CS 601.456/496/656
Computer Integrated Surgery II
Spring 2023 (3 credits, EQ)

Instructor
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Office hours: by appointment

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Meetings and video links

- Tuesday, Thursday 1:30-2:45 in Hackerman B17
- A zoom link is available for registered students and mentors available from the instructor or the TA or on https://jhu.instructure.com/courses/37966
- Recorded class sessions can be accessed on https://jhu.instructure.com/courses/37966.
- The expectation is that students will attend in-person unless they are ill, traveling, or have some valid reason for missing class.
- Students **may not share** the zoom link or recordings to any third parties without explicit written permission of the Instructor.
- Similarly, students are free to watch the recordings but **may not download** them without explicit written permission of the Instructor.

Textbook
None

Online Resources
The course wiki pages (https://ciis.lcsr.jhu.edu/doku.php?id=courses:456) are the main information source for the project. The Canvas page simply redirects students to the wiki site.

Course Information

- CIS II (601.456/496/656/356) is a projects course for graduate students and upper-level undergrads, in which students work in teams of 1-3 on semester-long projects broadly related to computer-integrated interventions, AI in medicine, medical image analysis, or related topics. In addition to material covered in

lectures/seminars by the instructor and other faculty, students are expected to read and provide critical analysis/presentations of selected papers in recitation sessions. Students taking this course are required to undertake and report on a significant term project under the supervision of the instructor and clinical end users. Grades are based both on the project and on classroom recitations. The only difference between the undergraduate versions (601.456/496) and the graduate version (601.656) of this course is the level of project undertaken. Typically, 601.656 projects require a greater degree of mathematical, image processing, or modeling background. Students wishing to attend the weekly lectures as a 1-credit seminar should sign up for 601.356.

- **Prerequisites**
  CIS I or permission of the instructor

Course Goals

At the end of this course, students will have demonstrated the ability to

- Identify a significant problem and formulate a credible implementation plan for addressing the problem, including goals, significance, technical approach, deliverables, dependencies, measurable milestones, and project management.
- Identify appropriate published literature relevant to their project, make a critical assessment of selected literature, and effectively summarize the literature and their assessment
- Manage significant implementation projects, tracking milestones, deliverables, and issues as they arise. This includes the ability to re-plan and justify changes.
- Demonstrate successful completion of significant implementation effort, including documentation of results
- Make effective oral presentations of project plans and results
- Make effective written reports and documentation

This course will address the following Criterion 3 Student Outcomes:

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- an ability to communicate effectively with a range of audiences
- 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, economic, environmental, and societal contexts
- 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

- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Course Expectations & Grading
Explained in on the course wiki site (https://ciis.lcsr.jhu.edu/doku.php?id=courses:456).

Confidentiality and Proprietary Information

Some of the projects may involve potentially patentable or otherwise confidential material

- Premature disclosure can compromise patentability
- Student inventors can get patents and licensing income
- Some projects (e.g., those using ISI API data) may require students to sign a separate non-disclosure agreement with a company.
- Students need to close the loop with the Instructor on projects involving 3rd party confidential data, to be sure that something is publishable. Usually, this has not been a problem, but should be addressed early.
- Web sites for these projects will be only accessible by Instructor, the TA, the students involved, and the mentors. Access will remain restricted for about a year, unless other arrangements are made between the Instructor, the students, and the project mentors.
- The whole class will sign a non-disclosure agreement to cover in-class presentations and discussion (JHTV has provided a template). A link is available on the CIS II Wiki pages.
- Students who are uncomfortable with this should contact the Instructor to see if an accommodation is possible.

Key Dates
These are discussed on the course wiki pages

Assignments & Readings
These are discussed on the course wiki pages

Confidentiality

Ethics
The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition.

You should be aware of (and follow) the JHU's policies for responsible conduct of

research. Training is available at http://eng.jhu.edu/wse/page/conduct-of-research-training.

Report any violations you witness to the instructor. You can also contact:

- For undergraduates: the director of student conduct (or designee) by calling the Office of Student Conduct at 410-516-2509 or via email at studentconduct@jhu.edu
- For KSAS Graduate Students; rseitz5@jh.edu
- For WSE Graduate Students: christinekavanagh@jhu.edu

Personal Wellbeing

- Because of the ongoing COVID-19 pandemic special requirements may be in effect this term, and these may vary during the term. Please keep updated with these at the following sites:
  - University information: https://covidinfo.jhu.edu/
  - Whiting School of Engineering information: https://engineering.jhu.edu/covid-19/
- COVID-19 vaccination a required unless an exception has been granted by the university for health or religious reasons.
- If you are sick please notify me by email so that we can make appropriate accommodations should this affect your ability to attend class, complete assignments, or participate in assessments. The Student Health and Wellness Center is open and operational for primary care needs. If you would like to speak with a medical provider, please call 410-516-8270, and staff will determine an appropriate course of action. See also https://studentaffairs.jhu.edu/student-life/student-outreach-support/absences-from-class/illness-note-policy/
- Johns Hopkins University values diversity and inclusion. We are committed to providing welcoming, equitable, and accessible educational experiences for all students. Students with disabilities (including those with psychological conditions, medical conditions, and temporary disabilities) can request accommodations for this course by providing an Accommodation Letter issued by Student Disability Services (SDS). Please request accommodations for this course as early as possible to provide time for effective communication and arrangements.
  For further information or to start the process of requesting accommodations, please contact Student Disability Services at Homewood Campus, Shaffer Hall #101, call: 410-516-4720 and email: studentdisabilityservices@jhu.edu or visit the website https://studentaffairs.jhu.edu/disabilities/.
- If you are struggling with anxiety, stress, depression, or other mental health related concerns, please consider visiting the JHU Counseling Center. If you are concerned about a friend, please encourage that person to seek out their services. The Counseling Center is located at 3003 North Charles Street in Suite S-200 and can be reached at 410-516-8278 and online at http://studentaffairs.jhu.edu/counselingcenter/

