



Course Overview: CS 577b Software Engineering II

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Outline

- **Course objective and challenge**
- **Project schedule**
- **Course Schedule – Ray Madachy**
- **Project Status and Team Formation**
- **Project and Team Risk Management**
- **Project Planning**
- **Other course preparation**
 - **Academic integrity reminder**
- **MBASE Guidelines Update – Winsor Brown**

CS 577b Course Objective

- **Learn how to go**
 - From a successful LCA package
 - To a successfully delivered software system
- **Main Elements**
 - Coping with the devils in the details
 - Understanding how the stakeholders will operate and maintain the system
 - Using the MBASE project guidelines



Challenge: IOC vs LCA Client Evaluations

| Metric | USC 1996-97 | USC 1997-98 | USC 1998-99 | USC 1999-00 |
|---------------------------------------|-------------|-------------|-------------|-------------|
| Fall Semester: LCO/LCA Package | | | | |
| Teams | 15 | 16 | 20 | 22 |
| Students | 86 | 80 | 102 | 100 |
| Applications | 12 | 15 | 17 | 22 |
| Teams failing LCO review | 4 | 4 | 1 | 1 |
| Teams failing LCA review | 0 | 0 | 0 | 0 |
| Pages, LCO Package | 160 | 103 | 114 | - |
| Pages, LCA Package | 230 | 154 | 167 | - |
| Client Eval (1-5, 5 Best) | 4.46 | 4.67 | 4.74 | 4.48 |
| Spring Semester: IOC Package | | | | |
| Teams | 6 | 5 | 6 | 8 |
| Students | 28 | 23 | 28 | 35 |
| Applications | 8 | 5 | 6 | 8 |
| Teams failing IOC Acceptance review | 0 | 0 | 0 | 1 |
| Applications satisfying Clients | 5 | 5 | 6 | 7 |
| Application not overtaken by events | 6 | 4 | 4 | 4 |
| Applications continued | 3 | 3 | TBD | 4 |
| Applications used | 1 | 3 | TBD | 5 |
| Client Evaluation | - | 4.15 | 4.3 | 4.75* |



Software engineering education stakeholders and win conditions. - I

| Stakeholders | Win conditions |
|---------------------|--|
| Students | <ul style="list-style-type: none">• Lifelong-value knowledge and skills• Marketable near-term skills, experience• Fair workload, grading• Rewarding intellectual, social experience |
| Industry | <ul style="list-style-type: none">• Lifelong-value knowledge and skills• Relevant near-term skills, experience• Full-spectrum coverage of life-cycle, discipline (people, economics, domain) skills• High volume of graduates• Distance learning opportunities |



Software engineering education stakeholders and win conditions. - II

| Stakeholders | Win conditions |
|---|---|
| Class-project clients | <ul style="list-style-type: none">• Well-engineered products• Easy to transition and use• Efficient use of client time• Minimum operational disruption• Client knowledge and skills developed in information technology |
| Software engineering community | <ul style="list-style-type: none">• Experience-based improvements in software engineering tools and techniques |
| Instructors, teaching assistants | <ul style="list-style-type: none">• Create, sustain stakeholder win-win enterprise• Confront, resolve win-lose risks• Contribute to software engineering and SE education state-of-art, state-of-practice• Manageable workload• Rewarding intellectual, social experience |



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Project Schedule

- Jan. 24** - **Re-form teams**
- Feb. 10** - **Draft LCA-Rebaseline on Web**
- Feb. 20-21** - **LCA-Rebaseline ARB reviews**
- Mar. 12-28** - **Core Capability Drive-thrus**
- Apr. 9** - **Draft Transition Pkg. on Web**
- Apr. 17-18** - **Transition Readiness Reviews**
- May 7** - **Product Delivery**
- May 9** - **Individual Critiques, Client Evaluations**



