COURSE SYLLABUS

1 ECE 3971 - Design Seminar - CPE

2 Meeting Information

2 credits, 3 contact hours Two 65-min classes a week

a. **Section 001:**
Lecture: TR 1300-1415, **DRSDCK-031**

b. **Section VAB:**
Lecture: TR 1300-1415, **DRSDCK-031**

3 Course Instructor(s), TA(s)

a. **Section 001:**

Class Instructor:	Liesl Klein
Office Hours:	M11-12, R 11:30-12:30, by appointment on Teams, or by appt.
TA(s):	
Office Hours:	, or by appt.

b. **Section VAB:**

Class Instructor:	Liesl Klein
Office Hours:	M11-12, R 11:30-12:30, by appointment on Teams, or by appt.
TA(s):	
Office Hours:	, or by appt.

4 Textbook

This course does not have a prescribed textbook

a. **Other Supplemental Materials:** Class notes and other material

5 Specific Course Information

a. **Catalog Description**
Areas and career paths in electrical engineering. Overview of required senior project courses and faculty project sponsors. Engineering design, project selection requirements, technical communications, information gathering. Requires selection of design project adviser, project topic, and a formal written project proposal.

b. **Prerequisites:** None; **Co-requisites:** None

c. **Required** for BS Electrical Engineering

6 Learning Objectives

a. To learn about the user-centered design process, to acquire knowledge of project planning and proposal writing, to perform preliminary design work and write a formal technical proposal for continued design effort next Fall, to develop skills in working on a team.

Learning Objectives
Students will:

(a) generate new knowledge about a problem, as it relates to those who experience the problem.
(b) identify underlying causes for probems.
(c) brainstorm and generate new solution ideas for problems.
(d) articulate their problem-solving skills.
(e) identify the user, need, and a surprising insight for a problem definition.
(f) be able to write their own POV statements for unique problems.
(g) generate a wide array of creative ideas for a given problem, using brainstorming methods.
(h) be able to generate a collaboration style that will lead to the success of the project.
(i) be able to identify means of effective teamwork through shared goals.
(j) be able to create opportunities for leadership within their projects.
(k) be able to identify potential problems from context and engaged observation.
(l) infer additional information about a situation based on context.
(m) synthesize and reflect on new information.
(n) generate schematics and plans for a design.
(o) share technical information in a logical and clear manner.

Progress Reports and Meetings:

Once projects have been selected, team will be required to meet with their advisors on a schedule defined by the advisor. It is strongly suggested that these meetings occur every week. Students should share their assignments with the advisor for assistance and review.

Out-of-Class Senior Design Project Work.

Each student is expected to spend a bare minimum of 60 hours outside of class on just the technical work of the project. Consult with your advisor for more information on anticipated work-time for technical aspects.

Deadlines.

All assignments are due on the dates indicated on BlackBoard. Late assignments will not be accepted, unless discussed with the instructor prior to the due date and reasonable accommodations are made. After that, students can request feedback, but will not receive points for the assignment.

Teamwork:

Effectively working together and communicating is an essential skill that is refined over the Capstone sequence. If it is evident that a team-member is not effectively contributing to their

team, the instructor and project advisor will first try to intervene. If intervention is not fruitful or it is deemed otherwise necessary, the student may earn an "F" in the course, regardless of the status of their grade on blackboard. Additionally, students who break their team contract may be eligible for an F in the course if this impedes the progress and success of their team.

Students are expected to use the Teams channel made for their group by the instructor for all communication so that the instructor and faculty advisor can stay aware of team dynamics and assist as needed.

b.

ABET Student Outcomes														
1a	1b	2a	2b	2c	2d	3	4a	4b	4c	5	6a	6b	7a	7b
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

The above student outcomes are defined by the Accreditation Board for Engineering and Technology (ABET) as:

1a. an ability to identify and formulate complex engineering problems by applying principles of engineering, science, and mathematics

1b. an ability to solve complex engineering problems by applying principles of engineering, science, and mathematics

2a. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare

2b. an ability to apply engineering design to produce solutions that meet specified needs with consideration of cultural and social factors

2c. an ability to apply engineering design to produce solutions that meet specified needs with consideration of global and economic factors

2d. an ability to apply engineering design to produce solutions that meet specified needs with consideration of environmental factors

3. an ability to communicate effectively with a range of audiences

4a. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global and societal contexts

