion of the instructors.

Lab Part 1:

Part 1 of lab is a ~2-hour exercise performed remotely in virtual teams, primarily using your Arduino kits. This part of the lab will be conducted in Zoom breakout rooms during your regularly scheduled lab section time, with a TA available to assist remotely. Labs are designed such that they can be completed within the allotted 2-hour time. However, to give teams additional time to finalize their answers, labs will be due at 11:59 pm on the Wednesday of the week following the lab (unless otherwise announced). No late labs will be accepted, barring extenuating circumstances at the discretion of the instructors.

Each lab contains an Introduction that provides background material for the lab to be performed that week. Each week, before lab class, students are expected to read the introduction; failure to do so wastes valuable class time.

In accomplishing the laboratory, the following roles will be performed by team members. Note that the roles/responsibilities are slightly different from those for the homework. These roles will rotate among team members on each assignment.
• **Coordinator** – The coordinator will make sure that all team members know their responsibilities and understand all problem solutions. The coordinator is also responsible for familiarizing themselves with the complete lab manual in advance of the scheduled lab time.

• **Data/Simulation Driver** – The data/simulation driver will collect the specific data set used in the team’s final submission. When simulation results are required, this team member will operate the simulation program on their computer and share their screen over Zoom so that all team members can participate in the exercise. **While only the data collected by the data/simulation driver (using their hardware kit) needs to be submitted, each team member is expected to perform all activities in the lab manual using their own kit. The team should not move on to the next section of lab until all team members are able to successfully complete the exercise. This requirement will be monitored by the TAs.**

• **Recorder** – The recorder will prepare the team’s final tables, figures, and answers. Once all other team members are satisfied with these, the recorder will submit these as a PDF to Canvas by the due date, with the required cover page. To make logistics easier for the graders, **only the recorder should upload the team’s final document to Canvas.**

• **Checker** – The checker will check the answers for accuracy and proper formatting before the assignments are handed in. In teams with 3 students, the **recorder** will also serve as the checker.

Every lab report will be submitted with a cover page listing all participating team members and their designated roles. If a team member does not participate, then that person’s name should not appear on the cover page.

**Attendance Policy:** You are expected to attend all virtual labs synchronously at their scheduled times and for their full duration. In case of a university-approved absence, make-up of course work may be approved. If a student must miss a lab due to illness, job interviews, or for other acceptable reasons, they must inform Head TA Matt Erdman and the lab section TA as soon as possible. Refer to the university policy on what constitutes a university-approved absence. If a lab is missed without an acceptable excuse, a grade of zero will be assigned.

**Lab Participation:** To ensure that all team members are participating, the TA will check during the lab to ensure that each student works together with their partners in both performing the labs and in preparing the lab reports. If a student is not carrying their fair share of the load, the other team members should contact the instructor and TA immediately to discuss options. Reasons for deductions in lab participation grade include:

- A student arrives late to the lab or leaves before their lab group is finished with the lab
- A student causes distractions or does not pay attention during lab
- Other (at the discretion of the TA)

**Lab Safety:** You **must** follow all safety procedures outlined here and in the lab manuals themselves. Safety requirements for Part 1 of the labs include (but are not limited to):

- No food or drinks should be in your work area.
- Do not wear loose clothing or jewelry. Tie back long hair.
- Turn off the power supply to an Arduino or circuit when reconfiguring its wiring.
- Do not rest electronics on a conductive table or surface.
- Discharge any buildup of static electricity in your body before touching metal components. Avoid workspaces and clothing that are prone to building static charge (e.g., carpeted floor).
- Double check the polarities of any connections you make.
- Keep a consistent wiring color code. A typical convention would be to use red for power and black for ground, however the ability to use that may depend on the colors/numbers of wires in your kits.
• Connect and test one small part at a time as you build complex circuits.
• Only work where a functional fire extinguisher is nearby, and know where that fire extinguisher is
• Don't put cords where people can trip on them.
• Be careful what you touch while troubleshooting. Arduinos usually don't deal with very high voltages, but inductors and capacitors can build up high charges. Be sure to safely discharge any capacitor after use.