Main Challenge for Clients

- **Products are delivered on May 7**
- **By May 14, students have disappeared**



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| Date | Lecture | Speakers | Individual Assignments | Project Assignments |
|--------------|--|-------------|-----------------------------|---|
| M 1/13 | Overview, Maintenance, Risk Management, MBASE Guidelines | BB, RM, AWB | | |
| W 1/15 | RLCA, CTS Planning | BB | | |
| W 1/22 | OO Analysis and Design | EC | Transition Plan Preparation | |
| F 1/24 | | | | Submit Teams and Projects |
| M 1/27 | Quality Management I | AWB | | Teams Formed |
| W 1/29 | Quality Management II | AWB, RM | OO Model Integration | |
| M 2/3 | COTS Integration and COCOTS | RM | | Effort Report |
| W 2/5 | OO Design and Development I | EC | Test Plan | |
| M 2/10 | OO Design and Development II | EC | | Effort Report, Draft LCA on Web |
| W 2/12 | OO Design and Development III | EC | OOAD | Project Status Report |
| W 2/19 | CTS Guidelines | RM | | Effort and Status Report |
| Th-F 2/20-21 | RLCA ARBs | | | |
| M 2/24 | RLCA Feedback, CCD Prep | BB | | Effort Report |
| W 2/26 | Quality Management III | BB, RM | | Status Report, RLCA Package, Quality Report |
| M 3/3 | Development, Test tools | AWB, RM | | Effort Report |
| W 3/5 | OO Design and Development IV | AWB, RM | | Status Report |
| M 3/10 | CCD Workshop | RM, EC, AWB | | Effort Report |
| W 3/12 | OO Design and Development V | EC | | Status Report and Design Reading, CCD |
| M 3/24 | Agile Methods | BB | | Effort Report, CCD |
| W 3/26 | MBASE and CMMI | BB, RM | | Status Report, CCD |
| M 3/31 | CCD Feedback, Transition Prep, Case Study | BB, RM, AJ | | IOC Working Set #1, Effort, CCD Report |
| W 4/2 | MBASE and CMMI II | RM | | Status Report |
| M 4/7 | Using MBASE in Ecommerce | Mehta | Case Study Homework | |
| W 4/9 | Case Study Discussion | AJ | | |
| M 4/14 | TRR Preparation Workshop | BB, RM | | Draft TRR Package on the Web |
| M 4/16 | Business Case Analysis | Reifer | | |
| Th-F 4/17-18 | Transition Readiness Reviews | | | |
| M 4/21 | Process Dynamics | RM | | |
| W 4/23 | Six Sigma Processes | Hefner | | |
| W 4/28 | Transition Workshop | RM | | |
| W 4/30 | Developing Secure Software | Murali | | |
| W 5/7 | | | | Product Delivery and Client Acceptance |
| F 5/9 | | | Individual Critiques | Archiving, Closeout Report |

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577A projects selected for continuation in 577B

| TEAM | PROJECT | CLIENT |
|--------------------------|--|---------------------------|
| Team #1 | DeLA | Barbara Sheppard |
| Team #3 | Dia UML | Robert Doiel |
| Team #6 | Archiving and Web Dissemination of Geotechnical Data | Jennifer N. Swift |
| Team #8 | Leavey Scheduling Module | Anne Lynch, John Bonham |
| Team #9 | Conference Trip Planner | Tess Reyes, Elen Castillo |
| Team #13 | Quality Management Information System | Winsor Brown |
| Team #14 | Caroline's Closet | Caroline Keating |
| Team #17 | USC MSCS-SE Database | Marguerite Brown |
| Team #19 | CSE Technical Reports System | Roshanak Roshandel |
| Team #22 | Online Customer Relations Management System | Andrew Quintero |

- **Students not on one those teams need to join one**
- **New students need to fill out the web capabilities questionnaire**



| Name | Team |
|----------------------------|--|
| Baxi, Pranjali, M. | 1 - DeLA |
| Chen, Yue | |
| Meyers, Steven, Alan | |
| Sharman, Gunjan | |
| Shaikh, Imran, A. | |
| Leung, Walter, Li-Zheng | 3 - Dia UML |
| Mehta, Milan, Pravin | |
| Yeh, Shih-Ching | |
| Javed, Arslan | 6 - Archiving and Web Dissemination of Geotechnical Data |
| Khan, Yasir, Bilal | |
| Nasir, Faisal | |
| Tiwana, Shahzad, Majeed | |
| Siriwattanakosol, Anongpat | |
| Wang, Lung-Ying | |
| Hor, Wing, Kit | 8 - Leavey Scheduling Module |
| Li, Hoi, Ming | |
| Motwani, Nirajkumar, Ashok | |
| Pagey, Himanshu, Ullhas | |
| Chaudhry, Bahram, Ali | 9 - Conference Trip Planner |
| Tan, Thomas, T. | |
| Tyagi, Shubham | |
| Wang, Jinran | |
| Desai, Harsh, Prakash | |
| Rajani, Gaurav, Suresh | |
| Silva, Vijay | |
| Kim, Sung, Tony | |
| Salgia, Gunjan | |
| Ziegenhorn, Eric, Joseph | |



