EPICS SUMMER 2024 SYLLABUS

COURSE & PROGRAM WEBSITE: https://engineering.purdue.edu/EPICS/

For general questions, email: epics@purdue.edu.

Address: EPICS Program
Armstrong Hall of Engineering 1200
701 W. Stadium Avenue
West Lafayette, IN 47907-2045

COURSE INFORMATION

- This syllabus covers all courses with the EPCS prefix
- The CRNS for the courses can be found at https://engineering.purdue.edu/EPICS/purdue/epics-purdue/register
- Meeting times can be found at https://engineering.purdue.edu/EPICS/purdue/resources/schedules. Consult the schedule for online synchronous courses.
- Course credit hours: Variable: 1-3 credits
- Course Brightspace pages vary by section. See https://purdue.brightspace.com/.

COURSE PERSONNEL:

EPICS Role	Staff Member	Office	Phone	E-mail
Director	Dr. William Oakes	ARMS 1211	(7654)9-43892	oakes@purdue.edu
Senior Program Manager	Haley Cutler	ARMS 1207	(7654)9-45785	hlindemo@purdue.edu
Lab Manager	Brandon Stevens	ARMS 1210	(7654)9-43750	brsteven@purdue.edu
Senior Continuing Lecturer	Andrew Pierce	ARMS 1209	(765) 414-2107	pierce1@purdue.edu
Senior Administrative Assistant	Robin Terwilliger	ARMS 1200	(7654)9-61068	rdterwilliger@purdue.edu epics@purdue.edu
Purdue IT | ECN support for EPICS: epicsite@ecn.purdue.edu or https://engineering.purdue.edu/ECN/TroubleReport				

ADVISORS

Instructors in EPICS are called Advisors. Their role is to advise and mentor the teams on their projects and to assess student progress and assign grades. Your advisor is indicated as the instructor in myPurdue and in Brightspace.

A TA is assigned to each EPICS team; however, all TAs have office hours to work with students from any team. Collectively, they form a TA Consulting Pool from which any student or team is encouraged to seek expertise relevant to their project. The office hour schedule can be found at:

https://engineering.purdue.edu/EPICS/purdue/resources/schedules

UGTAS

Undergraduate TAs (UGTAs) are available during specified hours to assist students working in the lab. See the website for a schedule.

ADDITIONAL EPICS RESOURCES

Name	Position	Office	Phone	E-mail
Charese Williams	Assistant Director, EPICS K12		(7654)9-61889	charese@purdue.edu
Jorge Martinez	Outreach Program Manager, EPICS Consortium	ARMS 1132	(7654)9-40629	martinezj@purdue.edu

COURSE DESCRIPTION

EPICS is a community-engaged design course in which teams of students from across campus work together on long-term projects that benefit the community. Project work centers around the engineering, technology, and computing needs of a community partner, but interdisciplinary team interaction is an integral element for project success. Students may participate in EPICS multiple semesters and participation for multiple consecutive semesters on a project team is encouraged. Teams are composed of first year students through seniors.

Most EPICS projects last at least one-year, though partnership with the community organization continues for several years. Projects are intended to solve real problems, are defined in partnership with their community partners, and span the complete design process cycle [problem identification - specification development - conceptual design - detailed design - delivery - service/maintenance – retirement].

You receive academic credit for participating in EPICS. How academic credits are applied to your major depends on your degree program and is determined by your department and/or advisor. See https://engineering.purdue.edu/EPICS/purdue/epics-purdue/credit.

IN EPICS, YOU WILL LEARN AND EXPERIENCE:

Multidisciplinary Design: Learn how to be better designers; gain design knowledge and skills; learn how to apply disciplinary knowledge to real and possibly ill-defined problems; learn how to identify and acquire new

knowledge; learn to collaborate with people from other disciplines and develop an appreciation for cross-disciplinary contributions in design.

Professional Preparation: Develop the broad set of skills needed to be successful in the changing global workplace and world:

Service-Learning: Provide significant service to the community while learning; gain an understanding of the role that engineering (and their discipline) can play in society and the broader issues related to the needs we are addressing.