- Student Outreach & Support helps students manage physical and mental health concerns, personal and family emergencies, financial issues, and other obstacles that may arise during their college experience. Students can self-refer or refer a friend who may need extra support or help getting connected to resources. To connect with SOS, please visit this website: https://studentaffairs.jhu.edu/student-life/student-outreach-support/ or email deanofstudents@jhu.edu, call 410-516-7857, or students can schedule to meet with a Case Manager by visiting the Student Outreach & Support website and filling out a referral form online.

Classroom Climate

I am committed to creating a classroom environment that values the diversity of experiences and perspectives that all students bring. Everyone here has the right to be treated with dignity and respect. I believe fostering an inclusive climate is important because research and my experience show that students who interact with peers who are different from themselves learn new things and experience tangible educational outcomes. Please join me in creating a welcoming and vibrant classroom climate. Note that you should expect to be challenged intellectually by me, the TAs, and your peers, and at times this may feel uncomfortable. Indeed, it can be helpful to be pushed sometimes in order to learn and grow. But at no time in this learning process should someone be singled out or treated unequally on the basis of any seen or unseen part of their identity.

If you ever have concerns in this course about harassment, discrimination, or any unequal treatment, or if you seek accommodations or resources, I invite you to share directly with me or the TAs. I promise that we will take your communication seriously and seek mutually acceptable resolutions and accommodations. Reporting will never impact your course grade. You may also share concerns with the department chair ([Chair's Name and Email]), the Director of Undergraduate Studies ([DUS Name and Email]), the WSE Assistant Dean for Diversity and Inclusion (Darlene Saporu, dsaporu@jhu.edu), the KSAS Assistant Dean for Diversity and Inclusion (Araceli Frias, afrias3@jhu.edu) or the Office of Institutional Equity (oie@jhu.edu). In handling reports, people will protect your privacy as much as possible, but faculty and staff are required to officially report information for some cases (e.g., sexual harassment).

Family Accommodations Policy

- Occasionally students may wish to have a guest attend class. You should discuss this with me before the class, in order to be sure that we can accommodate request in a manner consistent with non-disclosure agreement. Generally, this will require that anyone presenting potentially confidential material on the day in question agree to the visitor seeing the material presented and that the presence of the guest be known to the entire class. It may also require the guest to sign the non-disclosure agreement. Similarly, one should not share the video link with any third party or permit any third party to view the "live" video or video recording without my explicit permission in writing.

- **Family accommodations policy:** Occasionally, you may need to bring a family member to class when your responsibilities require it (for instance, if emergency child care is unavailable, or for health needs of a relative). In these cases, it usually will be better to view participate using the video link. However, if this is not possible, then discuss the situation with us beforehand and we will work with you to find a suitable accommodation. Please be sensitive to the classroom environment, and if your family member becomes uncomfortably disruptive, you may leave the classroom and return as needed.

University Policy on Incompletes

There are important revisions to the Incomplete Grade policy in effect for the 2022-2023 academic year. The full policy is available here:
https://e-catalogue.jhu.edu/engineering/full-time-residential-programs/undergraduate-policies/academic-policies/grading-policies/
the following text is an excerpt:

> 1. *A request for an Incomplete grade must be initiated by the student no later than the last day of classes via the Incomplete Grade Contract available in SIS*
> 2. *The required elements on the Incomplete Grade Contract are listed below; all of these topics should be included in the conversation between the student and the instructor.*
> - *The reason for the request for an incomplete grade*
> - *A description of all outstanding work that must be completed*
> - *Date the work is due from the student*
> - *The reversion grade if the student does not complete any of the outstanding work*
>   *3. Instructors are required to submit the new grade to the Office of the Homewood Registrar no later than 45 calendar days after the last day of classes. If the Incomplete grade is not resolved within 45 calendar days after the last day of classes, the Incomplete grade is automatically converted to the reversion grade.*

The significant change here is that there is an Incomplete Grade Contract available to students in SIS to request an incomplete grade. This is how all incomplete grades must be initiated now. The other significant change is the timeline for completion of an incomplete grade, now set **at 45 calendar days after the last day of classes**. Formerly, the default deadline was the end of the third week of the following semester. See the full catalogue entry for considerations for students on academic probation and graduating students.

Deadlines for Adding, Dropping and Withdrawing from Full-semester Courses
https://studentaffairs.jhu.edu/registrar/students/registration/

Students may add a course up to **February 3, 2023** (independent academic work such as research may be added until **March 5, 2023**). They may drop courses up until **March 5,**

2023 provided they remain registered for a minimum of 12 credits. Between **March 6, 2023 and April 14, 2023,** a student may withdraw from a course with a W on their academic record. A record of the course will remain on the academic record with a W appearing in the grade column to indicate that the student registered and then withdrew from the course.

Please see the Registrar's website for relevant deadlines for term courses (6-8 weeks, not full semester).

For more information on these and other academic policies, see https://e-catalogue.jhu.edu/engineering/full-time-residential-programs/undergraduate-policies/academic-policies/grading-policies/