| Name | Team |
|------------------------------|---|
| Shah, Meghna | 13 - Quality Management Information System |
| Shah, Sachin, Kirit | |
| Chang, Vivian, Yu | |
| Chen, Litsao | 14 - Caroline's Closet |
| Hui, Siu, Yan | |
| Song, Susan, Pei-Yin | |
| Ali, Mohamad, Sadiq | |
| Dave, Vineet, Anilkumar | |
| Tsai, Ming-Hung | |
| Chandrasekhar, Preetham, A. | |
| Meesookho, Chartchai | |
| Lopez, Elizabeth, Montijo | 17 - USC MSCS-SE Database System |
| Svanstedt, Daniel | |
| Selvakumar, Nishanth | |
| Chou, Phillip, Yi-Jinn | 19 - CSE Tech Report System |
| Ku, Chen | |
| Kuang, Jinglin | |
| Malek, Sam | |
| Weng, William, Wei | |
| Tambe, Swara, Uday | |
| Ozyel, Selim | |
| Matos, Margarita, Aurelia | 22 - Online Customer Relationship Management Tool |
| Richardson, Karen | |
| Shen, Ye | |
| Yang, Lijuan | |
| Bei, Gengyan | |
| Dhulia, Monica, Kamleshkumar | |
| Hosgur, Nihat | |

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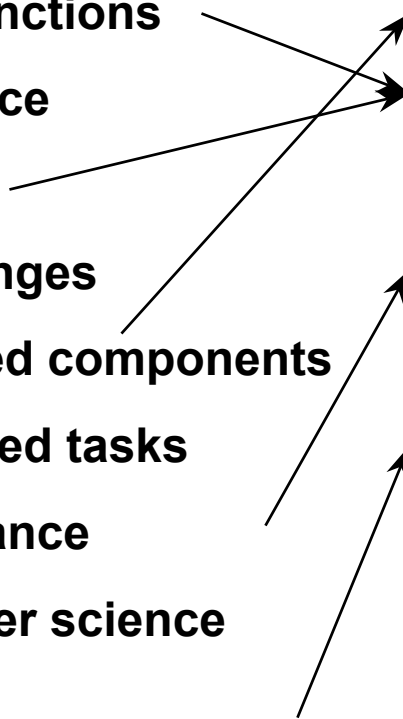
Top 10 Risk Items: 1989 and 1995

1989

1. Personnel shortfalls
2. Schedules and budgets
3. Wrong software functions
4. Wrong user interface
5. Gold plating
6. Requirements changes
7. Externally-furnished components
8. Externally-performed tasks
9. Real-time performance
10. Straining computer science

1995

1. Personnel shortfalls
2. Schedules, budgets, process
3. COTS, external components
4. Requirements mismatch
5. User interface mismatch
6. Architecture, performance, quality
7. Requirements changes
8. Legacy software
9. Externally-performed tasks
10. Straining computer science



Primary CS577b Risk Items

- **Personnel: commitment; compatibility; ease of communication; skills (management, Web/Java, Perl, CGI, data compression, ...)**
- **Schedule: project scope; IOC content; critical-path items (COTS, platforms, reviews, ...)**
- **COTS: see next chart; multi-COTS**
- **Rqts, UI: mismatch to Library user needs**
- **Performance: #bits; #bits/sec; overhead sources**
- **External tasks: Client/Operator preparation, commitment for transition**

COTS and External Component Risks

- **COTS risks: immaturity; inexperience; COTS incompatibility with application, platform, other COTS; controllability**
- **Non-commercial off-the shelf components: reuse libraries, government, universities, etc.**
 - **Qualification testing; benchmarking; inspections; reference checking; compatibility analysis**



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CS 577b Planning - Common LCA - LCP Problems

- **Test and transition preparation**
 - Transition-leader's success plan (teammates, clients)
- **Core capability specifics**
 - End-to-end demonstrable capability
- **Specific team member responsibilities**
 - By artifact and increment; but flexible
- **Possible RLCA prototype, business-case iterations**
- **Too many internal-increment deliverables**