SPECIFIC COURSE LEARNING OBJECTIVES ARE AS FOLLOWS:

- **Discipline Knowledge**: ability to apply concepts from their discipline to the design of community-based projects
- **Design Process**: an understanding of design as a start-to-finish process
- **Lifelong Learning**: an ability to identify and acquire new knowledge as a part of the problem-solving/design process
- **Customer Awareness**: an awareness of the customer
- **Teamwork**: an ability to function on multidisciplinary teams and an appreciation for the contributions from individuals from multiple disciplines
- **Communication**: an ability to communicate effectively both orally and written with widely varying backgrounds
- **Ethics**: an awareness of professional ethics and responsibility
- **Social Context**: an appreciation of the role that their discipline can play in social contexts

GRADING

In EPICS, students work on teams and their final individual grade will reflect the quality and quantity of the student's <u>documented:</u>

- **Learning and skill development** per the course learning objectives
- **Individual accomplishments**
- **Team accomplishments**

For non-Senior Design students, the "Individual Evaluation Rubric" provides an overall description of the characteristics of the different grade levels of individual work and can be found at: https://engineering.purdue.edu/EPICS/purdue/team-documents/ier

Grading guidelines for Senior Design Students can be found here:

https://engineering.purdue.edu/EPICS/purdue/current-students/individual-documents/senior-design/senior-design

EPICS students may receive Grades of A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F, FN, or I.

All team members are responsible for the project's progress. Teams will work together to identify team project goals for the semester. Individual roles and responsibilities within the team and projects will be identified. Formal assessment of the learning and accomplishments will be done at mid-semester, and then at the end of the semester for final grading. Evaluation will be based on the components listed in the individual evaluation rubric, including project progress, communication with project partner, individual accomplishments and documentation, lab and lecture attendance, project management and design documentation, design review presentations and documentation, social media posting, and informal lab presentations and demonstrations. Senior design students will also be graded on their specific requirements. Input into the assessment decisions

will be collected from the project partner, advisors, TAs, and the team members themselves. Each student will critique their own participation in the project and that of all team members (peer evaluations). Students will be allowed to propose modifications to the responsibilities if appropriate.

The mid-semester assessment is a formative assessment intended to provide more detailed and cumulative feedback on the learning and accomplishments to date in the semester. General feedback may be provided at the mid-semester, and if desired by student or required by advisor, at other times. Project documentation and team artifacts will be assessed during the semester per the Milestone schedule below.

SUMMER 2024

Date	Events
Week 1 Jun 11 – 13	• Intro EPICS, Instructor, Partner, Projects • Determine Project Assignments and Roles • Submit PDH Plans (returning or 2 credit students)
Week 2 Jun 18 – 20	• Project Partner Meetings • Submit Gantt Chart and Budget • Notebook Review and Feedback
Week 4 Jul 2	• Submit Design Document • Peer Evaluation • Submit IER • Midterm Grade Review
Week 8 Jul 30 – Aug 1	• Submit Design Document • **Design Review** • Submit PDH Report (returning or 2 credit students) • Peer Evaluation • Final Reflection • Submit IER • Course Evaluation

ATTENDANCE POLICY AND TIME REQUIREMENTS

Students must attend all the two-hour lab sections each week throughout the semester, either virtually or in-person. In accordance with Purdue's attendance policy, and in consideration of the myriad issues that may arise in the lives of students, we recognize that it may be necessary for a student to be absent. When the absence can be anticipated, the student should notify their advisor and team as far as in advance as possible. In the case of emergency absences (e.g., illness, bereavement, family emergency), students should contact their advisor and team as soon as possible. Students are responsible for any work they missed due to their absences and expected to minimize the impact on the team project work. Only advisors can excuse a student from a course requirement or responsibility. Unexcused absences will negatively impact the course grade. The University expects students and their instructors to approach problems with class attendance in a reasonable way. Additional meetings and work times are to be scheduled by the project team members. Students are expected to attend these meetings.

The typical expectations regarding time spent on EPICS are as follows, but like other courses on campus, you may need to spend more time than is typical to achieve a similar outcome:

2 credit hours= average 10 hours/week outside the lab on your EPICS project and/or learning activities
1 credit hour= average 7 hours/week outside the lab on your EPICS project and/or learning activities

Professional Development Hours (PDHs) are typically 50 minutes each, but requirements vary based on the number of credit hours you are registered for and if you are a new or returning student to EPICS. There are 5 required PDHs for new students. **Students enrolled for 1 credit hour must accumulate at least 5 PDHs. Students taking two or three credit hours must complete 10 PDHs in the semester.**

Professional Development Hours, including Skill Sessions, will be held throughout the semester and are designed to teach specific skills useful to project progress and the development of outcome related skill sets. Participation will count towards the requirement as specified in the Learning Activity or Skill Session description.

SEMESTER COURSE WORK

An overview of the semester activities can be found in the Milestone schedule on the EPICS website. Individual and team assignments are found in Brightspace. In addition, the website contains templates and guidelines for the course documents listed below.