**Lab Part 2:**

**Part 2** of lab is a ~45-minute individual exercise. This can be performed in our experimental instrumentation lab in 237 Reber building, with appropriate PPE, social distancing, cleaning procedures, and supervision from a TA. A video recording of the exercise will be available to everyone as a virtual alternative. Regardless of whether you perform the lab in Reber or watch the video, the same accompanying assignment should be performed.

To perform the lab hands-on in Reber, you will need to sign up for a time slot in advance. A link to the lab scheduling page can be found on Canvas. This scheduling will be performed weekly. Registration for each lab will open immediately following class on the **Wednesday** of the preceding week. Reservations cannot be made less than 12 hours in advance.

While Part 2 of the lab is conducted individually, you will still be expected to work with your team to combine your individual work into a final report that will be turned in together with your solutions to Part 1. **Similar to the homework, the recorder will receive each team member’s written work from their individual attempt of Part 2 and append this to the uploaded PDF after the team’s final answers. No late labs will be accepted,** barring extenuating circumstances at the discretion of the instructors.

**Masks, Social Distancing, and Cleaning Procedure:** As discussed in more detail below, students working in the lab must wear a mask appropriately at all times and remain at least 6 feet away from all other students and TAs. Failure to follow this requirement will result in immediate dismissal from the lab, deduction of points in the student’s lab grade, and the student may face disciplinary action for Code of Conduct violations.

The safety and cleaning procedure for every in-person lab will be as follows:

1. Enter the lab (237 Reber) already wearing a mask using the designated entrance, proceed to an open lab table while remaining socially distanced from everyone else in the room, and thoroughly sanitize your hands using the supplies at the lab table before touching anything else in the room. Avoid touching your eyes, nose, mouth, etc. while in the room.
2. A list of equipment used in the lab will be written on the white board at the front of the room. Use the cleaning supplies at the table to wipe/spray that equipment thoroughly, in addition to the general surface area of the table. A trash can will be located at each lab table for disposing used cleaning supplies. Care should be taken to avoid getting liquid on ports/contacts of electrical equipment, while still providing a thorough clean.
3. Wait 5 minutes before beginning the lab or working with any of the equipment that was just cleaned so that the cleaning solution can take effect. During this time, you are encouraged review the lab manual.
4. Conduct the lab in accordance with the lab manual, keeping track of any equipment/surfaces that you touch in the process. A TA will be present to provide help as needed, but social distancing (minimum 6-foot distance) must be respected at all times. If all activities are not completed within 45 minutes, the TA may need to ask you to stop without completing all activities so that the next scheduled student can begin on time. The video of the activity can be watched to fill in any remaining details.
5. When work is complete or time is up, again use the cleaning supplies at the table to wipe/spray the equipment listed on the white board as well as anything else you touched. Again, care should be taken to avoid getting liquid on ports/contacts of electrical equipment, while still providing a thorough clean.

6. Again use the supplies at the table to thoroughly sanitize your hands and leave the room using the designated exit while remaining socially distanced and without touching anything else in the room.

Late Arrival Policy: If a student arrives more than 5 minutes late to their scheduled appointment, they will not be permitted to begin the lab and will have to schedule a different time or watch the video instead. This is because a failure to start on time is likely to result in a failure to finish in time, delaying students who are scheduled to start later in the day.

