

Fall 2023: ECE 302 Probabilistic Methods In Electrical And Computer Engineering, Section 003. (CRN: 17104)

Section 003: Mon, Wed, Fri 11:30am–12:20pm @ARMS 1010

Version: 1.1; Last updated in 8/20/2023.

Revision note: The TA information has been updated from v1.0.

<https://engineering.purdue.edu/~chihw/23ECE302F/23ECE302F.html>

• **Contact Information**

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- This is a 3-credit-hour course. No official tutor support for this course.
- **Office hours and lecture information is provided in the following course website!**

https://engineering.purdue.edu/~chihw/pw_protected/ECE302_online/ECE302_online_links.html

- Course objectives, **learning outcomes**, course schedules, and basic requirements can be found in the following accompanying document, which is also part of the syllabus:

<https://engineering.purdue.edu/ECE/Academics/Undergraduates/UG0/CourseInfo/courseInfo?courseid=34&show=true&type=undergrad>

Please go to the webpage and review the official learning outcomes of this course!

- An estimate course schedule (on a week-by-week basis) can be found in :

https://engineering.purdue.edu/~chihw/23ECE302F/co_lec_19S.html

- Basic technology tools:

– **All announcements will be made via the following tools:**

1. During the lecture;
2. Brightspace course email list;
3. Via the faculty-maintained course webpage (link in the top of the syllabus). (NOT in the Brightspace.)

– All the HW assignment will be submitted through Gradescope.

- The “Grades” will be maintained centrally in Brightspace.
- The “Online Discussions” will be handled in Piazza.

- **Goal:** Work together and learn a new abstract concept: **Probability**, and its applications in **real life** (not limited to engineering)

- **General format:**

- *Important disclaimer:* The content, the assessment methods, and the grading scales are completely independent of any other section of ECE302. Please view this section as an independent course taught by Prof. Wang, even though the main subject “Probability” is a common thread connecting different sections of ECE302.
- A fully in-person-lecture course while adopting the latest online technologies.

	MWF Lectures	After lecture Q&A
In person	@ARMS1010	@ARMS1010

	Instructor Office Hours	TA Office Hours
In person	MW 12:30–1:20pm	TBA
Virtual	Th 12:30–1:20pm, no recording	Zoom + Piazza

	Homework	Midterm and Final Exams
In person	—	Fully in-person
Virtual	Only through Gradescope	—

- **Attendance:** Attendance will not be used in anyway in this course.

– **Homework:** The homework is scheduled on a weekly base and each contains 8–14 questions.

* HW questions will be posted on the course website **every Monday** and due **next Wednesday** (9 days later). You need to scan and upload your homework through Gradescope. Brightspace and Gradescope are connected but the HW submission is exclusively through Gradescope. For example, if you go to Brightspace assignments page, you may not find the Gradescope assignments.

The solutions will be posted within 2 days after the due date.

* The detailed policy of HW late penalty can be found in https://engineering.purdue.edu/~chihw/23ECE302F/grading_policy.html#HW_late

For example, HW1 is due on Wed 8/30/2023, 11:59pm. Any HW that is submitted before the due date will have its status being “normal”. There is another 2-week window from 8/31–9/13 during which students can still submit their HWs. However, the HW submitted during that window of 8/31–9/13 will be considered “late”. For any late submission, each additional day will incur a penalty of 3%. For example, if Catherine submitted her homework on 9/07, which is 8 days late, then her HW1 score will have a penalty of $3\% * 8 = 24\%$. That is, whatever her score is, it will be multiplied by 0.76 due to late submission. (If you are only 1 day late, then only $3% * 1 = 3\%$ will be deducted.)

In sum, please try to submit your HW by the due date. If you cannot meet the due date, try to submit your HWs as early as possible to avoid any accumulation of the penalty. The submission window will be closed 14 days after the due date.

* Collaboration is highly encouraged, but each student must write and turn in their own homework.

– **Exam Dates:** There will be three midterms evenly spaced throughout the semester. The dates are:

Midterm 1:

Tuesday 9/12/2023, 8-9pm, SMTH 108.

Coverage: Simple calculus, the arithmetic and geometric series, summation/integration over functions of multiple variables, and the materials covered in the first three weeks.

Midterm 2:

Thursday 10/12/2023, 8-9pm, SMTH 108.

Midterm 3:

Thursday 11/16/2023, 8-9pm, SMTH 108.

– **Grading:** Homework — 10%; The score of the lowest midterms will be dropped. The other two will count for 25% and 25% each; Final — 40%.

