Program Review Report

Yuba Community College District

YC - Engineering Program Recommendations

Program Description: The Engineering Program at Yuba College is an academic transfer program available to the over 50 engineering majors enrolled in the college. (It should be noted, that students transferring for engineering degrees CANNOT self-identify as engineering majors at Yuba College. This will only be possible after the A.S. degree in engineering is offered at Yuba College.) After completion of core courses in mathematics, physics, chemistry, computer science, general education and the available seven course in engineering, students in the program transfer to public and private universities and colleges, both within California and beyond. There they complete undergraduate degrees in one of the over 200 fields of engineering, but typically chemical, civil, computer, electrical, or mechanical engineering. It is an exciting time to be involved in engineering with new materials being invented and announced, new fields of technology expanding and strong and improving career choices and salaries.

The majority of YC engineering students transfer to CSU Sacramento, CSU Chico, American River College or UC Davis, in that order. Transfer from the Yuba College program is enhanced by the availability of many Transfer Agreements, the active participation of the MESA Program at Yuba College, and the demand for engineers in the workplace. It should be noted that even during the worst of the Great Recession, engineering unemployment was 5% lower than the national average.

Enrollments in the program are stable and healthy for an institution the size of Yuba College. Changes in course offerings and structures (as detailed in the program recommendations) are being made to increase student enrollment with relatively minimal increases in costs for the program.

Year of Review: 2012-2013

Type of Review: Self-Study (4-year review)

Executive Summary: After a year of transition, the Engineering Program at Yuba College is now stable and entering a phase of transformation and growth. With the program saved from the slow death that Drafting and other unstaffed programs have suffered, energies are being directed to goals and activities to improve the program. It is an exciting time in the Engineering program as courses are revised, SLOs are assessed, students are surveyed, and all the many changes are evaluated for effectiveness.

It is also an exciting time to be involved in engineering with new materials being invented and announced almost weekly, new fields of technology expanding and strong and improving career choices and salaries. The US News and World Report in an article in March 2012 noted that the unemployment rate for engineers reached a maximum during the Great Recession at the enviable rate of 6.4% and now sits at a stunning 2%. In June 2011, CNN reported that of the top ten highest-paying careers, the highest nine of them were in fields of engineering or computer science.

The Engineering program is pleased to announce in this Self-Study that it has achieved the major milestone of completing and assessing the set (note that all courses have more than one SLO) of SLOs for each course in Engineering offered since the summer of 2011. In addition, all course outlines of record (CORs), with the exception of ENGR-33 that has not been offered in many years, have been updated. Further, the Engineering Program is hopeful that Engr-10 will be granted its General Education petition in October 2012, because it has the potential to dramatically

increase engineering enrollments and, more importantly, get more students enthusiastic and considering STEM fields as their majors.

Future Goals and Program Direction: Moving forward, the department is focused primarily on preserving the current engineering program and ensuring that it is on a solid foundation of curriculum, processes, and equipment on which to build. The department would like to see the Engineering Program at Yuba College increase, not only in the number of students, but also in its breadth, quality and reputation.

The Engineering Program has developed a new course ENGR-10: Introduction to Engineering and Science which is currently under review by the Curriculum Committee. The goal of the new course is to engage more students in considering and pursuing a career in engineering or other STEM (Science, Technology, Engineering and Mathematics) field. The course will be offered at least once per year and will have only a beginning algebra prerequisite. As new courses are developed and existing courses are expanded, there will be increasing need for instructional assistants (for laboratory work) and adjunct faculty.

Finally, the Engineering Program is looking forward to a deeper partnership with the Computer Science Program and the CTE programs to develop an Engineering Technology Program. Engineering technology is a broad field that represents an exciting opportunity for students who are interested in STEM careers but who may not have the academic skills to obtain a Bachelor of Science degree in engineering. Engineering Technology was listed as #8 in a list of degree fields published by CNN in June 2011 based on starting salary.

Curriculum & SLO Assessment Summary : All courses scheduled since Fall 2011 have a full set (not just one) of course SLOs. In addition, the engineering department has made the commitment to assess course SLOs every time a course is offered due to the smaller enrollments of engineering courses, and this has been completed since Fall 2011. Finally, the engineering department reviews SLO assessment results each semester, and based on this analysis, the department has made some adjustments to clarify SLOs and improve instruction in various courses (see the Engr-35 and Engr-4 SLO results for examples).

