

POLICIES AND COURSE SYLLABUS

CSc 190 and CSc 191 - Senior Project

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1.0 INTRODUCTION.

Senior Project provides students with the following opportunities:

- To apply what has been learned in three (or more) years of academic work in computer science to the development of a real-world software product.
- To work as a member of a software development team.
- To have a learning experience in which software engineering principles are applied to a real-world project.
- To demonstrate technical and collaborative capabilities in the real world setting.
- To create a portfolio that provides evidence of quality work.

1.1 Course Prerequisites. Students enrolling in Senior Project should have satisfied the following requirements:

- Senior standing (90 units or more completed).
- CSc Major (Not a Pre-major).
- Passed the Writing Proficiency Exam (WPE).
- Successfully completed* CSc 130 and CSc 131
- Successfully completed* four additional 3 or 4 unit courses which fulfill major requirements (Excluding CSc 192, 194, 195A-D, 198 or CSc 199 – independent study)

* meaning a grade of C- or better

If the student has not attained senior standing or not completed the minimum number of upper division computer science courses, permission may be granted to enroll in Senior Project. However, this requires that the student be two semesters away from graduation, which must be documented with an approved graduation petition verifying the graduation date. If a student manages to enroll in Senior Project without meeting the eligibility requirements, that student can be dropped from the class. *If there are any questions about eligibility, see the instructor immediately.*

Students should not take Senior Project too early. While many students reach “senior” status before they are in their final year of studies, they are not adequately prepared to be an effective contributing member of a senior project team. The senior project requirement is intended to be the culminating experience for the undergraduate major. Consequently, the typical student should be enrolling in CSc 190 two semesters prior to graduation.

2.0 COURSE DESCRIPTION.

CSc 190/191 is a two-semester course sequence, which is structured as a laboratory experience, providing computer science majors the opportunity to apply the knowledge acquired during three (or more) years of college study to develop a real world software product. Each student is

required to work as a member of a project team. *The team must obtain a sponsor and a project*, which must be approved by the senior project instructor. The sponsor serves as the customer for whom the software product is being developed. Sponsors may be representatives from either the private or public sector, for example, a local business, a government agency, a non-profit entity, or the University.

The product is developed using a formalized, software engineering development process. In this process each team completes the necessary software engineering work and publishes this technical work in a set of documents. Completion of each document serves as a major milestone representing the culmination of the technical work completed in each phase in the life cycle of the project's development. During the first semester (*CSc 190*) teams are formed, an acceptable project is identified and upon approval, the work begins. The work requires a Project Overview Specification document to be prepared, a Project Management Plan to be written, and the software requirements elicited, analyzed, specified, and documented. All published work must be reviewed and approved by the team's faculty adviser. In addition, the Project Overview Specification and the Software Requirements Specification documents must also be approved by the project sponsor.

During the second semester (CSc 191) the teams design the software, construct the product according to these design specifications, prepare a system test plan, and – using this plan - test and deliver the product along with appropriate user documentation. Completion of senior project requires delivery and acceptance of the product by the project sponsor and the delivery of the software and a complete set of project documents to the senior project instructor and to the project sponsor. As in CSc 190, all published work must be reviewed and approved by the team's faculty adviser. In addition, the User Manual must be approved by the project sponsor.

All project deliverables are specified in tables 2a and 2b, below.

Some References:

Booch, G., Rumbaugh, J. and Jacobson. *The Unified Modeling Language User Guide*. Addison-Wesley Publishing Company. 1998.

Conallen, Jim. *Building Web Applications with UML*. Addison-Wesley Publishing Company. 2000.

Fowler, M. *UML Distilled: Applying the Standard Object Modeling Language*. Addison-Wesley Publishing Company. 1997.

Ginac, Frank P. *Customer Oriented Software Quality Assurance*. Prentice-Hall PTR, Inc. 1998.

Hunt, Andrew and Thomas, David. *The Pragmatic Programmer: From Journeyman To Master*, Addison-Wesley, 2000.

Institute of Electrical and Electronic Engineers, Inc. *Software Engineering: IEEE Standards Collection*, 1994 Edition.

Jacobson, I. *The Object Advantage: Business Process Reengineering with Object Technology*. Addison-Wesley Publishing Company. 1994

Kaner, Cem; Falk, Jack and Nguyen, Hung Quoc. *Testing Computer Software*, Second Edition, Wiley, 1999.

