

Why do things suck so much?

Student Perspectives on Cyber Security in Undergraduate Education

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Abstract

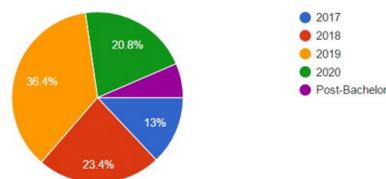
The current state of cyber security is bleak. From consistent failures in the private sector, to the drastic failures of the U.S. Government, there is little doubt that cyber security has been under prioritized in program design. Experts in the security field agree that undergraduate computer science programs are doing students a disservice by not integrating security into their curricula. On the other hand, many computer science professors believe that students are spread thin between different foundational topics, and that security should ultimately be considered a lower priority than other skills. Students' point of view on this topic is largely unexplored. This paper seeks to understand students' viewpoints on the importance of cyber security within their education, in the context of the mixed messages they receive from professors and professionals.

Methods

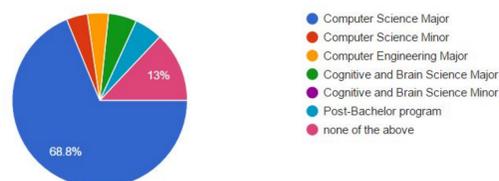
- Survey was written with the guidance of project mentor and security professor, Ming Chow
- It was distributed to students via course forum pages for core computer science classes
- Seventy-seven students responded in total
 - There is, admittedly, a self-selection bias, as students were not incentivized to respond to the survey
- For questions that were specific to certain courses, only the responses of students who had taken the course were considered

Who took this survey?

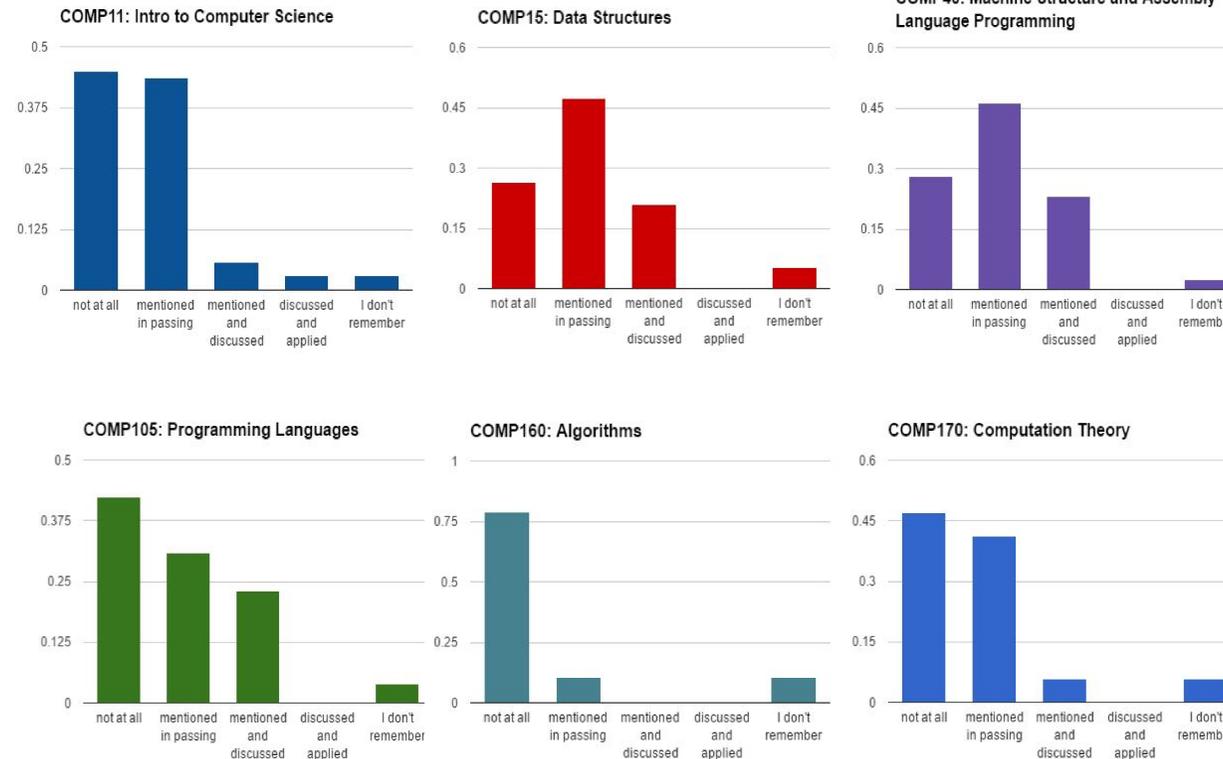
What is your expected year of graduation? (77 responses)



What is your relationship to the Computer Science Department? (77 responses)

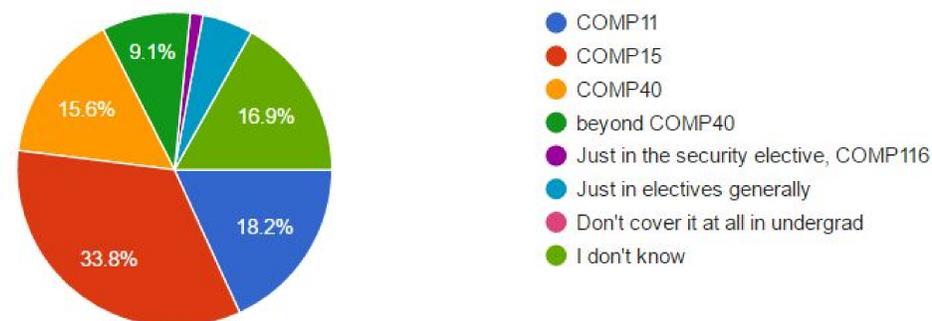


Which of your core classes have touched upon security? In how much depth was it discussed?



When do you think would be an appropriate point to introduce security in our Computer Science curriculum? (77 responses)

(77 responses)



Conclusions

- Students want to see more security, earlier
 - 52% of respondents would like it introduced in COMP11 or COMP15
- Students believe that topics in security can be integrated into the syllabi of core classes within the computer science major
 - e.g., COMP40 → buffer overflows
- Students may not recognize existing applications of security-related topics in the curriculum
 - COMP11 → input validation
 - COMP15 → public/private fields of classes

What next?

- Highlight how topics that the curriculum already relate to security
 - Input validation → Command injections
 - Class architecture → data protection
- Expand course offerings that relate to security
 - The new bridge professor will be a specialist
 - COMP50: Cyber Security and Cyber Warfare
 - Interdisciplinary, gets IR/CS majors in the same room
 - Offer COMP116 in a larger room, or with more than one section
 - This year, enrollment hit its cap
- Consider including more security-related topics in COMP11 or COMP15

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