4b. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in economic contexts

4c. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in environmental contexts

5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

6a. an ability to develop and conduct appropriate experimentation

6b. an ability to analyze and interpret data, and use engineering judgment to draw conclusions

7a. an ability to acquire new knowledge as needed, using appropriate learning strategies

7b. an ability to apply new knowledge as needed, using appropriate learning strategies

7 List of Covered Topics

1. Introduction to the Senior Design Sequence
2. Overview of the design process, focus on User-Centered Design
3. Overview of standards, constraints
4. Engineering design, project selection requirements, technical communications,
5. information gathering, project management
6. Team selection and team work
7. See blackboard for detailed schedule of assignments.

8 Tentative Schedule

Tentative schedules for all sections follow. Be sure to refer to the schedule for your specific section, if more than one is provided.

Tentative Schedule for **All Sections**

Class Meeting	Tentative Topic or Activity	Homework	CATME
Class 1- 1/13	Intro	POV	none
Class 2- 1/14	Conflict	DUTCH Test	none
Class 3- 1/20	Projects explained	Project Survey, UCD reflection	none
Class 4- 1/22	Library Visit	Sign up IEEE	none
Class 5- 1/27	Groupings	Team Contract	CM1
Class 6- 1/29	Observations	Observations	
Class 7- 2/3	Interviews	Interviews	CM2
Class 8- 2/5	Literature Review	Literature Review	
Class 9- 2/10	POV	POV	CM3
Class 10- 2/12	Brainstorming Day!	Brainstorm	
Class 11-13 (2/17-2/24)	Work time	Work	CM4, 5
Class 14- 2/26	C and Cs	C and Cs	
Class 15-17 3/10-3/17	Work time	Solution Descriptions- due 4/16	CM6,7
Class 18 - 3/19	project management	project management assignments	
Class 19 - 3/24	work time	work	CM8
Class 20 - 3/26	Gallery Walk	Solutions	
Class 21-23	Work time	materials, tools, budget	CM 9
Class 24-4/14	Proposals due	All proposal materials (including slides) due	CM 10 (final)
ECE Day - 4/17	Attend as able		
Class 25-29	Final Presentations	Complete CATS	

9 Grading Policy

This course is graded out of 1000 points. Each assignment has its own point allotment with a corresponding rubric. Assignments will be graded following the rubric. Some assignments required advisor signature, some are graded by the advisor. A break-down of grading for assignments is available on blackboard.

CATME will be used to modify grades based on team participation. CATME outputs a modifier score between 0.2 and 1.05. Student submission scores will be multiplied by their CATME modifier score to generate the score used for grading purposes.

W7 CATME, for example, will be used to modify the assignments in Week 6 of the semester (deci-

sion matrix).

At least one outside-of-class workshop will be required for an assignment in this course. If none of the workshop options are at times you are available, please speak to the instructor for an alternative assignment.
Communication and documentation is a critical part of project management. While there is no formal assignment for students to complete for communication and documentation, it is expected that students will use the Teams channel generated for them and a OneNote notebook to keep track of their work throughout the semester. The course coordinator will review Teams and OneNote at the end of the semester for the Documentation and Communication grade.

Letter grade scale: A(93.5–100), A–(90.5–92), B+(87.5–89), B(83.5–86), B–(80.5–82), C+(77.5–79),
C(73.5–76), C–(70.5–72), D+(67.5–69), D(63.5–66), D–(60.5–62), F(<60)

10 HW Assignment and Laboratory Report Submission Policy

All assignments are due on the dates indicated on BlackBoard. Late assignments will not be accepted without prior approval. After that, students can request feedback, but will not receive points for the assignment.
If students are able to communicate about late assignments prior to the original due-date, the instructor will make reasonable accommodations for them.
Please refer to the section on Teamwork for additional information about how teamwork and communication can impact your grade in this course.
There will be no final exam, only the final written and oral project proposals and presentations.
Please note that while the instructor encourages the use of additional resources towards exploring and defining problems, use of AI technologies like ChatGPT should not heavily relied on for the completion of writing assignments. While students may find these technologies helpful in stages like outlining and rough drafts, work submitted for a grade must reflect a student's own work, understanding, and writing.

11 Attendance Policy

General Rules

The full version of the official Villanova class attendance policy is posted at https://live-villanova-catalog.cleancatalog.io/class-attendance, but the main points are as follows.