Maciaszek, Leszek A., *Requirements Analysis and System Design: Developing Information Systems*, Addison-Wesley, 2001.

Mazza, C., Fairclough, J., Melton, B., DePablo, D., Scheffer, A., Steverns, R., Jones, M. and Alvisis, G. *Software Engineering Guides*, Prentice-Hall, Inc. Europe, 1996.

Raskin, Jef. *The Humane Interface: New Directions for Designing Interactive Systems*, Addison-Wesley, 2000.

Ruble, David A. *Practical Analysis and Design for Client / Server & GUI Systems*. Prentice-Hall PTR, Inc. 1997.

Stein, Ruth Federman and Hurd, Sandra. *Using Student Teams in the Classroom*. Anker Publishing Company, Inc. 2000.

Whitten, Jeffrey L. and Bentley, Lonnie D. *Systems Analysis and Design Methods*, Fourth Edition. Irwin/McGraw-Hill, 1998

Wiegers, Karl E. *Software Requirements: Practical techniques for gathering and managing requirements throughout the product development cycle*, Second Edition. Microsoft Press. 2003.

Wysocki, Robert K. *Effective Project Management*, Third Edition, Wiley Publishing, Inc. 2003.

2.2 Project Emphasis and Expectations. The primary purpose and intent of the senior project requirement is to use a relatively small project to simulate the software engineering practices needed in the development of a much larger software system involving a much larger project team. As such, the project teams will be asked to do work that would not necessarily be required of these relatively small projects. Students should understand that their team will be required to follow a standard software development process, one that establishes requirements before the product is designed, produces a design specification that accurately represents the product as implemented, plans and specifies the system testing needed prior to testing, etc.

Most importantly, the project team as well as the individual team members must demonstrate that the project was effectively managed from beginning to end on a week-by-week basis. In addition, the team must demonstrate that all members were engaged in this weekly work and that each contributed their fair share to the project. Furthermore, each team member must contribute to the technical work associated with each phase of the project. Upon completion of the project and the course, the teams as well as their members should be able to demonstrate an understanding of the discipline and practice necessary to successfully develop and deliver a software product.

Each team member should review the complete set of expectations, which are available at the following web address: <http://gaia.ecs.csus.edu/~buckley/CSc190/objectives.pdf>.

2.3 Phases of Project Work. Table 1 provides a listing of the phases of the project work and an estimate of the distribution of work effort using averages of times reported by previous Senior Project teams.

Table 1: Required Software Development Process

DISTRIBUTION OF WORK <i>Each Phase requires preparation of the following:</i>	<i>Estimated % of Total Project Time</i>
Project Overview Specification	4%
Project Management Plan	4%
Software Requirements Specification	14%
Software Design Specification	8%
Software Construction to establish baseline Code	20%
System Test Plan and Test Cases	7%
Testing & Software Test Report	2%
Software Delivery Materials (includes the User Manual and Delivery CD)	2%
Learning (all phases)	13%
Project Management (entire project)	24%
TOTAL	100%

2.4 Student Responsibilities. The two-semester sequence takes the student step-by-step through the development and delivery of a software product. The seminar portion of the course provides instructional guidelines on what is to be done. However, the seminars will not provide everything needed to successfully complete the entire software engineering project. While the student's previous three (or more) years of computer science education should have provided much of what is needed to be successful in Senior Project, teams are expected to prepare and implement learning plans to fill-in necessary technical skills. In fact, Senior Project provides an opportunity for the student to demonstrate the ability to learn and use new software and hardware technologies. This learning may require a considerable amount of ad-hoc, on-the-job, and collaborative learning.

Students are expected to have (or develop) a working knowledge of the following:

- Preparing and writing technical reports
- Preparing and presenting oral technical reports
- Planning and scheduling of all aspects of the work needed to complete the project
- Preparing prototypes to verify information required in the user interaction with the system
- Gathering, analyzing and specifying the software requirements

- Depicting the requirements specification using some representational methodology (e.g. UML)
- Preparing a design prototype to demonstrate the feasibility of the proposed design architecture.
- Preparing the design specifications from the requirements specification
- Depicting the system design using a representational methodology (e.g. UML)
- Building a system from a design specification
- Using an acceptable programming language(s) and tools to implement the software design specifications
- Preparing design prototypes to verify that the usability of the user interface design
- Developing a test plan and designing appropriate test cases sufficient for system testing
- Testing the system using the system test specification
- Applying quality assurance principles and practices throughout the project
- Performing technical reviews on all major documents
- Demonstrating interpersonal skills necessary to work effectively as a member of a project team
- ... or whatever else is needed.