For example, Aaron got 80, 70, 85 for midterms 1 to 3, respectively. Then only midterms 1 and 3 will be used for Aaron's grade. Bethany got 70, 72, 62 for midterms 1 to 3, respectively. Then only midterms 1 and 2 will be used for Bethany's grade.

- **Letter grade system:** This section of ECE302 uses the traditional letter grade system, not the plus/minus system. The grades will be given centrally for all four sections. The grading system of Prof. Wang's section will be different from the other professors' sections.
- **Grade statistics for the previous offerings:** *The student grades are assigned independently for each semester.* In the previous offerings roughly 25% of the entire class got A, 25% of the entire class got B, 25% of the entire class got C, and 15% of the entire class got D. The average GPA was around 2.5.
- **Brightspace:** Brightspace will be used exclusively for disseminating the scores of HW and midterms. Please constantly check your scores in Brightspace to ensure that we record your scores correctly. The scores in Brightspace will be used to decide your final letter grade. The instructors do not keep any record of your grades in his/her local computers.

Since your final letter grade will be decided based on your HW, midterms, and final scores in Brightspace, please use your scores in Brightspace as a graded feedback between the 5th and 7th week of the semester. Students can thus have some sense of his/her performance in this course before the drop date.

Your scores of the MT1 and the first 3 HW will be recorded in Brightspace and they will also be used as the main metric for reporting Initial Course Participation (ICP). If ICP is critical to your financial aids, make sure you take MT1 and turn in the first few homework assignments.

The final date to withdraw from a course with a W for Fall 2023 is Monday, November 27.

- **Email list and the course website:** The Purdue Brightspace is mostly used for disseminating the grades. Almost all of the announcements and/or HW assignments will be made on my personal course website or through the email list of Brightspace.

It is the students' responsibility to check the course website:

<https://engineering.purdue.edu/~chihw/23ECE302F/23ECE302F.html>

on a weekly basis to obtain the latest course information.

- **Textbook usage:** We have a recommended textbook Probability, Statistics, and Random Processes for Electrical Engineering, 3rd Edition, Alberto Leon-Garcia, Prentice-Hall, 2008, ISBN No. 9780131471221. The homework assignments are based on the problem set of the textbook. Many students in the past told me that with the weekly lecture notes published online, there was no need for them to use the textbook. If you feel the same

way, you can just photocopy the problem sets of the textbook and it will be sufficient. **There is no need to purchase the textbook!**

However, I strongly recommend students to purchase the textbook and **read it!** The textbook presents a different way of learning the same subjects. There are many useful examples and exercises in the textbook that I won't be able to cover them fully during the lectures. With the textbook, you can always review them later. The textbook also covers many more advanced concepts that are very useful in industry but will not be taught/tested in this course due to the time limitation.

- **Make-up exam policy:** In general, no make-up exam will be given since one score of your midterms is dropped. Only under exceptional conditions will an oral make-up exam be given. In the past, students generally felt that an oral make-up exam was much harder than the written exam due to the nature of the oral exam.

It is worth noting that the drop-the-lowest-exam-score policy is designed for medical emergencies, not for improving your scores. **That is the reason why we do not give make-up exam for students because we already have the score-dropping policy in place.**

Please spend some time reading the information in the following link

https://engineering.purdue.edu/~chihw/23ECE302F/exams_and_their_policies.html#L1_missing_exam

which explains why we do not have any make-up exam. For example, some students may be representing Purdue for some official responsibilities. Even if that is the case, if you miss just one exam, then no make-up exams will be given. Only for students who miss two or more midterm exams due to any official responsibilities or medical emergencies will a make-up exam be considered.

• Other detailed rules and policies of this class:

- **Phone policy:** Please refrain from taking phone calls during the class. Cell phones and computers are allowed. Just no talking.
- **Office hours:** Please take full advantage of the office hours before trying to set up an individual appointment. The instructor and the TA may not be available in the last minutes before an exam or any particular due dates.
- **Answering doubts / last-minute questions:** Prof. Chih-Chun Wang will not answer any doubt / last-minute questions 24 hours before the exam except during the office hours. The student should start to prepare for the exam as early as possible. Do not wait until the last minute.
The TA may still answer questions 24 hours before the exam.
- **Questions about the final exam:** The solutions of the final exam will be posted. The scores of the final exam will also be posted. The graded final exam can be reviewed via Gradescope.
- **The format of the midterm and the final exams:**
 - * A randomly assigned seating chart will be posted in Brightspace for each exam. Please consult the instructor as soon as possible if you are unable to follow the seating assignment (e.g., due to any medical reasons). Unable to follow the seating assignment may be considered as an academic dishonesty behavior.
 - * Please bring the Purdue ID for each exam. Student ID will be checked and compared with the seating assignment during the exam. If a student forgets to bring his/her Purdue ID, a digital picture will be taken and the exam will be graded only after the student presents his/her ID to either the instructor or the TA within one week of the exam.
 - * During the exam, a digital picture may be taken for the entire classroom.
- **Online materials:** All the past materials of this course, including HW, midterm exams, final exam, solutions, and lecture videos have been permanently published/maintained on the course website and Mediaspace, and can be used freely for non-commercial purposes. Any commercial use needs to obtain written consent of the instructor.