In the future, a number of curricular and SLO changes are planned. These are documented in the recommendations, but they include such items as new A.S. Engineering and A.S. Engineering Technology degrees, new courses such as Programming in Matlab or Computational Problem Solving in Engineering, and significant revision of the program SLOs to make them more meaningful. The Engineering department is now working with the Computer Science and Drafting faculty to determine what courses, if any, should be cross-listed to eventually become part of the A.S. Engineering Degree. Finally, the Engineering Department is connected to the state-wide effort to develop and review the AST degree for Engineering.

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
YC - Engineering Program Recommendations - Increased Lab Budget - The department requires a increase in departmental funding (from $800 to $1500	**Plan of Action:** Forward this request to acting Dean or, in their absence, the VP of Instruction.	09/25/2012 - MESH had no Dean for the last budget cycle. The Engineering budget was actually reduced from the prior year although not	

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
per year) for laboratory expenses to adequately fund the wide variety of laboratory samples that are used each academic year. **Year(s) Requested:** 2011-2012 **Recommendation Priority:** 3. High Priority **Supporting Evidence (SLO, WSCH, etc.):** As of December 2011, the department has used 80% of its budget for one lab (Properties of Materials) this academic year with two labs scheduled for the Spring semester (Circuits and Surveying). In addition, the metal samples used this semester have not yet been replaced.	**Type:** Curriculum/SLO **Budgetary Impact:** $700 increase	by as large a percentage (based on hearsay) as other departmental budgets. **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013	
YC - Engineering Program Recommendations - Roof Repair for Room 713 - Fix the leak in the roof above the Universal Testing Machines in 713. **Year(s) Requested:** 2011-2012 **Request Date:** 12/13/2011 **Recommendation Priority:** 3. High Priority **Supporting Evidence (SLO, WSCH, etc.):** There is a leak (likely in the roof) in room 713 near the center Universal Testing Machine that results in a large puddle next to or touching that expensive piece of equipment. Replacement of that piece of equipment (which is the only machine capable of compressing concrete to failure in the ENGR-45 laboratory) would likely result in replacement costs in the neighborhood of $50,000-$75,000, perhaps more. The machines are so expensive, that a reliable price quote could not be obtained	**Plan of Action:** Follow up on ticket that was submitted after the most recent rain storm. **Type:** Facilities **Budgetary Impact:** Minimal if adequate maintenance of the roof is done. VERY large if either testing machine near the leak is damaged. **Location:** YC Marysville Campus	10/24/2012 - Another ticket was submitted today (10/24/2012) after noting the puddle on the lab floor following yesterday's rains. The current maintenance ticket system does not allow tracking (via ticket number or online status) so it is not clear if anything is being done about this safety issue. **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013	
		09/25/2012 - A ceiling tile was removed from the lab during the Spring 2012 semester and remains missing. It is not clear whether the roof leak was repaired or not since it has not rained so far this semester. There is also not a way of checking status on maintenance tickets other than opening up a new ticket electronically. **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013	

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
via the web.			
YC - Engineering Program Recommendations - Revise ENGR-10 COR - Revise the Course Outline of Record (COR) for ENGR-10 to expand its applicability to STEM fields and excite and engage new students in these fields of study. **Year(s) Requested:** 2011-2012 **Request Date:** 11/01/2011 **Recommendation Priority:** 3. High Priority **Supporting Evidence (SLO, WSCH, etc.):** The ENGR-10 course should be revised to help introduce more students into the STEM fields, not only engineering. Nationally, it has been found that many students do not consider engineering or STEM fields simply because they do not know what jobs/activities these disciplines encompass. Engineering continues to have among the highest starting salaries for bachelors degrees and the among the lowest unemployment rates.	**Plan of Action:** Submit a revised COR for ENGR-10 and support it through approval in the curriculum review process. **Type:** Curriculum/SLO **Budgetary Impact:** Increased FTES would be a budgetary improvement	09/25/2012 - This was approved in Spring 2012 and the revised course uploaded to CurricUNET prior to the start of Fall 2012. There was one minor glitch in that the title of the course was not changed in CurricUNET, but this was corrected by the Curriculum Chair. This item is complete. **Recommendation Progress:** Recommendation Addressed/Satisfactory Progress **Reporting Year:** 2012-2013	
YC - Engineering Program Recommendations - Make ENGR-10 a GE Course - Get the new ENGR-10 (Introduction to Engineering and Science) listed as a General Education course at Yuba College to attract new students into the STEM fields. **Year(s) Requested:** 2011-2012 **Request Date:** 12/13/2011 **Recommendation Priority:**	**Plan of Action:** Once the new ENGR-10 COR is approved, a request will be made to consider making ENGR-10 a GE course for Yuba College. **Type:** Curriculum/SLO **Budgetary Impact:** An increase in Engineering FTES would be a budgetary improvement. However, there is a lab component with this course, so there could be a slight increase in the engineering departmental expenses.	09/25/2012 - After the Curriculum Committee and Board approved the revised Engr-10 COR, somehow the GE petition that was submitted at the same time as the revised COR got "lost in translation" to CurricUNET, or the summer semester, or other unknown reason. The GE petition was re-submitted in CurricUNET early in the Fall 2012 with the understanding that the petition would be expedited. The new Engr-10 course is to be offered in Spring 2013, but without an approved and advertised GE status, the department is concerned about the course	

