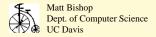# Teaching Computer Security

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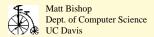fax: (916) 752-4767
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Slide # 1

Multi-Disciplinary?

Yes; the field includes various aspects of:
- ☞ operating systems
- ☞ networking
- ☞ databases
- ☞ theory of computation
- ☞ programming languages
- ☞ architecture
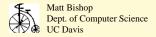- ☞ computer/human interaction

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Slide # 2

Incorporation

How do you incorporate the other disciplines into a computer security curriculum effectively?
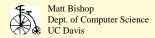
More interesting question …

How do you incorporate computer security into the other disciplines?

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Slide # 3

Example: Second Programming Course

- 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)
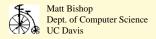 - ☞ buffer overflows (bounds checking)

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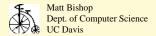Dept. of Computer Science
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Slide # 4

Testing

- 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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Slide # 5

Conclusions

- 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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Slide # 6