Lab Safety: Additional safety requirements for Part 2 of the labs include (but are not limited to):

- No eating or drinking is permitted in the laboratory.
- The laboratory workspace must be cleaned and restored to the same conditions as when the work session began. Failure to do so may result in a reduction of score.
- Students must always be careful! If at any time a student is unsure of how to operate a piece of equipment, they should ask the instructor or TA for assistance. It is best to ask if unsure about something.
- Excessive force should never be applied to any piece of equipment. For example, if a connector won’t connect, a valve is stuck, or a crank won’t turn, it should not be forced – the instructor or TA should be asked to assist. This will avoid equipment damage as well as possible personal injury.
- Common sense must be used regarding safety.
- Care must be exercised when plugging in and using electrical equipment around water experiments.
- Thermal gloves should be worn when handling hot objects.
- Do not wear loose clothing or jewelry. Tie back long hair. Do not wear open-toed shoes.
- Turn off the power supply to any circuit when reconfiguring its wiring.
- Double check the polarities of any connections you make.
- Keep a consistent wiring color code. A typical convention would be to use red for power and black for ground.
- Know where the nearest first aid kit is. For 237 Reber, this is near the front door to the lab.
- Know where the nearest fire extinguisher is. For 237 Reber, this is in the hallway.
- Know where the nearest eye wash station is. For 237 Reber, this is in the hallway.
- Don’t put cords where people can trip on them.
- A complete copy of the University’s safety guidelines is posted on the wall in the lab. All students should read these guidelines.

Formatting Guidelines:

Homework and labs should follow the formatting guidelines described in the “Formatting Guidelines” document on Canvas. Points will be deducted for failure to produce writing, equations, figures, and tables that meet these guidelines. Written answers, equations, and tables may be handwritten in both homework and labs. In general, plots should be computer-generated unless only a “sketch” is specifically requested in the problem statement.

Exams:

There will be two midterms (15% each) and one cumulative final exam (20%). On a tentative basis, the plan is for these to be administered synchronously at a designated time using Canvas and Zoom. More information about exams will be made available closer to the date of Exam 1.
Exam Schedule:

- Exam 1: Week of October 5 (specific day/time to be determined)
- Exam 2: Week of November 9 (specific day/time to be determined)
- Final Exam: Week of December 14 (specific day/time to be determined)

Grading:

If you feel there is an error in the grading of an exam, homework, or lab, this must be brought to the attention of the grader within seven days of when the scores are posted to Canvas. A list of the specific assignments to be graded by each TA is posted to Canvas. For an official regrade request, you must provide a detailed explanation of your request in writing.

Course grades will be calculated using the weightings on assignments given below.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage of grade:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required reading of learning modules</td>
<td></td>
</tr>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
<tr>
<td>Prelabs, group labs, and lab participation</td>
<td>25%</td>
</tr>
<tr>
<td>Lecture participation (via Poll Everywhere)</td>
<td>5%</td>
</tr>
<tr>
<td>Midterm exam 1</td>
<td>15%</td>
</tr>
<tr>
<td>Midterm exam 2</td>
<td>15%</td>
</tr>
<tr>
<td>Final exam</td>
<td>20%</td>
</tr>
</tbody>
</table>

The tentative grade assignment for the course is as follows:

- A: 93-100%
- A-: 90-92.9%
- B+: 87-89.9%
- B: 83-86.9%
- B-: 80-82.9%
- C+: 77-79.9%
- C: 70-76.9%
- D: 60-69.9%
- F: 0-59.9%

COVID-19:

We know from existing data that wearing a mask in public can help prevent the spread of COVID-19 in the community (Lyu & Wehby, 2020; CDC, 2020; Johns Hopkins Medicine, 2020). In accordance with PA Department of Health regulations and guidance from the Centers for Disease Control and Prevention (CDC), The Pennsylvania State University has determined that everyone will be required to wear a face mask in university buildings, including classrooms. You MUST wear a mask appropriately (i.e., covering both your mouth and nose) in the building if you are attending class in person. Masks have been provided for students, instructors, and staff, and everyone is expected to wear one. You MUST also follow all cleaning procedures in place for sanitizing your lab space before and after use.

Students who choose not to wear a mask may not attend class in person. This is to protect their health and safety as well as the health and safety of their classmates, instructor, and the university community. Anyone attending class in person without a mask will be asked to put one on or leave. Instructors will end class if anyone present refuses to appropriately wear a mask for the duration of class. Students should also be sure they are situated at least six feet away from their fellow students and seated in a seat that is designated to ensure that distance. Students who refuse to wear masks appropriately or adhere to other stated requirements may face disciplinary action for Code of Conduct violations.