Test Preparation

- **Test-leader's success plan**
 - Test data, drivers, tools, increments
 - Problem tracking and closeout: gnats tool
- **Testing as requirements evaluation**
 - Testing full portability, 24X7, ease of use
 - OK to iterate requirements
- **Verification cross-reference index**
 - Which requirements verified by test, analysis, inspection

Critical Success Factors for Adoption - I

| Application | Client Characteristics | | | | | Transition Preparation | | | Outcome | | |
|--------------------------|------------------------|----------------|-----------------|---------------|------------------|------------------------|------|--------|---------------|----------------|---------|
| | Focused | Representative | O & M Resources | Collaborative | Domain Knowledge | Software | Site | People | Stable Envir. | Client Success | Adopted |
| 1996-97 | | | | | | | | | | | |
| EDGAR Business Data | + | + | | + | + | + | | | + | + | |
| Medieval Manuscripts | + | | | + | + | + | | | + | + | |
| Technical Reports | + | + | | + | + | + | | | | + | |
| Latin American Pamphlets | + | + | | + | + | + | | | + | + | |
| Cinema-TV | + | + | + | + | + | + | + | (+) | | + | (+) |
| Image Archives | | | | + | | + | | | + | | |
| 1997-98 | | | | | | | | | | | |
| S-Charts | + | + | + | + | + | + | (+) | + | (+) | + | (+) |
| Global Express | + | + | + | + | + | + | | + | | + | |
| Hancock Virtual Museum | + | + | (+) | + | + | + | + | + | | + | |
| Serial Control Records | + | + | + | + | + | + | + | + | (+) | + | (+) |
| B-School Working Papers | + | + | + | + | + | + | + | + | + | + | + |
| 1998-99 | | | | | | | | | | | |
| Data Mining | + | + | + | + | + | + | + | + | (+) | + | (+) |
| Dissertations | + | + | + | + | + | + | + | (+) | + | + | (+) |
| Hispanic Archive | + | + | + | + | + | + | + | + | | + | |
| WWI Archive | + | + | + | + | + | + | + | + | | + | (+) |

Critical Success Factors for Adoption - II

| Application | Client Characteristics | | | | | Transition Preparation | | | Outcome | | |
|------------------------------|------------------------|----------------|-----------------|---------------|------------------|------------------------|------|--------|---------------|----------------|---------|
| | Focused | Representative | O & M Resources | Collaborative | Domain Knowledge | Software | Site | People | Stable Envir. | Client Success | Adopted |
| 1999-2000 | | | | | | | | | | | |
| Oversized Object Viewing | + | + | + | + | + | + | + | + | + | + | + |
| East Asian Ingest | + | + | + | + | + | + | + | + | + | + | + |
| New Books List | + | + | + | + | + | + | + | + | (+) | + | (+) |
| Chicano/Latino Serials | + | + | + | + | + | + | (+) | + | | + | |
| Vacation/Sick Leave Tracking | + | + | + | + | + | + | + | + | | + | |
| Business/Reference Q&A's | + | + | + | + | + | | | | | | |
| 2000-2001 | | | | | | | | | | | |
| Web Mail | + | + | + | + | + | + | + | + | (+) | + | + |
| Full text DB Search | + | + | + | + | + | + | + | + | | + | |
| Dental Journal ToC | + | + | + | + | + | + | + | + | + | + | + |
| Pathology Slides | (+) | + | + | + | + | (+) | (+) | (+) | (+) | (+) | |
| Arch/F. Arts Slides | (+) | + | + | + | + | + | + | + | | + | |
| Velero Archive | + | + | + | + | + | + | + | + | + | + | + |



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Other Course Preparation

- **Case study assignment and homework**
 - Readings TBD in Electronic Papers
- **Instructor staff: Barry Boehm, Ray Madachy, Winsor Brown, Ed Colbert**
- **TA's: Apurva Jain, Murali Gangadharan**
- **Grading: Homework 30%; Project 50%, Critique 20%**
- **Questionnaires: Project skills, agreement form**
 - Academic integrity reminder

CS577 Academic Integrity Guidelines

- **Individual Assignments**
 - OK to discuss
 - Not OK to copy each others' solution elements
 - Not OK to copy external sources without attribution
- **Team Assignments**
 - OK to use other teams' patterns
 - E.g., MS project tasks
 - Not OK to copy other teams' complete solutions
 - E.g., MS project schedules



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