Attendance to all classes is mandatory and students are expected to use "work time" days to work with their teams. Students are also expected to attend all group project meetings planned outside of class, as discussed with their team members and advisors.
Joining the Team for this class is **mandatory**. You can join using the code 'hsiikla' under the "join a team with a code" button on Microsoft Teams.

Whenever possible, students should inform the instructor if they plan to be late or absent from class. In all cases, documentation is required to petition for *excused* absences to the Associate Dean for Student and Strategic Programs, Dr. Stephen Jones. The excused absence form is posted on this page: https://villanova.sharepoint.com/teams/COECurrentUndergrads/SitePages/Catalog.aspx under the heading "Engineering Academic Policies and Forms".

Excused absences do not count towards a failure in the course for first year students. Absence from class does not release the student from assigned work. Students who miss an in-class obligation such as an exam, a presentation, etc., due to an excused absence will not be penalized - the instructor may offer a make-up test, arrange an alternative time for a presentation, exempt a student from the assignment, or provide another arrangement. In the case of illness or injury, the form must be submitted within 24 hours of missing a class. The University's list of excused absences for all students includes the following:

1. Participation in NCAA athletic competitions
2. Participation in special academic events such as: conferences, field trips, project competitions, etc., and in official university business such as student representatives attending meetings related to university governance
3. Attendance at significant events of the immediate family such as: funerals, weddings, etc.
4. Religious holidays - see the University's policy on Religious Holidays
5. College-approved participation in placement activities such as: job interviews, graduate school interviews, job fairs
6. Legally required absence such as: jury duty, court appearance, short-term military service
7. Documented serious illness or disability

Personal Days

Personal Days are NOT allotted for laboratory sessions and courses that meet once a week. For all other courses that meet at least twice a week, students are entitled to excused absences for any reason that may contribute to their personal wellness. The following rules apply.

Students must advise the instructor by email *before* class of their intent to utilize a Personal Day as the reason for their absence. A Personal Day will not be approved retroactively. Students may, but are not required, to provide additional information regarding their absence. A Personal Day does not grant an automatic extension for items due. Students remain responsible for all assignments, exams, presentations, etc. due on that date. The instructor may apply her/his discretion on a case-by-case basis to determine whether an extension on a deliverable item is appropriate.

For classes that meet thrice a week (50 mins $\times$ 3), TWO personal days are allowed in the semester. These personal days may not be used ...

1. on consecutive class days
2. in the same week
3. immediately preceding or following a University holiday or break period, and
4. on days when exams, presentations or other major assignments are scheduled.

For classes that meet twice a week (75 mins $\times$ 2), ONE personal day is allowed in the semester. This personal day may not be used ...

1. immediately preceding or following a University holiday or break period, and
2. on days when exams, presentations or other major assignments are scheduled.

12 Examination Policy

The College of Engineering has adopted the following general examination guidelines:

1. Students must arrive before the start of the examination. Under exceptional circumstances a student may need to arrive late, but he/she can enter the examination room no later than 5 minutes after the start of the exam.
2. All cell phones and smart devices must be turned off and stored away until the student exits the exam room, unless explicitly permitted by the instructor.
3. The official Villanova class attendance policy must be followed when requesting excuses for absences or lateness to an examination.
4. Each student must write and sign the following statement, "I have neither given nor received any unauthorized assistance in the completion of this examination."
5. In the case of virtual exams, the instructor may implement video proctoring or other measures to ensure academic integrity. For consent purposes, the instructor will announce ahead of time to students if they plan to use any form of video proctoring during an assessment and whether a recording will take place.

13 Academic Integrity Policy

The College of Engineering is committed to creating an environment of academic integrity and ethical decision-making that we hope is reflected in the actions of our students and graduates. As Villanova students, integrity is central to the University mission. As engineers, our code of conduct requires us to place honor and integrity at the forefront of everything we do. As engineering students, it is expected that you will begin to adopt these values and instill them into your work habits. Students violating the academic integrity policy will receive a zero on that assignment or exam and the violation will be reported to the Associate Dean for Academic Affairs. The University's academic integrity policy can be found on the following web page:
https://live-villanova-catalog.cleancatalog.io/academic-integrity-0.