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
3. High Priority **Supporting Evidence (SLO, WSCH, etc.):** Nationally, it has been found that many students do not consider engineering or STEM fields simply because they do not know what jobs/activities these disciplines encompass. Engineering continues to have among the highest starting salaries for bachelors degrees and the among the lowest unemployment rates. We must find a way to attract new students into this field, and fulfilling a GE requirement could be a means of introduction for YC students to these exciting fields.		effectively meeting the population of students that it is designed for. This item is on the agenda for the Curriculum Committee on October 16th (the day after this program review is due). **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013	
YC - Engineering Program Recommendations - Elmo Projector for Room 713 - Purchase and install an Elmo document projector for Room 713. **Year(s) Requested:** 2011-2012 **Request Date:** 12/13/2011 **Recommendation Priority:** 3. High Priority **Supporting Evidence (SLO, WSCH, etc.):** Room 713 is home to a number of engineering courses that require the use of complex diagrams and charts, such as phase diagrams, engineering stress/strain graphs, etc. These are impossible to draw accurately by hand even if one had the time during a lecture to do so. An Elmo document projector would allow sharing such diagrams to the class and demonstrate the use of these engineering graphics.	**Plan of Action:** Request institutional purchase and installation of the document projector from Media Services. **Type:** Equipment/Technology **Budgetary Impact:** According to the spreadsheet provided by Media Services, the cost is $2350.	09/25/2012 - No change in status. The lack of a document cam and the age of the other AV equipment in 713 has been documented by Media Services in its program recommendations. Apparently the price has dropped to $1925 this year, though. At this rate it will be free by the next program review! **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013	
YC - Engineering Program Recommendations - Engineering Laboratory Manuals - Create laboratory instructional manuals for ENGR-45 and	**Plan of Action:** Create laboratory experiments and corresponding student instructions for these	09/25/2012 - A draft laboratory manual has been created for Engr-45 (Properties of Materials), and this is being refined during the Fall 2012 semester.	

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
ENGR-3. **Year(s) Requested:** 2012-2013 **Request Date:** 08/01/2011 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** Any laboratory instruction manuals (including equipment documentation and safety instructions) were lost with the prior engineering instructor. As a consequence the laboratory experiments and student instructions must be recreated from scratch for both ENGR-45 and ENGR-3.	course based on available equipment and supplies. **Type:** Curriculum/SLO **Budgetary Impact:** Minimal, since this work is being accomplished mainly on nights and weekends by the instructor. Possible FLEX time credit for the new multidisciplinary experiments such as the recrystallization of brass experiment.	In future years, it is hoped this could be printed and bound by the Print Shop to be an additional required reference for the course. Some experiments were created for Engr-3 (Plane Surveying) during the Spring 2012 semester, but malfunctions in the GTS equipment hindered development of experiments involving that technology. **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013	
YC - Engineering Program Recommendations - Hire qualified and dynamic adjunct faculty - Hire qualified and dynamic adjunct faculty to teach Engineering Courses at YC, particularly ENGR-3 and ENGR-4 **Year(s) Requested:** 2011-2012 **Request Date:** 08/22/2011 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** Because community college engineering programs teach the fundamental course for a wide variety of engineering disciplines, it is unlikely that any one instructor is best qualified to teach each course offered at YC. For example, even an instructor with a PhD in electrical engineering is unlikely to have ever even taken a surveying class at any time during their course work. In addition, since the fulltime engineering professor is qualified to teach mathematics	**Plan of Action:** Request a job posting from Human Resources at least 6 months prior to the start of the semester of the next offerings of either ENGR-3 or ENGR-4 (now scheduled for Spring 2013). **Type:** Staffing - Other **Budgetary Impact:** If a qualified and suitable adjunct was able to be located and hired, their would likely be a net IMPROVEMENT in the budget impact based on the relative pay rates of fulltime faculty versus that of the hired adjunct. The engineering professors fulltime load would be shifted to unstaffed mathematics classes or (budgetary worst case) to take over a section previously staffed by a mathematics adjunct.	10/03/2012 - A subject matter expert (a retired CA surveyor) was hired for Engr-3 in the spring semester to assist with the equipment in the laboratories. After several postings of the adjunct position, no qualified candidates were available to teach or assist in teaching plane surveying thus documenting the difficulty in finding qualified instructors in the demanding and lucrative discipline of engineering. **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013	

