CS 482 Radio Telescope: Syllabus

CS 482 - Senior Software Project II
YCAS Radio Telescope Project

Spring 2022

Webpage: https://ycpcs.github.io/cs482-spring2022-RT

Instructor:

- Professor Donald J. Hake II, djhake2@ycp.edu, KEC 137, Office hours: M-W-F: 1:00p to 2:00p, and by appointment

Meeting times:

- CS 482 Project Status Reports and Milestone Presentations/Demos: Wednesdays, 12:00p to 1:15p in KEC 118, KEC 128, and/or the Project Workspace, in coordination with the ECE Engineering Capstone team.
- The ME Engineering Capstone team will be presenting its status reports and Milestone presentations on Fridays, from 12:00p to 1:15p in KEC 128 and/or the Project Workspace.
- Integrated CS and Engineering Team Meetings: Mondays, 12:00p to 1:15p in KEC 118, KEC 128, and/or Project Workspace.

General Course Description

This course is an elective course for Computer Science majors. It is a continuation of CS481 (Senior Software Project I). It is also to be taken by the student (or student team) provided the project begun in CS481 is considered to be large enough to warrant two full semesters of project activity. The course instructor and members of the sponsoring organization will determine if this condition is met. The two most likely cases are: projects of a type that have taken two semesters when they have been completed by student-industry teams before, or projects which grow into a larger project as unforeseen positive results in CS481 warrant further investigation into a fruitful area(s) that will take another semester to complete.

Additional Course Description for YCAS Radio Telescope Project

This semester (Spring 2022) will be a continuation of the work that was accomplished by the four CS481 Radio Telescope teams from Fall 2021 (and the previous Radio Telescope teams), in coordination with the 2021-2022 Radio Telescope Capstone Engineering team. The Radio Telescope teams will continue the design and development efforts for the various software components for the York County Astronomical Society (YCAS) Radio Telescope. This project is being developed under the direction of the course instructor(s), members of the sponsoring organization (YCAS), recent York College Engineering and Computer Science graduates, and local industry partners.

There are currently four teams of 1-4 people each, working in a coordinated fashion to develop the entire Radio Telescope software suite. The four teams are:

- **Team Jupiter:** Control Room Windows Application (C#, .NET, possibly Azure)
- **Team Luna:** Cross-Platform (Android & iOS) Mobile Application (React, JavaScript, Java)
- **Team Saturn:** Simulation, Visualization, and Virtualization (C#, .NET, Unity)
- **Team Venus:** Front-End User Interface Website (Kotlin, Spring, Java, JavaScript)

There previously was a team dedicated to Back-End work. That work has largely been completely, but may require some modification and maintenance:

- **Team Mercury:** Back-End Server, Database,and AWS

The standard user interface for the Radio Telescope is a web-based GUI. The mobile application, website, and control room application all interface with the Control Room application via the back-end server and database. The simulation, visualization, and virtualization components, (and optionally, an operational scale model of the radio telescope) can all substitute for the physical radio telescope through a common Radio Telescope interface, and will also be used as educational tools by YCAS.

You will be working in close coordination with the Radio Telescope Engineering Capstone Team. As such, the leader of each CS Senior Design team is required to attend the Engineering Capstone Team's status meetings and Milestone Presentations and Demos. Some of the presentations and demos will likely be collaborative efforts betweeen the CS Senior Design Teams and the Engineering Capstone Team.

The Radio Telescope Engineering Capstone Team Drives (Capstone I and II) have been shared with you - you can view all of their accumulated information. Those drives are not, however, open for you to create or edit content. You may use their work, but whatever content you do use, you must cite or reference the source.

Prerequisites

CS 481 - Senior Software Project I with a 2.0 or better.

Textbook

No textbook required.

Course Structure and Expectations

For this semester (Spring 2022), this portion of CS 482 will concentrate exclusively on the further development of the YCAS Radio Telescope project. This will be in the form of multiple teams as shown above.

Each student will be required to maintain a weekly journal documenting their work accomplished for each week. Additionally, a series of graded Milestones similar to CS482 will be based on demonstrations of your (team's) progress throughout the semester. For the weeks when there is not a Milestone presentation scheduled, each team will give a status update on their progress.

Policies

Grades

Your overall grade for the course will be determined as follows:

- Your project grade is a weighted average of an initial proposal and four milestone grades:
  - Weekly Journal: 20%
  - Team Proposal: 5%
  - Milestone 1: 10%
  - Milestone 2: 10%
  - Milestone 3: 15%
  - Milestone 4: 15%
  - Technical Report: 20% (Rough Draft: 15%, Final: 5%)
  - Team Poster: 5%
- Your individual grade for the course is your project grade multiplied by an individual effort factor determined by all of your peers on the Radio Telescope project (through mid-semester and final peer evaluations), combined with the instructors' input.

Grades are assigned on a 100-point scale:

Numeric Range	Letter Grade
90-100	A (4.0)
87-90	B+ (3.5)
80-87	B (3.0)
77-80	C+ (2.5)
70-77	C (2.0)
60-70	D (1.0)
0-60	F (0.0)

Course website

Please check the course web page regularly for important announcements.

