Summary

1. Inquiry
2. Themes and concepts

1. Inquiry

• What is computing?
Inquiry

• What is the most exciting new development in computing in the first half of 2012?
• What are the coolest features of MS Word and PowerPoint?
• What is the main principle that enables productivity in text formatting?
• Why are spreadsheet skills required for economics and business majors?
• What is the main principle of spreadsheets?

Inquiry

• What is worth knowing about databases?
• What is the principle for organizing data?
• What unites all information storage?
• Does a computer work like a brain?
• Why does my phone boot quickly and my laptop boot slowly?
• Why is the network often down?
• How can I connect better online with my friends?
• What principles enable communication worldwide?
Inquiry

- Why does almost everyone either hate or love programming?
- Why does software not work?
- What steps and what tools enable building computer solutions efficiently?
- How will IT affect me and everyone I know, in our personal and work lives?
- How does IT affect the rate of social change?

2. Themes and concepts

- silicon vs. neurons
- global control of formatting
- nonlinearity of text
- absolute vs. relative referencing
- linking vs. embedding
- virtuality
- metadata
- hierarchy
- storage/retrieval
- analytical thinking and abstraction
### Abstraction

- A big theme in the course, because computers manipulate abstract symbols
- “To abstract is to remove the basic concept, idea, or process from a situation” (L. Snyder)
- **Goal:** to identify the *relevant* facts
- **Related:** finding patterns and generalizations about them
- What is computing? (Instructor point of view: Computing is *either* transforming data to data, or else *interaction.*)

### Languages used in IT

<table>
<thead>
<tr>
<th>Topic</th>
<th>Kind of language</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Application interface Markup</td>
<td>MS Word, PPT HTML</td>
</tr>
<tr>
<td>2</td>
<td>Formula (algebra)</td>
<td>Excel formulas</td>
</tr>
<tr>
<td>3</td>
<td>Query language</td>
<td>DB query</td>
</tr>
<tr>
<td>4</td>
<td>Machine</td>
<td>Intel microprocessor</td>
</tr>
<tr>
<td>5</td>
<td>Network protocol</td>
<td>HTTP, FTP, TCP/IP</td>
</tr>
<tr>
<td>6</td>
<td>Design Procedural</td>
<td>flowcharts, UML JavaScript</td>
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Multi-topic objectives

0a. Participate in class activities throughout the semester
0b. Solve a problem as part of a team
0c. Present a short talk in the classroom
0d. Write a short documented research paper
0e. Explain and use metadata

3. Course topics

1. Formatting text and graphics
2. Spreadsheets and decision support
3. Introduction to database management
4. Hardware and operating systems
5. Networks and the Internet
6. Problem solving and procedural programming
7. IT and society
**Topic 1: Formatting text and graphics**

1a. Distinguish operating-system from application software
1b. Describe the hierarchical file system concept
1c. Recognize and use the basic terminology of text formatting and presentation software
1d. Explain and use global control of formatting
1e. Format text
1f. Use and explain hyperlinks
1g. Import and export data

**Topic 2: Spreadsheets and decision support**

2a. Explain and use spreadsheet formulas
2b. Explain and use relative and absolute referencing
2c. Explain and use named functions in a spreadsheet
2d. Explain and use spreadsheet formatting
2e. Explain the uses of spreadsheets in business
**Topic 3: Introduction to database management**

3a. Group, extract, summarize and display tabular data by value
3b. Design a relational database
3c. Design simple database queries
3d. Recognize or use simple database concepts

**Topic 4: Hardware and operating systems**

4a. Recognize and use the basic terminology of computer hardware
4b. Manipulate binary numerals and describe their applications
4c. Describe what an assembler or machine-language program does
Topic 5: Networks and the Internet

5a. Use and explain the basic terminology of computer networking and the Internet
5b. Distinguish locally stored data from data stored on a server
5c. Discuss network security issues
5d. Use technology that supports collaboration
5e. Evaluate online information

Topic 6: Problem solving and procedural programming

6a. Identify the steps in system development
6b. Explain the notion of an algorithm
6c. Trace a looping and branching computation specified in a flowchart
6d. Write a looping flowchart or pseudocode
6e. Write branching and looping code in a procedural language
6f. Explain the concept of debugging
6g. Create a simple event-driven web page
Topic 7: IT and society

7a. Explain how technological changes have given rise to new social and professional issues

7b. Explain economic and social factors in the IT revolution