• How to succeed in ECE302:

– ECE302 is a very “sequential” course. Namely, almost all of the later concepts are built on top of the earlier concepts. If you have confusion of any of the earlier concepts, it is very difficult to understand the later ones. Please make sure you spend as much time on the earlier, foundational materials as possible. (For comparison, ECE301 is a relatively more “parallel” course, for which new concepts may directly depend on the earlier concepts.)

– **Attend the office hours!** During the office hours, the instructors will help you get more familiar with many important concepts and examples!

– **Attend the class!** It is definitely going to *save you much more time* than studying by yourselves. Many important concepts and examples not in the textbook will be covered in class.

– **Ask questions during the class.** It is very likely that other students also have some doubts on the materials. So when you ask a question, you are not only helping yourself but also helping your fellow classmates.

Even if you do not know how to phrase your question, you are very welcome to ask the instructor to repeat the same concept or to use a different way to explain.

If I am not able to answer your questions in class due to the time constraint, I am more than willing to answer your questions offline or during office hours.

– **Work together with your friends:** Oftentimes, different students understand different parts of the concepts. Discuss the course materials with your friends will be mutually beneficial.

– **Lecture notes:** Collaborate with your friends so that you can get a complete copy of notes. Many students found that the course notes were highly related to the exam, but they missed a point or two during the lectures. However, keep it in mind that thinking along with the instructor is always the highest priority of being in a class, not transcribing the notes. That is why you need to work with your friends on lecture notes.

– Skeleton of the lecture notes will be printed for you every week. For those students who prefer having a .pdf file so that they can take notes using their digital devices, the pdfs of the skeleton notes can be found in

https://engineering.purdue.edu/~chihw/23ECE302F/co_lec_19S.html

– **Take full advantage of the office hours.** Do not feel that it is a waste of time when somebody else is already in the office. Come in and try to listen to what questions other students have. They are usually your questions as well. Further, I always rotate among students so that all students’ questions can be answered.

Nonetheless, students usually come to office hours only before the homework is due (in Wednesday’s office hours). Try to do your homework earlier and come

to the other office hours. You will receive more attention, I can understand your questions better, and we can work on the materials closely together. If you do not feel comfortable attending the instructor's office hours, please keep it in mind that TAs also have 6 office hours a week during the day and 1 additional office hour in the evening.

- **Turn in HW and do a lot of exercises:** Do not wait until the due date to start your HW. Two reasons: (1) HW counts a high percentage (10%) in your final score. (2) Just as any other math courses, practice makes perfect.

• Academic Dishonesty:

The ECE faculty expects every member of the Purdue community to practice honorable and ethical behavior both inside and outside the classroom. Any actions that might unfairly improve a student's score on homework, quizzes, or examinations will be considered cheating and will not be tolerated. Examples of cheating include (but are not limited to):

- Sharing / passing any information during an examination.
- **Looking around unnecessarily during an exam.** The instructor and the TA may ask the student to concentrate on the exam booklet during the exam.
- Using forbidden material or devices to an examination. (Calculators and help sheets are prohibited during the exam.)
- Using cellular phones, and other non-essential electronics during an examination.
- Collaboration for homework questions is encouraged, but the students **MUST** hand write / type their own homework separately.
- Working on an exam before or after the official time allowed.
- Requesting a re-grade of answers or work that has been altered.

At the instructor's discretion, cheating on an assignment or examination will result in a reduced score, a zero score, or a failing grade for the course. All occurrences of academic dishonesty will be reported to the Assistant Dean of Students and copied to the ECE Associate Head for Education. If there is any question as to whether a given action might be construed as cheating, please see the instructor or the teaching assistant before you engage in any such action.

Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, Student Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations)

is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest.” [University Senate Document 72-18, December 15, 1972]

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern.

<https://www.purdue.edu/odos/academic-integrity/>

General Course Policy For All Purdue Courses

- **Campus Emergency Preparedness:**

For any emergency call 911.