IN THE EVENT OF A MAJOR CAMPUS EMERGENCY OR CRISIS, COURSE REQUIREMENTS, DEADLINES, AND GRADING PERCENTAGES ARE SUBJECT TO CHANGES, WHICH MAY IMPOSE A REVISED SEMESTER CALENDAR OR OTHER CIRCUMSTANCES BEYOND THE INSTRUCTOR'S CONTROL. EPICS WILL WORK TO KEEP INFORMATION FLOWING VIA EMAIL (SEE THE LIST OF CONTACTS AT THE TOP OF THIS SYLLABUS) AND ON THE EPICS WEBSITE: https://engineering.purdue.edu/EPICS/ .

ALL STUDENTS:

- **Individual Evaluation Rubric:** Evaluation tool which can document individual contributions and learning plus facilitate self and advisor's assessment. The document is completed by the student at mid-semester and end of semester.
- **Individual Documentation: All** students are required to maintain Individual Documentation to demonstrate their individual accomplishments and thinking via an online notebook. All activities related to the project, including individual efforts and ideas, reflections, relevant material and discussions from lecture, contacts, team sessions, and conversations and meetings with the project partner, are to be date-recorded or referenced in the Individual Documentation. Individual documentation will be reviewed as indicated on Milestones schedule.
- **Peer Evaluation:** Students will complete a peer evaluation of their team members at mid-semester and at the end of the semester using the CATME system.
- **Final Reflection:** Individuals are to complete a final reflection at the end of the semester.

SENIOR DESIGN STUDENTS (ADDITIONAL REQUIREMENTS):

Students MUST obtain explicit approval from the team advisor before participating as a senior design student.

- **Senior Design Project Proposal:** Must be completed during the first semester of Senior Design
- **Senior Design Project Description:** Must be completed during the second semester of Senior Design.
- **Documentation:** The senior design project and individual student outcomes must be documented carefully throughout the senior design experience.
- **Senior Design Outcomes Matrix:** An index of how the course outcomes have been met over the year and where evidence for this mastery can be found (notebook, project documentation, etc.). It is also used by the advisor(s) and EPICS admin to approve the satisfaction of the course outcomes.
- **Senior Design Rubric:** Senior design grading will be completed in accordance with the Senior Design Outcome Rubric, found at https://engineering.purdue.edu/EPICS/purdue/individual-documents/senior-design.

TEAMS:

- **Team Responsibilities:** Teams will maintain team roles in Brightspace. These can be updated by the Team Leader/Project Manager and TA.
- **Design Document:** Each project has a Design Document which provides a comprehensive and detailed description of the project design, as well as the project management information. It also contains the Project Charter, which establishes the project's goals and the overall timeframe. The intended audience is future EPICS teams who need to continue the design the following semesters or teams that need to maintain and/or repair the project after it is fielded. The project management information includes the Semester Plan and Transition Report. The Design Document should be seen as a "living" document and posted on the team's MS Teams Site.
- **Design Reviews:** Formal reviews by reviewers external to the team completed mid-semester and the end of the semester to get feedback on projects. Teams must prepare documentation prior to the review to send to the reviewers. After the review, teams are responsible for documenting what issues were raised and how they were addressed (some may be resolved in the following semester).
- **Delivery Review**: The delivery review may be held with the Design Reviews for projects to be delivered this semester. A Delivery Checklist must be completed and returned by week 14.
- **Social Media:** Teams must maintain a LinkedIn page showing regular progress; use @EPICS at Purdue to tag and augment the reach of your team's progress.

ACADEMIC INTEGRITY AND PROFESSIONAL RESPONSIBILITY

The EPICS Program expects every member of the Purdue community to practice honorable, ethical, and professional behavior both inside and outside the classroom. In EPICS, students are encouraged to work together and share information. When indicated, students and teams can modify previous versions of documents to be submitted for the current assignment. However, it is unacceptable for students to claim individual work that is not their own or to use sources without appropriate citation. It is also unacceptable for students to misrepresent information to their instructional staff, their team, and/or their community partner. **Any use of form text, language models, artificial intelligence, or any other means of generating documentation that is not authentically written by the student in their own words for notebooks, reflections, design documents, or any other course document in strictly forbidden.** In addition, misuse of EPICS resources is considered dishonest. At the instructor's discretion, instances of academic dishonesty 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 Office of Students Rights and Responsibilities (OSSR) with copy to their school. If there is any question as to whether a given action might be construed as academic dishonesty, please see the instructor or the teaching assistant before you engage in any such action.

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breeches 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.

PURDUE HONOR PLEDGE:

"AS A BOILERMAKER PURSUING ACADEMIC EXCELLENCE, I PLEDGE TO BE HONEST AND TRUE IN ALL THAT I DO. ACCOUNTABLE TOGETHER - WE ARE PURDUE."