Deficiencies in any of the above areas must be corrected through group or self study.

3.0 THE PROJECT.

The Senior Project class is intended to help students make the transition from academic life to professional life. The project will require students to assume responsibilities broader in scope than one would normally have the opportunity to assume even in their early years of employment.

3.1 Project Responsibilities. In a typical classroom setting, all students do the same assignment or project. The instructor provides the proper guidance or the means to accomplish the assignment. The approach to be taken is either specified in the curriculum or text, or demonstrated by providing previous examples of similar assignments. The instructor is not a “customer” who depends on the student’s successful completion of the assignment. In fact, the consequences of not completing the assignment are reflected only in the student’s grade.

In the senior project course the assignment is a real world project. If such a project has been done previously, there is seldom any need to do it again. Furthermore, if no one is depending upon the project being completed, there is no need to do it at all. Hence, an acceptable project must be unique (e.g. not a copy of existing software), have some risks, and have no guarantee that it will be completed on the prescribed “due date”. Furthermore, in some cases there is no guarantee that the project is doable or that the resources needed to complete the project will be available. However, *the project sponsor should be depending upon the completion of the project.* This is the most significant difference.

The student teams are responsible for effectively managing the relationship with their project sponsor. In so doing they must assume the responsibility to keep their customer informed as to how the work is proceeding and whether the project will be completed as planned. Communication will be facilitated with the use of prototypes showing the team’s understanding

of the requirements as well as the team's proposed design for user interaction.

Just as in the private and public sector, each student will be expected to perform professionally. As a member of a team, they will be responsible for establishing schedules and setting goals. The teams will also be expected to meet these goals and achieve a high standard of product quality.

3.2 Project Requirements. The project is expected to extend over a full two semesters. The average project requires anywhere from 100 to 300 hours of work per student over the two semesters (the average is approximately *200 hours of work per student*). While there is considerable variation between teams, there may also be considerable variation between times spent by individual team members. In the latter case, team members are expected to undertake a relatively equal share of the work.

To gain credit for CSc 190, the project team must satisfy all requirements for each of the deliverables listed in Table 2a as well as fulfilling the expectations specified in section 2.2 above. Students not achieving at least a grade of C- in the first semester will NOT be allowed to continue and must repeat CSc 190. To gain credit for CSc 191, the project team must satisfy all the requirements for each of the deliverables listed in Table 2b as well as fulfilling the expectations referred to in section 2.2 above. Failure to achieve a C- or better will require the student to restart senior project, repeating both CSc 190 and CSc 191.

Tables 2a and 2b identify the required deliverables, but also contain columns for "Start Date" and "Due Date". Each team will need to develop a schedule for the work needed to prepare each deliverable, including the required formal presentation meeting with the sponsor at the end of CSc 190 and CSc 191. Each team's *baseline* schedule should be submitted to the seminar instructor and must also be included in their Project Management Plan (PMP) document. Over the course of the project, each team should expect that changes in their schedule will be necessary. In such cases the changes should be presented to the team's faculty adviser for review and approval. In addition, copies of these schedule changes should be provided to the seminar instructor.

All deliverables in both CSc 190 and CSc 191 *must be completed by the end of the last day of instruction*.

Table 2a: Sample Project Schedule for CSc 190

<i>CSc 190 Activity</i>	<i>Deliverable</i>	<i>Start Date</i>	<i>Due Date</i>
Project Management	Project Log	NA	NA
Identify Project	Project Abstract (formally initiates the project)	NA	NA
Prepare Project Overview	Project Overview Specification (POS)	?	?
Plan Project	Project Management Plan (PMP)	?	?
Elicit, analyze, specify, and document Software Requirements	Requirement Prototypes Software Requirements Specification (SRS)	?	?
Prepare for Customer Presentation	Requirements Review and Sign-off Presentation	?	?

Note. ? indicates that dates are to be estimated by the team.

