

HACS 479

Undergraduate Research in Cybersecurity

Overview

The Advanced Cybersecurity Experience for Students (ACES) program encourages its students to engage in research in order to gain greater insight into a specific area within cybersecurity, obtain an appreciation for the subtleties and difficulties associated with the production of knowledge and fundamental new applications, and to prepare for graduate school and the workforce.

Credits and Time Requirements

Students can enroll in HACS 479 for between 1-3 credits, depending on the scope of the project and the time commitment. They should expect to work 3-4 hours a week (or a total of 45 hours over the course of a semester) for each credit of HACS 479.

Research Proposal

Students may receive HACS 479 credit for participation as an assistant on an ongoing research project or they may propose their own research project with a faculty sponsor. A completed application form and detailed research proposal must be submitted online for review by the ACES Director or Associate Director, who will then determine if the project meets the necessary requirements for an undergraduate research project.

To apply for research credit and to upload your research proposal as a pdf, please visit <https://researchapp.eng.umd.edu/ACES/>. Sign in with your university username and password. Complete the information on the application.

Your research proposal must be uploaded as a pdf. The project description should answer the questions outlined below. Please list all headings and include all required information under each heading. The more detailed and thorough your proposal, the less cumbersome making revisions and obtaining approval will be.

1. Project Title
2. Research Objective(s)
 - Explain the primary and any secondary objectives of the research project, i.e. what do you expect to have accomplished by the end of the project? The objective should include a research question, problem, or hypothesis that will be shaping the direction of the project.
3. Overview
 - Provide background information to place your project in the context of previous studies related to the proposed work and explain your project's significance.
4. Student Involvement
 - List all who will be involved in the project. If more than just the student and the advisor will participate, clearly indicate the role of the other personnel and detail the tasks to be performed by the student. Include information on the question, problem, or hypothesis each student will be pursuing as part of the project.
 - If a project will be a group project, all student proposals must be submitted at the same time for review. The project proposals must be unique and clearly delineate each student's individual tasks and contributions to the project.
5. Methodology
 - Explain what tools, techniques, and approaches will be applied to examine particular materials, data, or phenomena to answer the research question, solve the research problem, or test the hypothesis.
6. Project Schedule
 - The schedule for the planned project must list at least 5-6 major milestones for the project (with target dates). One milestone must be for a written mid-semester progress report, which is described in more detail below.
7. Student Learning Outcomes

- List the knowledge, techniques, skills, and any other competencies that the student will acquire as a result of successfully completing the project.
8. References
- Include an appropriately formatted list of references.

Project Deadlines

1. Application and Proposal

The HACS 479 application and completed proposal must be submitted electronically at <https://researchapp.eng.umd.edu/ACES/>. For the Fall and Spring semesters, the completed application and proposal must be submitted no later than one week after the start of the semester in which the project will be completed and credit will be awarded. For Summer and Winter terms, the completed application and proposal must be submitted no later than the first day of classes of the term in which the project will be completed and credit will be awarded. Under no circumstances will credit be awarded for projects that are more than 25% completed at the time of application.

2. Mid-Semester Progress Report

Describe your progress thus far in the semester. This report must be at least one page, double-spaced with standard margins (1.25 inches on the sides and 1 inch on the top and bottom), excluding tables and figures. Please submit your report online at <https://researchapp.eng.umd.edu/ACES/> by the end of week 8 of the semester.

3. Final Research Project

The final research project report should be similar in content to a regular journal article and include: abstract, introduction, methodology, results, conclusion, and references. Please label these sections clearly. The report should be no shorter than five pages single-spaced with standard margins (1.25 inches on the sides and 1 inch on the top and bottom), excluding figures, tables, and references. In order to receive credit for the course, an electronic copy of the project report must be submitted to the Supervisor as well as online via <https://researchapp.eng.umd.edu/ACES/> no later than the last day of classes in the semester in which the project is to be completed. In addition, the Supervisor's project assessment form must be submitted online via <https://researchapp.eng.umd.edu/ACES/> no later than the last day of finals in the semester in which the project is to be completed.

One part of the Supervisor's assessment focuses on the student's performance. Besides providing a comparison with other students supervised, the assessment should contain comments on the student's overall motivation, creativity, ability to work independently, potential for continued growth as a researcher, and any other areas necessary to provide a complete picture of the student's efforts over the course of the project. Another part of the assessment focuses on the project quality. The assessment should indicate if the goals of the project were satisfied, explaining the novelty of the final results (i.e., what new knowledge is reported and what makes it non-obvious) and identifying the significance of these results. In addition, comments should be provided on the student's contribution to formulating the project goals, generating the final results, and identifying and articulating the potential impact of the work.

Notes about the online submission system

You should receive automated emails at each step of the process to keep you informed of where you are and what is left to do. In addition, your supervisor and the ACES staff can send you messages through the system to ask questions or to share revision suggestions. If, at any time, you are confused by this system or have other questions, please do not hesitate to contact the ACES staff.