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. In such an event, information will be provided through the course website and through the course email list.

Students are encouraged to stay home if having any COVID-19 symptoms.

- **Grief Absence Policy for Students:**

Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). GAPS Policy: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missed assignments or assessments in the event of the death of a member of the student's family.

See the University's website for additional information:

http://www.purdue.edu/studentregulations/regulations_procedures/classes.html

- **Violent Behavior Policy:**

Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.

See the University's website for additional information:

<http://www.purdue.edu/policies/facilities-safety/iva3.html>

- **Accessibility and Accommodations:**

Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.

- **Nondiscrimination:**

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity,

understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. Purdue University views, evaluates, and treats all persons in any University related activity or circumstance in which they may be involved, solely as individuals on the basis of their own personal abilities, qualifications, and other relevant characteristics. Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Purdue's Equal Opportunity, Equal Access and Affirmative Action policy which provides specific contractual rights and remedies. Additionally, the University promotes the full realization of equal employment opportunity for women, minorities, persons with disabilities and veterans through its affirmative action program.

Any question of interpretation regarding this Nondiscrimination Policy Statement shall be referred to the Vice President for Ethics and Compliance for final determination.

You may want to refer students to Purdue's nondiscrimination statement:

http://www.purdue.edu/purdue/ea_eou_statement.html

- **Counseling and Psychological Services (CAPS) Information:** Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765)494-6995 and <http://www.purdue.edu/caps/> during and after hours, on weekends and holidays, or by going to the CAPS office of the second floor of the Purdue University Student Health Center (PUSH) during business hours.
- **Basic Needs Security sample language:** Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. There is no appointment needed and Student Support Services is available to serve students 8 a.m.–5 p.m. Monday through Friday. Considering the significant disruptions caused by the current global crisis as it related to COVID-19, students may submit requests for emergency assistance from the Critical Needs Fund.
- **Disclaimer** This syllabus is subject to change.

EMERGENCY PREPAREDNESS A MESSAGE FROM PURDUE

1. To report an emergency, call 911. To obtain updates regarding an ongoing emergency, sign up for Purdue Alert text messages, view www.purdue.edu/ea.
2. There are nearly 300 Emergency Telephones outdoors across campus and in parking garages that connect directly to the PUPD. If you feel threatened or need help, push the button and you will be connected immediately.
3. If we hear a fire alarm during class we will immediately suspend class, evacuate the building, and proceed outdoors. Do not use the elevator.
4. If we are notified during class of a Shelter in Place requirement for a tornado warning, we will suspend class and shelter in [the basement].
5. If we are notified during class of a Shelter in Place requirement for a hazardous materials release, or a civil disturbance, including a shooting or other use of weapons, we will suspend class and shelter in the classroom, shutting the door and turning off the lights.

Please review the Emergency Preparedness website for additional information.

http://www.purdue.edu/ehps/emergency_preparedness/index.html

Academic Guidance in the Event a Student is Quarantined/Isolated

If any student is quarantined/isolated due to Covid-19 concerns, the student can seamlessly continue the learning activities since all HWs and projects are all submitted and graded through Gradescope. The instructor is working with ITaP to have the BoilerCast set up for this course. Once set up, BoilerCast should be available via Brightspace. Also note that in ECE302 attendance is not used for the final grade of the students in anyway.

If a student is quarantined during the exam, the student can apply for the “online exam backup option”. Namely, he/she can take the same exam during the same time of corresponding in-person exam. However, such a backup option requires an official email/letter from the student’s academic advisor/PUSH explaining the situation, and it has to be evaluated and approved independently by the faculty member.

If any student experiences severe symptoms/complications, please dial 911 and also contact Purdue University Student Health (PUSH) service for further help. For any severe medical conditions, not necessarily limited to Covid-19, the instructors will alter the workload/schedule of the students to further accommodate the situation.

If any of the students/TA/instructor has any concerns about the health or status of the teaching team, the fellow students, the teaching environment/space, please also contact the Protect Purdue Health Center at 765-496-4636.

If you become quarantined or isolated at any point in time during the semester, in addition to support from the Protect Purdue Health Center, you will also have access to an Academic Case Manager who can provide you academic support during this time. Your Academic Case Manager can be reached at acmq@purdue.edu and will provide you with general guidelines/resources around communicating with your instructors, be available for academic support, and offer suggestions for how to be successful when learning remotely. Importantly, if you find yourself too sick to progress in the course, notify your academic case manager and notify any of the instructor via email. We will make arrangements based on your particular situation. The Office of the Dean of Students (odos@purdue.edu) is also available to support you should this situation occur.