Exams

There are no exams for this course.

Project

The overall grade for the course will be determined by the progress made on the chosen project through a series of four milestones. Each group will be expected to demonstrate a working **system** for each milestone and discuss the progress made from the previous one. It is very important to make continuous incremental progress throughout the semester on a weekly basis.

Attendance Policy

Attendance at every weekly meeting is mandatory. If you must miss a meeting, for whatever reason, you must inform your team leader and the instructor as soon as possible. Note that the course meets three times a week.

One of those meetings is the weekly status meeting (or Milestone presentation). One or more instructors, plus your YCAS clients, will be present for those meetings.

A second meeting will involved collaboration with the Engineering Capstone team. It is possible that the CS and ECE team will give combined presentations on one day, while a second day will be used for ME presentations. You will be reuqried to attend both meetings.

The remaining meeting time is reserved for you to accomplish work as a team, as well as interface with the Engineering Capstone teams, and attend their status meetings and Milestones. Attendance at all three schedule class meeting times is mandatory.

In addition, you will need to schedule team meeting times outside of the regular class times, as this is your capstone team project course, and the amount of overall effort required to achieve a successful project laucnh far exceeds the assigned class times.

Academic Integrity

York College's mission statement stipulates that strict adherence to principles of academic honesty is expected of all students. Therefore, academic dishonesty will not be tolerated at York College. Academic dishonesty refers to actions such as, but not limited to, cheating, plagiarism, fabricating research, falsifying academic documents, etc., and includes all situations where students make use of the work of others and claim such work as their own.

When a faculty member believes a student has committed an act of academic dishonesty, the faculty member must promptly notify the student in writing and obtain confirmation of notification from the student. The faculty member then has ten business days from that written notification to the student to report the incident to the Dean of Academic Affairs and the Department Chair. Documentation related to instances of academic dishonesty will be kept on file in the student's permanent record. The faculty member has full discretion to determine a suitable penalty for the student, up to a course grade of 0. This discretion is limited to the course in which the dishonesty took place. Students may not withdraw from a course in which they have been accused of academic dishonesty, unless and until the accusation is withdrawn by the faculty member or is overturned by the Student Welfare Committee or the Dean of Academic Affairs.

Students who believe they have been unjustly charged or sanctioned must discuss the situation with the faculty member and have 10 business days thereafter to submit an appeal to Student Welfare Committee through the Dean of Academic Affairs. If an appeal is filed, the Student Welfare Committee will then conduct a hearing to review the charge and/or sanction. In the case of an egregious first offense, the faculty member may request that the Student Welfare Committee conduct a hearing and determine a sanction, which may involve academic probation, suspension or dismissal from the College.

If the Dean of Academic Affairs determines that the academic dishonesty is the student's second offense, the Dean will provide written notification to the student, the faculty member, and the Department Chair. The Student Welfare Committee will automatically conduct a hearing to review the charge and decide on an appropriate sanction, which will involve academic probation, suspension or dismissal from the College. Students who believe the Student Welfare Committee has unjustly sanctioned them may submit a written appeal to the Dean of Academic Affairs within 72 hours of receiving notification of the Student Welfare Committee's sanction.

Professionalism

We expect you to conduct yourself as a professional in this course. Professionalism includes:

- Respect for and courteous interaction with peers, faculty and facilities;
- Integrity, which includes at its core honesty, responsibility and accountability for one's own actions;
- Sensitivity and appreciation for diverse cultures, backgrounds, and life experiences;
- Constructive evaluation, which means that criticism is offered and accepted in a productive manner;
- Self-reflection and identification of one's own strengths and weaknesses;
- Responsibility for one's own education and learning;
- An attitude that fosters professional behavior in colleagues and peers;
- Punctuality at meetings and class sessions;
- Attentive behavior during class sessions, avoiding personal or social use of cell phones, laptops, or other electronic devices;
- Acknowledgement of the Kinsley Engineering Center as a professional workplace, and treatment of this facility as a business or office space, not as an informal space.

We reserve the right to enforce this code through the York College Code of Student Conduct.

Use of Personal Technology in the Classroom

While York College recognizes students' need for educational and emergency-related technological devices such as laptops, PDA's, cellular phones, etc., using them unethically or recreationally during class time is never appropriate. The college recognizes and supports faculty members' authority to regulate in their classrooms student use of all electronic devices.

Communication Standards

York College recognizes the importance of effective communication in all disciplines and careers. Therefore, students are expected to competently analyze, synthesize, organize, and articulate course material in papers, examinations and presentations. In addition, students should know and use communication skills current to their field of study, recognize the need for revision as part of their writing process, and employ standard conventions of English usage in both writing and speaking. Students may be asked to further revise assignments that do not demonstrate effective use of these communication skills.

Disability Support Services

If you had an IEP or 504 plan in high school or if you have a disability or health condition that impacts you in the classroom, please contact Linda Miller, Director of Disability Support Services, at 815-1785 or lmille18@ycp.edu to discuss obtaining the accommodations for which you may be eligible. If you already have an accommodation memo and wish to access your accommodations in this class, please see me confidentially to discuss.

Disclaimer

This syllabus is subject to change by the instructor.