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# CIS 400 Senior Design

## Fall 2014

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Prof. Insup Lee  
lee@cis.upenn.edu

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# Goals and Objectives

- Define a project
  - Conduct research
  - Produce and execute a work plan
  - Present your ideas and results
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# TAs

- Rado Ivanov, [rivanov@seas.upenn.edu](mailto:rivanov@seas.upenn.edu)
  - Ran Chen, [ranchen@seas.upenn.edu](mailto:ranchen@seas.upenn.edu):  
systems, hardware, networks,...
  - Charu Jangid, [jangidc@wharton.upenn.edu](mailto:jangidc@wharton.upenn.edu):  
online ad, web site,...
  - Alex Roederer, [roederer@seas.upenn.edu](mailto:roederer@seas.upenn.edu):  
data analytics, machine learning, user  
interface...
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# Course Schedule CIS 400

- Project Proposal (~25% of grade)
    - 4-5 pages
    - Due by Thursday Oct 2 by 5 pm
      - Electronic form – PDF to Dropbox  
**AND** hardcopy signed by your advisor
      - Must be in LaTeX
    - Proposal Meetings: Oct 3-7
    - Sign up later
  - Progress Presentation and Report (~75% of grade)
    - 8-10 pages
    - Report Due by Friday, Dec 12 by 5 pm
    - Progress presentations in class: Nov 13-25
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# CIS 400 in-class meetings (tentative)

- ❑ Meet with your TA, 4:30 pm, Thursday, LRSM Auditorium
  - ❑ Introduction to Latex, 4:30 pm, TBD, LRSM Auditorium
  - ❑ Proposal writing tips/feedback, TBD
  - ❑ Library/Research resource info session, TBD
  - ❑ Presentation on “security precautions in the real world,” by Charles Buchholtz, TBD in Nov
  - ❑ Presentation tips session, TBD
  - ❑ Project presentations, Nov 13, 18, 20, 25
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# Tentative Course Schedule CIS 401

- Project progress presentations (in Feb/March)
  - Poster presentation (in April)
  - Judgment Day, late April
    - End of semester demo and poster presentation
    - Prizes awarded to outstanding projects
      - Panel of external judges
    - Top 3 goes to SEAS competition
  - Final report
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# To Do in Fall Semester

- Select a topic
  - Select a team of 4 members (3 or 5 allowed)
  - Find a faculty project advisor
  - Turn in Project Proposal by Oct 2
  - Meet with me and TAs for Project Review
  - Attend **mandatory** information resources sessions
  - In-class Project Presentation in November
  - Turn in Project Progress Report by Dec 12
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# Course Web Page

- [www.seas.upenn.edu/~cis400](http://www.seas.upenn.edu/~cis400)
  - Includes some project suggestions and links to past project descriptions
  - Other helpful information:
    - [http://www.seas.upenn.edu/~cse400/CSE400\\_2014\\_2015/spec\\_proposal/prop\\_spec.pdf](http://www.seas.upenn.edu/~cse400/CSE400_2014_2015/spec_proposal/prop_spec.pdf)
    - [http://www.seas.upenn.edu/~cse400/CSE400\\_2014\\_2015/prelims/write\\_guide.pdf](http://www.seas.upenn.edu/~cse400/CSE400_2014_2015/prelims/write_guide.pdf)
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# Characteristics of a good project

- The problem is **interesting**
- The problem has a **novel** research component and/or can result in high-quality, **innovative** product
- You are aware of prior work and can explain why your project is better/different
- You have a clear idea of what your end result will be
- You understand what's required in terms of skills, personnel, equipment, tools, and time
- ~~Grading rubric available online~~

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# Project Proposal Format

- **Title**

- Project Name, participants, faculty advisor

- **Abstract**

- 1-2 paragraph description of the project including a clear description of what your software system will eventually do
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# Project Proposal Format

## ■ Introduction

- Motivation, problem statement

## ■ Related Work (1 – 2 pages)

- Summarize related research, products and systems
- Explain why the proposed system is better/different from what already exists
- Multiple information sources:
  - Patents, Textbooks, Scholarly articles, tech reports, web sites

## ■ Proposed Work (2 pages approx)

- Explain how your system will work
  - Provide a block diagram of major components
  - Explain the principal technical challenges
  - Evaluation Criteria
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# Project Proposal Format

## ■ Milestones/Timetable

- List the major tasks that you will need to perform and when you expect to do them
- **Must indicate tangible deliverables to be demonstrated at the end of fall and spring semesters**
- Resources Required (if needed)
  - Which computers will you use, what hardware and software tools are required what new textbooks and reference material

## ■ References

- List the articles, textbooks, web sites, etc. that you cited in the body of your project proposal
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# Project Progress Report

- Similar format to Project Proposal but Technical approach section will be expanded
  - Description of work done to date
  - Results of prototype implementation
  - Detailed plan for work to be done next semester
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# Grading Considerations

- Is it clear what the project is about?
  - Have you done sufficient research to identify related projects, products and relevant resources?
  - Do you have a plausible technical approach and a clear idea of the challenges?
  - Do you have a clear idea of what it will take to get the project done, time, equipment tools personnel etc.?
  - Is the project innovative?
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# Plagiarism Policy

- All reports and code turned in are expected to be original work.
    - If and when in question, ask the instructor
  - Refer to the web site for a detailed plagiarism policy
    - <http://www.vpul.upenn.edu/osl/acadint.html>
  - Violations of the policy will be viewed as a serious breach of Academic Ethics and may result in a trip to the OSC
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# CIS Faculty Research Areas



- **Graphics** (Badler, Gallier, Kavan, Lane)
- **Computational linguistics** (Callison-Burch, Marcus, Nenkova, Liberman)
- **Robotics/vision** (Daniilidis, Gallier, Mintz, Shi, Taylor)
- **Algorithms and Complexity Theory** (Alur, Guha, Kannan, Kearns, Khanna, Roth)
- **Computer Architecture** (Devietti, Martin, DeHon)
- **Databases** (Davidson, Guha, Khanna, Ives, Loo, Pierce, Tannen, Weinstein)
- **Embedded Systems** (Alur, Lee, Phan, Sokolsky, Mangharam)
- **Machine Learning** (Kearns, Ungar)
- **Networks and Distributed Systems** (Haeberlen, Loo, Smith)
- **Programming Languages** (Pierce, Weirich, Zdancewic)
- **Security, Privacy, Trust Management** (Blaze, Lee, Heninger, Smith, Sokolsky, Zdancewic)
- **Software Engineering** (Lee, Murphy)