ACADEMIC GUIDANCE IN THE EVENT OF QUARANTINE/ISOLATION

If you are sick with an acute or chronic medical condition, please contact the Purdue Student Health Services patient portal (https://myhealth.push.purdue.edu/). If you find yourself too sick to progress in the course, notify EPICS via email or Brightspace. The Office of the Dean of Students (odos@purdue.edu) is also available to support you should this situation occur.

STUDENTS WITH DISABILITIES:

Students with all ranges of abilities are welcome and encouraged to participate fully in all aspects of the course. If you feel you may need accommodation based on the impact of a disability, you should contact your team advisor privately to discuss your specific needs. Also, the Disability Resource Center in room 830 Young Hall can assist in coordinating reasonable accommodation for students with documented disabilities. Students may present a "Letter of Accommodation" at any point in the semester.

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 your advisor and/or EPICS administration 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 STATEMENT

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 everyone 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's nondiscrimination policy can be found at http://www.purdue.edu/purdue/ea_eou_statement.html.

CAPS

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 through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours.

EPICS RESOURCES

EPICS Project Work Locations:

Type	Room
EPICS "Tools" Meeting Room*	ARMS 1098B (accessible thru 1098 labs)
EPICS "Ross" Meeting Room*	ARMS 1098C (accessible thru 1098 labs)
EPICS Meeting Room*	ARMS 1101
EPICS Design Build Lab*	ARMS B103
EPICS Computer Lab*	ARMS 1095
EPICS Electronic & Computing Hardware & Project Prototyping labs*	ARMS 1098

*All students are expected to review the Lab Safety Awareness and Use Guidelines and complete the online form annually in Brightspace to receive card swipe access to the EPICS labs and meeting rooms (ARMS 1098 lab, meeting rooms in 1098 B-C and 1101, design build lab in B103, and the software lab in 1095) during evening and weekend hours via your PUID. Forms must be submitted via Brightspace as soon as possible, but no later than by the end of the first week of the semester. More information about the EPICS lab spaces at: https://engineering.purdue.edu/EPICS/purdue/resources/epics-labs.

Laboratory facilities are for EPICS students only. EPICS students who fail to comply by allowing non-EPICS students access to the facilities will forfeit their privileges.

All students and teams are responsible for keeping their project areas clean.

EPICS students are expected to use the equipment in the labs responsibly. Abuse of the lab facilities may result in loss of access, a failing grade for the course, and/or formal disciplinary action.

COMPUTER ACCOUNTS

TEAM COMPUTING RESOURCES

Microsoft Teams is an integrated environment that allows collaboration and content management. Each EPICS team has its site where they can store and edit documents, assign tasks, have discussion groups, chats, etc.

Although Teams is the primary method of communication, each team also has an email list service. The format is: epics-*<team name>*@ecn.purdue.edu (e.g., epics-ims@ecn.purdue.edu for the IMS team). Please note the team email is originally set up for team members only, not the advisor or TA. The advisor and/or TA can be added if desired.

At the discretion of the advisor, the team can also maintain a web home page. The URL would be http://epics.ecn.purdue.edu/xxxxx, where xxxxx is the team acronym (e.g., epics.ecn.purdue.edu/ISD for the ISD team). The team home pages are also linked to the main EPICS home page.

OTHER RESOURCES:

EPICS has many resources available to support your project work. Example resources: laptops, reference books, video cameras. Please see the EPICS Lab Manager to check out these resources.

ADDITIONAL INFORMATION

CRNs and meeting times for each team can be found on the course website
https://engineering.purdue.edu/EPICS

EMERGENCY PREPAREDNESS

Please subscribe to Purdue ALERT text messages and familiarize with Purdue's emergency procedures guide flipbook at: https://www.purdue.edu/ehps/emergency-preparedness/emergency-plans/emergency-procedures-guide.php. Please review the emergency procedures for the Neil Armstrong Hall (where EPICS meeting and lab spaces are) included below.

EMERGENCY PROCEDURES

PURDUE UNIVERSITY

ARMSTRONG HALL

IMPORTANT NUMBERS

911 for Police, Fire and all life threatening emergencies

Purdue University Police: (765) 494-8221 | You are in **ARMS** in the **BASEMENT**

MAP KEY

🚪	EXIT
🚶	STAIRS
🏠	SHELTER LOCATION
✕	ASSEMBLY POINT

SEVERE WEATHER

- Calmly proceed to the basement level of the building.
- Lecture halls 1010, B061, & B071 are preferred for occupants to gather.