Table 2b: Sample Project Schedule for CSc 191

<i>CSc 191 Activity</i>	<i>Deliverable</i>	<i>Start Date</i>	<i>Due Date</i>
Project Management	Project Log	NA	NA
Design and implement the architectural prototype	Architectural Design Prototype	?	?
Usability Testing	Usability prototypes	?	?
Complete System Design	Software Design Specification (SDS)	?	?
Prepare System Test Plan and Test Cases	System Test Specification (STS)	?	?
Implement System, Conduct Unit and Integration Testing	Baseline CODE	?	?
Conduct System Tests	Testing & System Test Report (STR)	?	?
Create User's Manual	User's Manual (UM)	?	?
Prepare Delivery Materials	Product CD	?	?

Prepare for Customer Presentation	Technical presentation including delivery, installation, demonstration, and delivery of Product CD	?	?
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3.2.1 Preliminary Project Schedule. Using a standard template (available on the Project Log website), each team will prepare and submit to the seminar instructor a schedule of activities and deliverables. Any revisions in this schedule should be clearly specified, submitted to the project faculty adviser for approval, submitted to the seminar instructor, and attached as updates to the Management Plan. As the team begins each phase of work, a work breakdown schedule (WBS) should be created that shows weekly work assignments. The WBS and then included as a Baseline Change to the team’s Project Management Plan and included in the Project Log. This expanded schedule of work should guide the team’s work and be reviewed as part of the team’s weekly meeting with their faculty adviser.

3.2.2 Project Documents. A typical Senior Project team must prepare the following documents (Table 2c). Baseline documents are considered complete after all indicated parties have approved the document and signed the approval page. The “yes” entries indicate the signatures required for approval.

Table 2c: Sign-off Requirements

<i>Baseline Document</i>	<i>Team Members</i>	<i>Team’s Faculty Project Adviser</i>	<i>Customer</i>
Project Overview Specification (POS)	yes	yes	yes
Project Management Plan (PMP)	yes	yes	<i>optional</i>
Software Requirement Specification (SRS)	yes	yes	yes
Software Design Specification (SDS)	yes	yes	<i>optional</i>
System Test Specification (STS)	yes	yes	<i>optional</i>
System Test Report (STR)	yes	yes	<i>optional</i>
User Manual (UM)	yes	yes	yes

NOTE. Any subsequent changes in the technical specifications require that a Baseline Change Request Form (available on the Project Log website) be prepared and these changes be approved by the indicated parties.

3.2.3 Additional Deliverables. The team’s project faculty adviser may and/or the sponsor may require additional deliverables during various phases of the project. The intent, in all cases, is to provide for a more structured sequencing of activities as teams plan and work toward completion of the major milestones. Examples might be a formal delivery of a completed work breakdown structure (WBS) for each currently active phase or the completion of UML diagrams prior to the completion of the software requirements and software design specification documents.

3.2.4 Oral Presentation. Each team is required to make an end-of-the-semester class presentation in both CSc 190 and CSc 191. The intent of these presentations is to provide students with an un-graded opportunity to make a technical presentation and to receive constructive criticism on the effectiveness of the presentation. In addition, at the end of CSc 190 and again at the end of CSc 191 each team is required to make a formal, technical presentation to their sponsor.

NOTE. Students can expect during their professional career to be called upon to attend many presentations as both a participant and presenter. As a presenter they will be expected to effectively communicate and, in many cases, to seek feedback from management, coworkers, subordinates, customers and other groups. The content of these presentations will vary, at times being focused on technical content while at other times being focused on ideas, proposals and recommendations. This content and its presentation will need to be designed to be clearly understandable by the targeted audience. Those that are able to effectively organize information and have developed good presentation skills will have an advantage over those that lack such skills. Such skills add significant value to the organization and consequently those with the skills are more apt to receive career advancement opportunities, including more challenging job assignments, increased authority, responsibility, and remuneration.

