CPSC 589
Seminar in Computer Science
Introduction

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Outlines
1. Introduction
2. Research Resources and References
3. Research Topics in Computer Science
4. Survey
5. Presentation
6. Research Proposal

Now we are here!

Introduction
Research in Computer Science

Course Objectives
- Find research topics for CPSC 597 (Project) and CPSC 598 (Thesis) in the CSUF Computer Science MS program
- Investigate research resources
- Learn how to
  - Survey
  - Present research work
  - Propose research projects

Computer Science MS Program
- CPSC 597: Project
  - Applied computing projects
  - Development of software
  - Systems development projects
  - Theoretical studies also possible
  - Good for the students choosing technical/business careers
- CPSC 598: Thesis
  - More creative components
  - Good for the students pursuing Ph.D. and academic/research careers

Software Development
- Performed by using software engineering techniques and computer science principles to produce a working representation of the problem
  - Perform a requirements analysis and write software specification
  - Design a software solution from the specifications
  - Implement the design in computer programs
  - Test and integrate the software programs
  - Write the required documents
  - Demonstrate the project
  - Deliver the software project and documents
Systems Development Projects

- Emphasis on developing systems that are both hardware and software intensive
- Designed and developed to interact with a special hardware environment

Theoretical Studies

- Explore and investigate a computer science problem or topic by:
  - Analyzing the problem or topic
  - Conducting extensive research
  - Summarizing the findings from the research investigation
  - Recommending additional research on the topic
  - Drawing conclusions from the study
  - (May or may not include software development)

Project Planning

- Identify a computer science problem
- Perform an analysis of the problem
- Postulate a solution
- Investigate current research to support the solution
- Solve the problem
- Test the solution
- Document the results
- Demonstrate the project program
- Deliver the final product

Related Documents

- Master's Project Guidelines, CSUF, CS Department, (Find a new edition).
- CSUF Computer Science Department, Forms & Documents: http://cs.fullerton.edu/

Related Documents (Forms)

- CPSC 597: Project Definition Form
  - Tentative title of project
  - Project proposal
  - Advisor
  - Reviewer
- Final Project Form
  - Presentation
  - Advisor
  - Reviewer

Project Prerequisites
- You must register in either CPSC 597 (Projects) or CPSC 598 (Thesis) in order to complete the CS project or thesis.
- Must be classified as a graduate student
- Deadlines
  - The last day of instruction of the semester before you register in CPSC 597 or 598.

General Procedures
- Select project topic or problem
  - Think early
  - Computer science classes and references
  - Faculty research interests and samples
- Select project advisor and reviewer
  - Full-time faculties
- Prepare project proposal
  - Project Definition Form

Project Proposal
- Project topic
- Problem objectives
- Project activities
  - Development phases, tasks, HW, SW
  - Development environment
- Project results
  - Design document, source code, user's manuals, final report
- Project schedule
  - Milestones, estimated time: 150 hours - 200 hours
- Submit project proposal (Project Def. Form)
  - Must be approved prior to enrolling CPSC 597

Perform Project Tasks
- Submit progress reports
- Create draft project document
- Demonstrate the project
  - Oral representation for theoretical studies
- Bibliography
- Submit final project and report
- Final evaluation

Final Project and Report
- Bound in a single binder (multiple binders are acceptable for very large reports)
- Size: 8½ inches by 12 inches
- Coil binding, comb binding, fabric binding, and looseleaf ring binders are not acceptable.
  - e.g., Kingko's VeloBind is acceptable.
- Hardcopy: MS Word or PDF format with a CD
  - 4 copies must be submitted.
  - For student, advisor, reviewer, and department

Final Evaluation
- Quality of the final project report
- Quality of the product developed
- How well the tasks were performed
- The difficulty of the project
Guidelines for SW Development Project Report

- Approval cover page (approval form)
- Table of Contents, Tables, Figures, and Appendix
- Introduction
- Description of the Problem
- Project Objectives
- Technical Description of the Problem
- SW System Objectives
- SW Functions
- SW Interfaces
- SW Specifications
- SW Design
- SW Implementation
- Test and Integration
- System Delivery
- Recommendations for Enhancement
- Bibliography, citing all references used

Guidelines for Systems Development Project Report

- Approval cover page (approval form)
- Table of Contents, Tables, Figures, and Appendix
- Introduction
- Problem Definition
- Goals for the System
- System Constraints
- Description of the User Environment
- Development Operating Environment
- System Architecture
- System Interfaces
- Hardware Architecture
- Software Architecture
- Design and Implementation
- System Integration and Test
- Recommendations for Enhancement
- Bibliography, citing all references used

Guidelines for Theoretical Studies Projects

- Approval cover page (approval form)
- Table of Contents, Tables, Figures, and Appendix
- Introduction
- Definition of the Problem
- Objectives of the Study
- Significance of the Problem
- Review of Significant Research
- Assumptions and Limitations
- Research Approach and Methodology
- Research Results
- Analysis of the Results
- Summary and Conclusions
- Bibliography, citing all references used

Project Definition Form

Final Project Report Form

Example Schedule
CPSC 598: Thesis

- For Thesis, see Graduate Regulations
  - Graduate Studies Office, MH 103
  - http://www.fullerton.edu/catalog/graduate_regulations/
  - General regulations
  - Format guidelines and style Manuals
  - Deadlines
  - Final procedures
    - Approval signatures
    - University thesis reader
    - Binding and microfilming
    - Notification for award of the degree
    - Depositing of thesis in Library

References

- Master’s Project and Thesis Guidelines, CSUF Computer Science Dept.
- CSUF Computer Science, Forms & Documents: http://cs.fullerton.edu/