

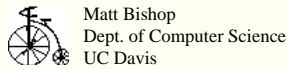
# Teaching Computer Security

## Teaching Computer Security

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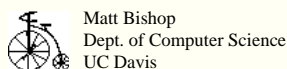
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## Multi-Disciplinary?

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Yes; the field includes various aspects of:

- ☞ operating systems
- ☞ networking
- ☞ databases
- ☞ theory of computation
- ☞ programming languages
- ☞ architecture
- ☞ computer/human interaction



Slide # 2

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## Incorporation

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How do you incorporate the other disciplines into a computer security curriculum effectively?

### More interesting question ...

How do you incorporate computer security into the other disciplines?



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## Example: Second Programming Course

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- Program design from a set of requirements
  - ☞ Treat going from requirements to specification as an exercise (also allows students to be creative)
  - ☞ Design to meet the specifications
- Program implementation from design
  - ☞ argument checking (types, validation)
  - ☞ input/system checking (bogus data from server, bad command arguments)
  - ☞ buffer overflows (bounds checking)



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## Testing

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- Verification and validation
  - ☞ Mathematical verification of binary sort
  - ☞ Test with respect to properties
  - ☞ Test data generation
  - ☞ Stress testing
  - ☞ If it “can’t happen,” fake it



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## Conclusions

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- To improve the quality of security-sensitive software, we have to teach security principles in non-computer security courses.
- Computer security is a multi-disciplinary subject, but one that can be taught with other disciplines as well as teaching other disciplines in a course on computer security
- No-one is expert in all areas; so draw on experts in the other areas



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