On a case-by-case basis, students may consult with Student Disability Resources for accommodations if they cannot wear a mask. Students requiring such accommodations may be advised to take advantage of and participate in the course through synchronous remote learning, if available.
Students who are experiencing COVID-19 related symptoms should not attend class in person and are encouraged to contact a health care provider.

**Academic Integrity:**

Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity at The Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University’s Code of Conduct states that all students should act with personal integrity, respect other students’ dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts.

Academic integrity includes a commitment by all members of the University community not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others.

Some examples are given below:

- **CHEATING:** Using crib sheet; pre-programming a calculator; using notes or books during a closed book exam etc.
- **COPYING ON TEST:** Looking at another unsuspecting student’s exam and copying; copying in a complicit manner with another student; exchanging color-coded exams for the purpose of copying; passing answers via notes; discussing answers in exam, etc.
- **PLAGIARISM:** The fabrication of information and citations; submitting others work from professional journals, books, articles and papers; submission of other students’ papers or lab results or project reports and representing the work as one’s own; fabricating in part or total, submissions and citing them falsely, etc.
- **ACTS OF AIDING OR ABEDING:** Facilitating acts by others; unauthorized collaboration of work; permitting another to copy from exam; writing a paper for another; inappropriately collaborating on home assignment or exam without permission or when prohibited, etc.
- **UNAUTHORIZED POSSESSION:** Of examinations, through purchase or supply; stealing exams; failing to return exams on file; selling exams; photocopying exams; buying exams; any possession of an exam without the custodian’s permission, etc.
- **SUBMITTING PREVIOUS WORK:** Submitting a paper, case study, lab report or any assignment that had been submitted for credit in a prior class without the knowledge and permission of the instructor.
- **TAMPERING WITH WORK:** Changing own or another student’s work product such as lab results, papers, or test answers; tampering with work either as a prank or in order to sabotage another work, etc.
- **GHOSTING:** Taking a quiz, an exam, performing a laboratory exercise or similar evaluation in place of another; having another take a quiz, an exam, or perform an exercise or similar evaluation in place of the student, etc.
- **ALTERING EXAMS:** When instructor returns graded exams for in class review and subsequently collects them, student changes incorrect answers and seeks favorable grade adjustment asserting that instructor made mistake in grading; other forms may include changing the letter or and/numerical grade on test; obtaining test in discretely, etc.
- **COMPUTER PROGRAM THEFT:** Electronic theft of computer programs, data, or text belonging to another etc.
Specifically, for this course:

- First offense: Zero score for the assignment in question, and infraction reported to the College.
- Second offense: Failure of the course and infraction reported to the College.

**Academic Accommodation:**

Penn State welcomes students with disabilities into the University’s educational programs. Every Penn State campus has an office for students with disabilities. Student Disability Resources (SDR) website provides (http://equity.psu.edu/sdr/disability-coordinator). For further information, please visit Student Disability Resources website (http://equity.psu.edu/sdr/).

In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: See documentation guidelines (http://equity.psu.edu/sdr/guidelines). If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with an accommodation letter. Please share this letter with your instructors and discuss the accommodations with them as early as possible. You must follow this process for every semester that you request accommodations.

**Educational Equity:**

Penn State takes great pride to foster a diverse and inclusive environment for students, faculty, and staff. Acts of intolerance, discrimination, or harassment due to age, ancestry, color, disability, gender, gender identity, national origin, race, religious belief, sexual orientation, or veteran status are not tolerated and can be reported through Educational Equity via the Report Bias webpage (http://equity.psu.edu/reportbias/).

**Counseling and Psychological Services:**

Many students at Penn State face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients’ cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

**Counseling and Psychological Services at University Park (CAPS)**
http://studentaffairs.psu.edu/counseling/
814-863-0395

**Penn State Crisis Line (24 hours/7 days/week)**
877-229-6400

**Crisis Text Line (24 hours/7 days/week)**
Text LIONS to 741741