3.2.4.1 Objectives. The presentations required of Senior Project teams satisfy the following course objectives:

- To design and deliver a formal presentation in the time allotted
- To design and fabricate visual aids to support the presentation
- To involve each team member in the design fabrication and delivery of the presentation
- To receive and formally reflect on feedback from members of other project teams on the effectiveness of the presentation
- To provide other teams with constructive criticism on the content and effectiveness of their presentations

3.2.4.2 Content of Sponsor Presentations. As indicated above, teams are required to give, at a minimum, two oral presentations to their sponsor. The first presentation is called a software requirements review and must contain information on both the technical aspects as well as the managerial status of the project. This presentation typically includes a review of the requirements as specified as well as a summary of the semester's work and plans for the CSc 191 work required to complete the project. This presentation is given at the end of the first semester (CSc 190). The second presentation is given at the end of the second semester (CSc 191) and marks the completion of the project. This presentation typically includes a summary of the team's work and a discussion of the product test results along with the installation and demonstration of the product.

3.2.4.3 Evaluation. For the in-class presentations, students will be given a rating sheet for the purpose of providing feedback to the presenting team as to style, presentation context, visual aids, manner of speaking, etc. In addition, the instructor and/or project faculty adviser will provide feedback.

Note. In the case of the classroom presentations, members of teams that are not presenting will be given evaluation forms and must provide feedback on the other teams' presentations. This is a graded requirement for all students.

3.3 Selecting a Project. The seminar instructor will provide teams with the names and contact information for potential sponsor. Teams may also identify potential sponsors. In either case, each team is responsible for coming to an agreement with a sponsor and then preparing a project abstract that provides an initial estimate of the scope of the work. Before work begins,

the abstract must be submitted to the seminar instructor for approval. In judging whether a proposed project is acceptable, the size must be sufficient to provide significant work for each member of the team. As indicated above, teams may contact potential sponsors on their own or use the list of potential sponsors provided to class.

3.3.1 Identifying an Acceptable Project. The following are some guidelines for identifying an acceptable project:

The proposed project:

- Must require at a minimum, sufficient complexity reflected in the need for 5 to 6 major uses (equivalent to, at least, one major Use Case per team member).
- Must involve ALL phases of the software development life-cycle.
- Must involve ALL team members in the technical work and its documentation for each phase.
- Must contain a minimum of 50% custom work (that is, the project must not be all "packages").
- Must reflect the sponsor's expressed need for the software and commitment to work with the team during the development.

3.3.2 Identifying an Acceptable Customer/Sponsor. The following are the restrictions on selecting a project customer/sponsor:

- The customer/sponsor must represent a legitimate business, governmental entity, a non-profit organization, or an educational institution.
- The team cannot serve as their own customer/sponsor.
- The customer/sponsor must not be related to student.
- None of the project team may work directly for the customer/sponsor (i.e. the job performance by the team member should not be affected positively or negatively by the team's work).

3.3.3 Contracted Responsibilities. The Project Overview Specification and the Software Requirements Specification serve as de facto contracts signed by the student, the customer and the project faculty adviser. Since the project, by definition, is one that has never been done before, it is likely that unforeseen problems may arise. Therefore, the student, customer, and project faculty adviser must all understand that the original contract is subject to re-negotiation. If the original work has been planned well, the schedule monitored on a weekly basis, and the status kept and reported, then problems can be identified, changes negotiated and the project schedule easily modified.

WARNING. A significant penalty will be assigned to those teams that require a reduction in the scope of the project merely because they have not committed the necessary time and effort and, consequently, have not effectively managed their work.

3.4 Project Manager. Each student will work on a project team headed by a team member identified as project manager or project leader. The project manager is responsible for ensuring that work assignments are allocated to all team members and that problems (technical and managerial) are dealt with in a timely manner – involving the team's project faculty adviser when necessary. The project manager is also responsible for ensuring that the time allocated

and spent by each team member on each task assigned is monitored and reported.

At the outset all team members are considered to be equally qualified contributors. Some may have more in depth experience in the technical aspects of the project and/or in the management of projects. However, no member should be singled out for extra work and therefore extra credit. This means that the project management function must be a shared responsibility. Much of the work that would typically be assigned to a project manager must be delegated to team members. Again, the intent is to ensure a relatively even distribution of the work load. Again, the responsibility for ensuring this distribution is a shared responsibility of the designated project manager *and* each team member.

NOTE. A different team member is expected to serve as project manager during the CSc 191 portion of the project.

