463.0 Course Plan

Computer Security II
CS463/ECE424
University of Illinois
Administration

• Instructor: **Gang Wang** ([gangw@Illinois.edu](mailto:gangw@Illinois.edu))
  – Office hours: 10:45 am – 11:45 am M/W over zoom (after class)
  – 1-on-1 meeting by appointment

• Course Staff
  – TA: Elizabeth He ([ehe3@illinois.edu](mailto:ehe3@illinois.edu)), Office hour to be added to course website
  – CA: Kevin Tu ([ktu3@illinois.edu](mailto:ktu3@illinois.edu)), Office hour to be added to course website

• Course website: [https://gangw.cs.illinois.edu/class/cs463/](https://gangw.cs.illinois.edu/class/cs463/)
  – Piazza
  – MP Release
  – Slides
  – Grading Policies
Studying Security at University of Illinois

- CS461/ECE422 Computer Security I
- CS460 Security Lab
- CS463/ECE424 Computer Security II
- CS563/ECE524 Advanced Computer Security
- CS498/ECE498 Applied Cryptography
- CS498 Cyber Dystopia
- Other special topics (498/598)
- See https://iti.illinois.edu/education/course-roadmaps/security for links and updates
Summary

• This is a course for graduate students and advanced undergraduates and wanting to develop greater depth and breadth in security.

• It assumes a basic knowledge of the area such as the material covered by Computer Security I (prerequisite or corequisite)

• This semester: expect the ability to program in Java and C/C++. 
Class Format

• About 50-60 minutes of lecture/presentation
• About 15-25 minutes of Q&A discussion
• Follow-up online Quiz released at the end of each class
  – Expected to be completed by the end of the week of each class
  – Sign up to access here: https://learn.illinois.edu/course/view.php?id=61131
  – Contact TA if you have trouble signing up
  – Not-graded (you will see correct answers after trying)
# Common Assessment

<table>
<thead>
<tr>
<th>Assessment Element</th>
<th>% of Grade</th>
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</thead>
<tbody>
<tr>
<td>MP1</td>
<td>6</td>
</tr>
<tr>
<td>MP2</td>
<td>7</td>
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<tr>
<td>MP3</td>
<td>8</td>
</tr>
<tr>
<td>Midterm</td>
<td>15</td>
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<tr>
<td>MP4</td>
<td>9</td>
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<tr>
<td>MP5</td>
<td>10</td>
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<tr>
<td>Participation</td>
<td>15</td>
</tr>
<tr>
<td>Final</td>
<td>30</td>
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This will be used for:
- 100% of the grade for 3 credit students
- 75% of the grade for 4 credit students
Participation

• For most students who can attend the live lectures
  – Attend all the lectures
  – Finish the quiz after each class
    o 85% of quizzes → full quiz score (in case you occasionally forgot to do it)
  – Ask questions/answer questions directly (or in the chat window)

• Students who cannot attend live lectures for the entire semester:
  – Please email the instructor during the first week of class to get permission
  – Watch lecture videos, finish the quiz after each class
  – Post questions/answer questions on Piazza
MPs

- Five assignments, starting this week (Wed)
- MP1 is **individual effort** only.
- Other MPs allow **teams** of up to three.
- You may request a modified, extended, or substituted MP5 if your team wishes.
  - Requires proposal and approval in advance
- Present MP5 results orally (details to be decided)
Exams

Midterm
• October 6, 2021 (week-7)
• Specific details will be posted to Piazza
• It will ask questions about the lectures from week-1 to week-6
• It will test attentiveness, recollection, and reasoning ability in subject matter

Final
• Final week: time to be announced
• It will ask questions about all lectures.
  – 25% from first half
  – 75% from second half
• It will test attentiveness, recollection, and reasoning ability in subject matter
Students Getting 4 Credits

- Write a Survey Paper
  - 4-credit students are expected to complete a survey paper.
  - Grade will come 75% from common assessment and 25% from the Extra Credit Assessment

- Choose your topic (related to security and privacy).
- Select at least 10 papers on the topic.
- Proposal (1-2 pages) due on October 29 at 11:59 PM CT
- Write an 8-page survey of the selected papers.
- Survey due on Sunday Dec 12 at 11:59 PM CT
Survey Paper Assessment

- **Topic** (10%): cohesive, not too broad or narrow, important and interesting
- **References** (15%): on-topic papers showing good coverage
- **Discussion and organization of ideas from topic** (40%)
- **Critique and future challenges** (10%)
- **Writing** (25%): correct English grammar and spelling, good organization
Topics from CS461/ECE422

- Mindset and Ethics
- Software Security
- Web Security
- OS Security
- Crypto
- Network Security
What More is There to Know?

• Revise and extend past topics
• Much more to say in key areas related security and privacy
  ✓ Privacy
  ✓ Machine learning security
  ✓ Advertising
  ✓ Advanced crypto
  ✓ Smartphones and apps
  ✓ Bitcoin
  ✓ Automobile security
  ✓ Cybercrime
  ✓ Code stylometry
  ✓ Misinformation
  ✓ And More
Tentative Course Syllabus

• Course website: [https://gangw.cs.illinois.edu/class/cs463/](https://gangw.cs.illinois.edu/class/cs463/)
  – Lectures are based on research papers (classics + recent research)
  – Will finalize the schedule after confirming with a few invited speakers

• Different from “typical” undergraduate courses
  – No required textbook; we mostly read papers
  – Learn to think like a researcher
  – MPs are related to lectures; but they are not necessarily designed to practice what you already know
  – MPs are more of opportunities to learn something new
Reading: Tertiary Materials

• General textbooks:

• Surveys and specialized texts. Examples:
Reading: Secondary and Primary Materials

• References to scientific research papers (secondary materials) on slides and at the end of the slide set. Example:

• References to standards and source data (primary materials). Examples:
Most slides are derived from existing slide sets. Most of these are, in turn, derived from secondary, primary, and other tertiary materials.

Credits to the folks who created the slides from such sources or originated them appear in the notes for the slides.

Example:
- Based on slides by Nikita Borisov and Carl A. Gunter.
- Based on slides by Lawrie Brown.