MEDICAL EMERGENCY

- Avoid leaving the injured person except to summon help.
- Do not move the injured person.
- Render FIRST AID or CPR if you are trained and feel comfortable doing so.
- Call 911.

FIRE

- Pull nearest fire alarm.
- Use stairwells to leave the building.
- Do not re-enter building until directed by emergency personnel.
- Alert other people as you evacuate and provide assistance to others if necessary.
- Gather to the west of Armstrong Hall in emergency assembly area.

ACTIVE THREAT

- Seek immediate shelter, preferably in a room that can be locked, barricaded, or secured.
- Remain in place until emergency personnel provide additional guidance or tell you it is safe.

PURDUE ALERT

Receive emergency alerts. Sign up to receive campus emergency alerts straight to your smartphone (via text). Visit: **purdue.edu/securepurdue**

IMPORTANT PHONE NUMBER: Purdue University Police (765) 494-8221

ARMS	The map abbreviation for the Armstrong Hall of Engineering, the location for the EPICS offices and labs.
Design-Build Lab	Name of ARMS B103.
Human-Centered Design Process	A process a designer goes through in developing their design for problem solution in which the people the designer is designing for are considered throughout the process.
Design Documentation	All information vital to the project which would allow any new project member to determine why the project was started, design decisions/reasoning along the way, what specifications and restrictions are imposed on the project--any information that would allow them to start where you left off or to completely recreate the project.
Design Lead (Project Leader)	Role that oversees the project design and responsible for facilitating the project through all aspects of the design process.
Electronic & Computing Hardware Lab	Formal name of part of the EPICS Lab in Armstrong (ARMS 1098).
EPICS	Formerly *Engineering Projects In Community Service*; as an established interdisciplinary program, the acronym is better known and preferred.
Financial Officer	Team role to manage team's budget and expenses.
Hardware Lab	The name used to refer to the project development/build space. The labs in Armstrong are officially titled the EPICS "Electronic & Computing Hardware & Project Prototyping labs," and have equipment and space for the physical construction of projects.
Individual Evaluation Rubric	Evaluation tool which can document individual contributions and learning plus facilitate self and advisor's assessment.
Lab/lecture	The "lab" portion of the EPICS course is the 2-hour block designated in student's schedule to meet with the whole team and to work on their projects.

Outcome	One of the eight broad learning goals of the EPICS courses that students who successfully participate in the course over multiple semesters will have demonstrated.
Peer Evaluation	The peer evaluation allows students to assess themselves and their peers. It is completed at mid-semester and at the end of the semester. See "Semester Course Work" section for more info.
Project	An individual engineering/technology/computing need that an EPICS team hopes to meet.
Project Manager (Team Leader)	Team role responsible for the overall operation and effectiveness of the team and provides planning, direction, and guidance.
Project Partner	A community organization that communicates an engineering need that a team is created to meet in continued coordination with the EPICS program and students.
Project Partner Liaison	Team member selected to be the main point of contact between the team and the project partner.
Project Prototyping Lab	Formal name of part of the EPICS Lab in Armstrong (ARMS 1098).
Project Evaluation Rubric	Evaluation tool which can document project progress and accomplishments plus facilitates self (project) and advisor's assessment.
Role	Word used to describe one of the positions held by students on each team.
Ross Meeting Room	ARMS 1098C: Room dedicated in honor of Donald J. Ross and Phyllis E. Ross by Jerry and Karen Ross.
Senior Design	Intensive engineering design experience required for all senior engineering students to graduate. The EPICS coursework currently can fill this requirement for ECE, EEE, MDE and CS students. See "Semester Course Work" section for more info.
SharePoint	SharePoint is an integrated environment that allows collaboration and content management. Each EPICS team has its site where they can store and edit documents, assign tasks, have discussion groups, and create wikis. It can be accessed via Teams.

Skill session	A learning activity intended to help develop skills and knowledge needed for project work and related course outcomes. Counts towards required number of lectures.
Software Lab	This refers to the computer lab used by EPICS students.
Web (epics) and Team File Shares (epics-shares)	The team file share (epics-shares) was a physical server space hosted by ECN and used in the past for collaboration. Nowadays, only historical videos and photos are hosted there and are accessible only through ECN web share (epics). Approval may be required to access the old Web and Team File Share content.
Team	A group of people who partner with the same organization(s) and share a lab time (e.g., IS, BME); the terms Project Team or sub-team are sometimes used to describe the group of people working together on a specific project.
Tools Meeting Room	ARMS 1098B: Room made possible by "Purdue Tools", a group of friends and Purdue graduates.
Communication Officer	Team member selected to post updated team member information and progress on social media; the individual also leads team recruiting.