3.5 Manager of Projects. As manager of projects, the team's faculty advisor (the project faculty adviser) wears two hats. Like a "division" manager, he or she is responsible for the successful delivery of the products being developed by each of the teams under his or her supervision. In the role as manager, he or she will insist that students and teams comply with project procedures and policies. In the role as project faculty adviser, he or she will provide the guidance and feedback necessary to facilitate the student's learning and use of real-world software engineering principles. All documents prepared by the team must be approved by the faculty adviser. In this capacity, the faculty adviser monitors and evaluates the quality of the team's work. In addition, the faculty adviser may provide team members with performance reviews over the course of the semester.

3.6 Team Formation. All teams will be formed by the end of the first class meeting of CSc 190. While some students will have formed into teams in advance of the first class meeting, those students who have not will be assigned to a team at that time. Once assigned to a team, students will remain with that team until completion of the project, that is, completion of CSc 191.

Although many of the entering students may not be able to form a team prior to the start of CSc 190, doing so can provide a significant advantage. Students that have worked effectively together in the past, typically have fewer group dynamic problems that those that have not.

A team can be more effective if there is a diversification of talents among team members. However, in forming a team or deciding to join a team, consideration should be given to answers to the following questions. Are the technical skills of the team members equal and/or balanced? Are their work habits compatible? Can each member contribute his or her fair-share of the work? Will the team continue to perform effectively under stress? Is there a potential for personality conflicts over the course of one to two semesters? Are team members all committed to producing a quality product? It is important for all team members to commit to work together to complete all the necessary work over the next 30 weeks. The project's success requires that such a commitment be made by each team member.

3.7 Project Schedule and Status. As mentioned above, each team will prepare a baseline schedule to be included in their Project Management Plan. This baseline schedule and all subsequent changes are to be reported to the seminar instructor using standard forms that will be provided. In addition the team is responsible for collecting, verifying and reporting data on

person-hours worked during each phase of the project – week by week. Recording and reporting will begin immediately after the Project Abstract has been approved by the lab instructor. Weekly reports will be submitted to the seminar instructor indicating both the time worked by each team member during the previous week and the status of the work on all currently active phases. A standard form for reporting weekly time and status will be provided (available on the Project Log website).

3.8 Legal Disclaimer. California State University, Sacramento, the instructors, or any of their agents do not bear any responsibilities for any damages arising from any project undertaken by students in Senior Project.

3.9 Ownership of the Product. As students registered in the senior project courses, team members are not employed by California State University, Sacramento or the project's sponsor. Consequently, the team, collectively, "owns" the final product and all project related materials. However, if the sponsor or any other interested party requires any special conditions of team members (for example, joint ownership and/or clear legal title to the product), a separate agreement should be made between the sponsor and the team members. Responsibility for developing and implementing such agreements rests with the team and the sponsor.

NOTE. The Project Overview Specification (POS) should spell out in exact detail whatever special conditions have been agreed to. Regardless, the POS must indicate that the Computer Science Department reserves the right to use both the documentation and the product as examples of student work.

4.0 DOCUMENTATION.

All technical work – from requirements analysis through to final delivery – must be documented. Each document should be self-contained and written for anyone with a general computer science background. The team should not assume the reader has a detailed understanding of the project. Specific guidelines for the preparation of each document are available on the Senior Project webpage and will be discussed in class.

4.1 Product CD. At the end of CSc 191, the team will deliver to the customer/sponsor and the Senior Project Seminar instructor a CD that contains copies of all the project documents, the software produced along with instructions for installation of the software. In addition, the team's presentation materials from CSc 190 and CSc 191 along with electronic versions of the team's CSc 190 and CSc 191 Project Logs are to be included. This compendium of project documents (1) represents the final product of the class, and (2) serves as an example for future classes. Each team will also deliver to seminar instructor the hard copy originals of the signed approval pages for each the documents, including the final approval page signifying successful delivery of the product and project documentation to the project sponsor. Failure to deliver the Product CD and the approval pages can result in failure to pass CSc 191. These specifications are available on the Project Log website.

4.2 Document Review and Feedback. The project team is responsible for the quality of the documentation produced. The process used to ensure adequate review and revision of the team's work products requires that the team conduct formal technical reviews for each of the documents. The team's quality assurance process must be documented in their Project Management Plan (again, see the materials available on the Project Log website for copies of the

forms to be used to document these technical reviews).