14 Adherence to the Student Code of Conduct

Students are expected to act in a professional and respectful manner to their fellow students, faculty, and staff. Students should become acquainted with and understand the responsibilities set forth in the Student Handbook, especially those in the sections on Policy and Regulations. Adherence to university regulations is expected and required for successful completion of the program of studies. Enforcement within the classroom of policies regarding classroom behavior is the responsibility of the faculty member. All other discipline problems are to be referred to the Dean of Students.

15 Inclusive Classroom

This classroom is a place where you will be treated with respect; we welcome individuals of all ages, backgrounds, beliefs, ethnicities, gender, gender identities and expressions, sexual orientation, and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment to allow all among us to learn and flourish.

16 Students with Disabilities

It is the policy of the university to make reasonable academic accommodations for qualified individuals with disabilities. If you are a person with a disability (non-physical) please register with the office of Learning Support Services (LSS) by emailing Learning.support.services@villanova.edu

or by phoning 610-519-5176 as soon as possible. Registration is *required* in order to receive accommodations. In addition, please contact the instructor during office hours in order to make the appropriate arrangements.

The Office of Disability Services (ODS) collaborates with students, faculty, staff, and community members to create diverse learning environments that are usable, equitable, inclusive and sustainable. The ODS provides Villanova University students with physical the necessary support to successfully complete their education and participate in activities available to all students. If you have a diagnosed disability and plan to utilize academic accommodations, please contact and register with Gregory Hannah, advisor to students with disabilities at 610-519-3209 or visit the office on the second floor of the Connelly Center.

17 Tutoring Services

Villanova's tutoring services include The Writing Center, The Learner's Studio, and The Center for Speaking and Presentation. These services are offered free of charge to students. Drop in as-needed or book a regular weekly session to supercharge your academic success. Sessions can be 30 or 60 minutes in length.

Register for an account and book sessions in advance at villanova.mywconline.com. If you don't see your class listed, request a tutor for a missing subject at: tutorrequest.villanova.edu For more information, contact Juliana Struder at juliana.studer@villanova.edu or at 610-519-5862.

18 Online Expectations

Some or all sessions of this class may be recorded for educational purposes and for later playback. In order to foster a professional environment, please wear appropriate clothes, refrain from eating, mute your microphone when you are not talking so as to eliminate background noise, and select an appropriate setting free of distractions. You may turn off your webcam for privacy reasons unless explicitly instructed not to do so by the instructor (such as during the conduct of online examinations).

19 Electronics Policy

The use of electronic devices, such as phones, laptops, tablets, calculators, etc., during class is generally allowed, unless their use causes a disturbance to others. During examinations, the use of any electronic device is prohibited, unless it is expressly authorized by the instructor.

Students are prohibited from making any audio or visual recordings (including taking photographs) of lectures, discussions, or other classroom activities, unless a student (1) has written permission in advance from the instructor, or (2) is permitted to record under terms and conditions as approved by the University's Office of Disability Services or Learning Support Services. Students who have received approval to record classes as an academic accommodation must provide supporting documentation from the Office of Disability Services or Learning Support Services in advance of any recording. Students may use authorized recordings only for the purposes of individual study in the course, and may not disseminate or share them with a wider audience without explicit permission.

20 Copyright Policy

The materials used in Villanova University courses ("Course Materials") generally represent the intellectual property of course instructors, third parties and/or the university which may not be

disseminated or reproduced in any form for public distribution (e.g., sale, exchange, etc.) without the written permission of the course instructor. Course materials include all written or electronic documents and materials, including syllabi, current and past examination questions/answers, and presentations such as lectures, videos, slides, etc., provided by a course instructor. Course materials may only be used by students enrolled in the course for academic (course-related) purposes.

Published course readings (book chapters, articles, reports, etc.) available in "Blackboard" are copyrighted materials. These works are made available to students through licensed databases or fair use. They are protected by copyright law, and may not be further disseminated or reproduced in any form for distribution (e.g. uploading to websites, sale, exchange, etc.) without the permission of the copyright owner.

Follow these links for more information on Intellectual Property, Copyright, and Computer Acceptable Use.

21 Professorial Duties

It is important to note that teaching is one of the many duties that professors perform as part of their job responsibilities. In addition to teaching, professors perform research, advise graduate students, edit journals and review journal articles, serve on committees for the university and professional societies, travel to conferences to remain abreast of current developments and to present their results... to name just a few commitments.