

Spring 2024: ECE 301 Signals and Systems, Section 003. (CRN: 11474)

Section 003: Tue, Thur 10:30–11:45am @BHEE170

<https://engineering.purdue.edu/~chihw/24ECE301S/24ECE301S.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/ECE301_online/ECE301_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/UGO/CourseInfo/courseInfo?courseid=33&show=true&type=undergrad>

- An estimate course schedule (on a week-by-week basis) can be found in:
https://engineering.purdue.edu/~chihw/24ECE301S/co_expanded_lec.html

- Basic technology tools:

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

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

- All the HW assignments will be submitted through Gradescope.
- The “Grades” will be maintained centrally in Brightspace and Gradescope.
- The “Online Discussions” will be handled in Piazza.

- **Goal:** Work together and learn various techniques of analysis and design of signals, linear systems, and their applications.

- **General format:**

- *Important disclaimer:* The content, the assessment methods, and the grading scales are completely independent of any other section of ECE301. Please view this section as an independent course taught by Prof. Wang, even though the main subject “Signals and Systems” is a common thread connecting all sections of ECE301.
- A fully in-person-lecture course while adopting the latest online technologies.

	TR Lectures	After lecture Q&A
In person	@BHEE170	@BHEE170
Virtual	Full video backup	—

	Instructor Office Hours	TA Office Hours
In person	TW 12:30–1:20pm	A total of 13 hours/week
Virtual	Thu 1–1:50pm, Zoom, no recording	Zoom and 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 both 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.
 - * Collaboration is highly encouraged, but each student must write and turn in their own homework.
 - * In the past offerings, we had created videos that demonstrate 1–2 questions of every homework. So make sure you watch those videos if you do not know how to solve HW problems.
- **Team projects:** There will be two team-based homework projects, one in the middle of the semester and one in the end of the semester. Each team consists of 2–3 students. A 4-student team is not allowed, neither is a single-student team. Please start finding your teammates as early as possible.
- **Suggested exercises:** Suggested exercises have been posted on the course website and are for practice only. There is no need to turn in suggested exercises. The solutions of suggested exercises will not be posted. You are welcome to discuss those questions with TA or with the instructor.
- **Exam Dates:** There will be three midterms evenly spaced throughout the semester. The dates are:
 - Midterm 1:**
Tues 2/6/2024, 8–9pm, MATH175 and RHPH172.
Coverage: Simple calculus, computation of complex numbers, the arithmetic and geometric series, and the materials covered in the first three weeks.
 - Midterm 2:**
Tues 2/27/2024, 8–9pm, BHEE129.
 - Midterm 3:**
Tues 4/2/2024, 8–9pm, MATH175 and MTHW210.
- **Online video lectures:** Some lectures (no more than 2 hours total) will be given online. That is, the students will download videos by themselves and watch the videos at their own convenient time within a window of 2–4 days. For those online video lectures, roughly an equivalent amount of lecture time will be canceled.
- **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. Bill got 70, 72, 62 for midterms 1 to 3, respectively. Then only midterms 1 and 2 will be used for Bill's grade.

Details of the course dropping policy can be found in

https://engineering.purdue.edu/~chihw/24ECE301S/exams_and_their_policies.html

- **Letter grade system:** This section of ECE301 uses the traditional letter grade system, not the plus/minus system. *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 and Gradescope will be used exclusively for disseminating the scores of HW and midterms. Please constantly check your scores in Brightspace and Gradescope to ensure that we record your scores correctly. The scores in Brightspace (sync'ed from Gradescope) 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/Gradescope, please use your scores in Brightspace/Gradescope 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/Gradescope 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.

- **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/24ECE301S/24ECE301S.html>

on a weekly basis to obtain the latest course information.

- **Textbook usage:** We have a recommended textbook Signals and Systems, 2nd Edition, Oppenheim, Willsky, & Nawab, Prentice-Hall, 1997, ISBN No. 0-13-814757-4.

The homework assignments are based on the problem sets 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.

- **A tentative weekly course schedule:** A week-by-week schedule about what topic will be covered is provided in
https://engineering.purdue.edu/~chihw/24ECE301S/co_expanded_lec.html

- **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 and/or official Purdue events, 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.

Detailed rationale why there will be no make-up exam under the score-drop policy can be found in

https://engineering.purdue.edu/~chihw/24ECE301S/exams_and_their_policies.html

- **Exam regrade request:** If you believe that we have made an error in grading on an assignment or exam, please submit a regrade request on your corresponding Gradescope submission with your reasoning or explanation. All such requests must be made within one week of when the grade was posted on Gradescope. Regrade requests arriving later than this will not be considered. Please note that during the regrading process, we reserve the right to regrade all portions of your submission.

- **HW late submission penalty:** After the due date of each assignment, there is another 14-day window for a late submission. Each additional day will result in 3% reduction. For example, the due date of HW1 is Wed 1/17/2024. If a student's HW1 is submitted in 1/27, i.e., it is 10 days late, then he/she can receive at most $100\% - 3\% * 10 = 70\%$ of the total points for the assignment. Submissions more than 14 days late will be assigned a score of 0.

By only deducting 3% per day — a very small amount compared to other courses — we are removing the need to consider extensions on homework submissions. For example, if you are sick and unable to work for 2 days, your deduction will only be 6%, which is negligible considering the small weight

each individual homework has on your final grade. Therefore, extensions on homework submissions will not be granted.

Please see the following link for more details on this rationale:

https://engineering.purdue.edu/~chihw/24ECE301S/grading_policy.html#HW_late

- **Prerequisite:** ECE202 is the prerequisite of this course. A student may be dropped automatically if he/she has not taken ECE202 before. Please consult with the instructor if you have not taken ECE202 already.

- **Purdue Honors Pledge:**

As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue.

• 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 with you the Purdue ID for each exam. Student ID will be checked and compared with the seating chart 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 from the instructor.

• How to succeed in ECE301:

- **Attend the office hours!** During the office hours, the instructors will help you get more familiar with many important concepts and examples! If you cannot attend the office hours, watch the HW demonstration videos, which cover the questions that are commonly asked during the office hours.
- **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.
- **Start as early as possible!** We have 3 instructor office hours each week, plus 14+ office hours hosted by the TA. Try to join some of the earlier office hours. In this way, you will be in a smaller session and will have more interactive time with the instructor and the TA.
- **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 13 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 flu or 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