As indicated above, the team's project faculty adviser must approve all the documents produced by the team, making every effort to complete the review of submitted documents in a timely manner. In general, the team should expect a one-week turnaround for all materials submitted. However, as deadlines approach, teams should plan for this review time and not expect turnaround time to necessarily fit their scheduled needs.

5.0 COURSE CONDUCT.

The course consists of a weekly lecture/seminar and a weekly "lab" period.

5.1 Lecture/seminar. The lecture/seminar meets in a 75 minute session once a week and attendance by all team members is mandatory. Over the course of the semester the discussions will include issues related to the software development process as well as topics specific to the work required to successfully complete the project. As described above, each team will give a technical presentation during the seminar – in both CSc 190 and CSc 191.

5.2 Lab Period. In addition to the seminar, students must register for a senior project "lab" section. Each team will be assigned to a project faculty adviser (the "lab" instructor) and will meet with their faculty advisor each week. Each team will consult with their faculty adviser and establish a regular time to meet each week. Attendance at these meeting is mandatory for all team members.

The following list provides an example what might be expected during the team weekly meeting with the project faculty adviser:

- Discussion of the work completed during the previous week
- Discussion of problems
- Review of time and status of the project (including a review of the project schedule and discussion of whatever changes are needed)
- Review of work assignments for the coming week
- Review of project faculty adviser's comments on submitted documents
- Review all or portions of the team's Project Log
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The team is responsible for preparing the agenda for these meetings (see the Project Log materials for a copy of the standard form will be provided).

5.3 Drops, Incompletes, and Cheating. All students enrolled in the senior project sequence are subject to the University and the Department of Computer Science policies regarding drops, incompletes, and cheating. Copies of these policies may be obtained in the Department office.

Cheating in CSc 190/191 is defined as (1) submitting someone else's specific work (i.e., without crediting the source), (2) forging a signature, and (3) intentionally submitting erroneous reports. However, copying from documents that are essential to the support and development of the project is permissible. If this information is general, credit need not be given, however if the information is specific credit must be given. If students have questions about what is permissible, consult the lab instructor.

5.4 Grades. The grades for both CSc 190 and CSc 191 are determined by performance evaluations done in collaboration with the Project Adviser and the Seminar Instructor. Grades are assigned based upon demonstration that the team managed the project on a week-by-week basis throughout both semesters and used the required software engineering principles and practices, individual team member performance, the quality of the documentation, and successful delivery of the software. The following general criteria will be used to assess team and individual performance (see CSUS Grading System, 2006-08 Catalog):

- A. is given for exemplary achievement of the course objectives. In addition to being clearly and significantly above the requirements, work exhibited is of an independent, creative, contributory nature.
- B. is given for superior achievement of the course objectives. The performance is clearly and significantly above the satisfactory fulfillment of course requirements.
- C. is given for satisfactory achievement of the course objectives. The student is now prepared for advanced work or study.
- D. is given for unsatisfactory achievement of course objectives, yet achievement of a sufficient proportion of objectives so that it is not typically necessary to repeat the course. Note. As a major in Computer Science, all courses taken to fulfill your major require C- or better and repeating such a course would be required.
- F. is given for unsatisfactory achievement of course objectives to an extent that the student must repeat the course to receive any credit.

Note. In the “real-world”, a project and those working on the project are subject to review by management. Such reviews have an affect upon the career, the salary and even the continued employment of those involved in the project. Since students are not (**and cannot be**) paid for Senior Project work, each student’s “salary” is received in the form of a grade. “Continued employment” should be interpreted as a passing grade in both CSc 190 and CSc 191.

6.0 PROFESSIONAL SOCIETIES.

Finally, each technical discipline has a number of professional societies and publications that exist to provide a forum for presenting and disseminating professional views and advancements in the state-of-their-art. As a computer scientist or software engineer, membership in such professional organizations is common. The Association for Computing Machinery (<http://www.acm.org/>) and The Institute for Electrical and Electronic Engineers Computer Society (<http://www.computer.org/portal/site/ieeecs/index.jsp>) are the two most highly respected computer organizations are. The School of Engineering and Computer Science is fortunate enough to have a joint ACM/IEEE Computer Society student chapter. Students interested in joining should contact the chapter’s faculty advisor or visit the student chapter homepage (<http://www.ecs.csus.edu/students/acm>).