CSC 300
Professional Responsibilities

- Instructor: Clark Savage Turner
- Office: 14-222, Phone: 756 6133
- Office Hours (tentative):
  - Tuesday 9:10 - 12 noon (except 10 April!)
  - Weds. and Fri. 1:10 - 2 pm
    - and by appointment
- Email: csturner@calpoly.edu
  - don't count on email (or cellphones!)
  - watch for spam filtering (use calpoly accounts)
- Web: www.csc.calpoly.edu/~csturner

Prerequisites

- Prerequisite for this class
  - CSC 307 or CSC 309
    - very limited exceptions, only be prior approval
- Make sure you are on the roll,
  - and you know the drop dates

General Course Goals

- Spot relations between technical and social realms
  - identify social issues and tradeoffs inherent in professional computing activities
  - understand basic ethical principles that apply to technical decisions (tradeoffs)
  - discover and explain different points of view regarding ethics of tradeoffs
  - utilize the SE Code (and other principles) in ethical analysis of tradeoffs
  - clearly communicate basic ethical issues and analyses to a technical and nontechnical audience

General Grading Thoughts

- How to get the grade you want
  - *consistently*
    - develop research skills
      - understand basic current issues in professional computing
      - know basic ethical principles that apply
    - develop critical thinking
    - look at computing in a situated context
      - a broad view of computing as a human activity
    - ***develop communication skills***
      - writing effectiveness (spelling, grammar, clarity and style)
      - NOTE: this is the ONLY way I can evaluate your progress!

Grading (cont'd)

- "Correctness" not really at issue
  - your ability to spot issues, make alternative arguments and analyze to a logical conclusion is "enough"
  - "satisficing" solutions (not necessarily optimal!)
    - compare this with software "formal" correctness
    - or "nonfunctional" requirements (see Winter exam!)
- Perspective on grades
  - evaluation is part of life
    - but NOT all of it!

Grade Calculation

- Requirements (see webpage)
  - Midterm 30%
  - Final 20%
  - 20 page Research Paper 20%
  - Formal Presentation 20%
  - Lab Reports and Lab Presentations 10%
  - ***You must receive a passing grade in each activity***
- Note: 2 minute talks, class participation +/- 10% in addition to your normal class grades

Course Basics

- **Required Text:**
  - None! You will read several scholarly articles and consult other references throughout the course
- Recommended readings:
  - *Johnson*, Computer Ethics; *Baase*, A Gift of Fire; *Martin, Schinzinger*, Ethics in Engineering; *Yourdon*, Death March; *Landaur*, The Trouble With Computers; *Simon*, The Sciences of the Artificial
- ***Very important to writing***
  - *Turabian*, A Manual for Writers; *Strunk and White*; The Elements of Style

Class Ground Rules

- Open and respectful behavior -
  - strive to truly "understand" the other side
    - even if offensive to you personally
    - give the "other side" respect and courtesy, you will receive the same when you deliver your own argument
      - this should be through feedback indicating you "understand" (empathize?) with the opposing argument
  - be on time to class, prepared to participate, current with class readings and labs

First Assignment and Reading

- Read SE Code of Ethics
  - Linked from my webpage and everywhere on the Web
  - Possible pop QUIZ on the code during the second week of classes.
    - You need to read and understand the major topics and some details
    - Be prepared to discuss a few in detail
- Read Weinberg's "Trans Science" paper in its entirety - week 1
  - 4-5 page reaction paper due last class of second week
    - ***NOT a summary***, write analysis!
      - critical, supportive or both
      - you may choose a particular angle
        - » ***show me you've read and thought about it***

A simple approach to a reading…

- WHY did the author write it?
  - what is author's "pedigree"?
- What is in the Preface, TOC, Appendices, Index, glossary, cover photo, reviews?
  - note structure (chapters or sections)
- What appears to be the main "theme"
  - related to title? hints?
- Read it in earnest!
  - discuss it with your colleagues (especially from other majors!)

Weinberg Reaction Paper Mechanics

1. **Facts (unbiased)** - what is the book about?
   - no conclusions, no judgments, lots of citations
2. **Issue** list - what questions are raised?
   - choose only one for your focus
   - in the form of a question (yes/no form is best!)
   - note why it is important to think about this question
3. **Others' Arguments** about the issue
   - without comment - as though true!
4. **Your analysis**
   - where *you* analyze old arguments, synthesize or create new ones
   - *now* you make reasoned judgments based on known principles
   - you *answer your question* here

Reaction Paper Notes

- Use headings:
  - Facts, Issue, Arguments, Analysis, Conclusion
- Cite sources when used (absolutely mandatory!)
  - any statement of fact or about the state of the world requires a source
  - quotes short, indented, single spaced, citation
  - even cite conversations with colleagues (a good thing!)
  - form of citation: [number] in text
    - then numbered list in Bibliography
- Spelling, grammar and style are important
  - I will not read / grade a poorly written paper

Assignment and Reading (cont'd)

- First "2 minute talk" - this week in lab
  - you will have a minimum of two this term
  - your choice of topic - broad based
  - 2 minute limit and no reading from a script
  - second talk involves code / design ethical issues
    - discuss a technical artifact and critical tradeoffs

2 Minute Talk topics (and finding a Research Topic!)

- A few sources for topics -
  - a LUG meeting
  - Barnes and Noble (buy 2600 magazine)
  - slashdot.org
  - the Wall Street Journal
  - Friedman's "The Earth is Flat"
  - your own work experience

Lab 1 Assignment

- Prepare 1-2 page "future alumnus" report
  - give me a vision of what you hope to achieve in the 10 years beyond graduation.
    - where will you live?
    - what will you be doing?
    - what sort of additional training did you require to get there?
    - what will you have achieved?
  - include a recent photo at the top
  - due at the end of last lab of week 1

Preliminary Issues to Think About…

- What is a "Professional?"
  - distinguish an "employee"
- What are "Responsibilities?"
  - what are "ethics?"
    - distinguish "laws"
    - who cares?
      - do physicians (or attorneys) collectively care about ethics?

Responsibility?

- What are YOU doing here?
  - Why do we get to do computing?
    - Who pays for this?
    - Who suffers costs / enjoys benefits?
    - Who has “authority” to direct, restrict, guide?
  - What are the issues of consequence?

Computer “Science” ??

- Define “science”
  - consider theme central to “The Structure of Scientific Revolution” by Thomas Kuhn
    - *natural* science
- Is computer science a “science” activity?
  - how about “Software Engineering?”
- What are the Sciences of the Artificial?
  - “design science”
    - see Herb Simon’s work and others built on it

Karl Popper's falsifiability criterion (epistemology)

- Any respectable scientific theory must be falsifiable, subject to showing it is untrue
  - "God is love" is not falsifiable
    - not a perjorative criteria
    - there are different ways of "knowing"
  - "The new Cal Poly IP policy explicitly favors open source" is falsifiable
    - so it can be "tested" for its truth objectively
    - just like the rules for Software Requirements

What is the Focus of a Computing Professional?

- Duty to meet a "contract" …..or "solve a problem?"
  - what are some implications for society for the various stakeholders?

New Features Computing Professionals Must Address?

- Systems Engineering (see Jackson!)
  - we are the "general engineers?"
    - process control example
- Emergent behavior (see Leveson!)
  - pseudo chaotic behavior of deterministic systems?
- Digital vs. Continuous models of the physical world (see Brooks!)

Intro Cases to think about

- Final exam on professor's display
  - you are invited but unobserved
- Internet gambling program flaw
  - illegal to gamble in your state
- Avionics control systems contract
  - impossible to meet software requirements
- Wardriving and mapping to put on web