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
at YC, any decrease in his engineering class load enables more sections of mathematics to be taught.			
YC - Engineering Program Recommendations - Clean 713 Floor Drains - Hire a "Roto-Rooter" or equivalent to clear the floor drains in Room 713. **Year(s) Requested:** 2011-2012 **Request Date:** 12/13/2011 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** Several experiments in ENR-45 involve the use of water, including but not limited to the Concrete Design and Testing Lab and the Recrystallization of Brass Lab. The floor drain in the concrete mixing area is very slow and water seeps under the door into the main classroom near the instructors podium with all the AV equipment. The resulting situation presents a safety hazard.	**Plan of Action:** Request a cleaning/clearing of the floor drains in 713. **Type:** Facilities **Budgetary Impact:** Unknown, but likely minimal since this should be part of regular building maintenance.	10/03/2012 - The drain is still blocked. This room is used every fall for the concrete laboratory, and there is a tank in the room used to cure the concrete for 28-days in water. Draining the tank must be done by bailing out the water and walking it outside to the grass. **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013	
YC - Engineering Program Recommendations - Install padlocks on the Universal Testing Machines - Request keyed padlocks for the new knife switches on the Universal Testing Machines from Facilities. **Year(s) Requested:** 2011-2012 **Request Date:** 12/13/2011 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** The new "knife" electrical cutoff switches were installed on 2 of the 3 Universal	**Plan of Action:** This request was expedited in January 2012, and the new locks are now installed. **Type:** Facilities **Budgetary Impact:** Trivial -- the locks match those used by Facilities for all campus electrical fuse boxes.	09/25/2012 - The largest of the UTMs (the one used to break concrete samples during the concrete lab) was not fitted with a knife switch. Therefore this machine could be turned on other than by a supervised student in Engr-45 (Properties of Materials). This means it is important that Room 713 be locked at all times that an instructor is not in the room. **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013 01/17/2012 - Complete **Recommendation Progress:** Recommendation Needs Improvement/Attention	

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
Testing Machines in 713 for student safety. However, they were never supplied with padlocks so there is the potential that any student in 713 for any class or any reason could activate these powerful and expensive machines and damage themselves, other students or the machines.		**Reporting Year:** 2011-2012	
YC - Engineering Program Recommendations - Improve Internet Access in 713 - Improve the speed of internet connection to the instructional computer in 713, and install an internet connection to the laboratory microscope computer in 713A. **Year(s) Requested:** 2011-2012 **Request Date:** 12/13/2011 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** The Engineering Department lacks sufficient funding at the moment to supply the newest technologies to its students. To compensate in some areas, videos are available on the Web to demonstrate technology, techniques and processes that could never be duplicated here. However, the current instructional computer or the computer's internet connection lacks sufficient speed so that these videos can be effectively played in the classroom. In addition, the laboratory computer connected to the new metallurgical microscope in 713A has no internet connection at all, preventing software updates and complicating the sharing of laboratory results.	**Plan of Action:** Request the improvements in internet access in 713 from Media Services. **Type:** Equipment/Technology **Budgetary Impact:** Unknown -- depends on issues and decisions on implementation.	10/03/2012 - No improvement for this item. The age of the computer equipment in the room may be some of the issue for the teaching computer's slowness, and the outdated computer (2006) is listed in Media Services program recommendations. **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013	
YC - Engineering Program			

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
Recommendations - Define a YC Engineering Technology Program - Work with CTE, Computer Science and other MESH faculty to define a viable Engineering Technology Program for Yuba College. **Year(s) Requested:** 2011-2012 **Request Date:** 12/13/2011 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** Engineering Technicians have relatively high starting salaries and are in demand in many different fields. There is considerable interest among the affected YC faculty to establish a program that would provide such certification here in Northern CA. Given the established Engineering Program and the wide range of disciplines in MESH, this is a reasonable goal for an exciting interdisciplinary program that could be of great value to our students and community.	**Plan of Action:** Partner with CTE and Computer Science faculty to define such a program then seek support of MESH and then the Academic Senate. **Type:** Curriculum/SLO **Budgetary Impact:** None at this time.	10/03/2012 - Some discussions are occurring between Computer Science and Engineering. We believe this degree option would be easier after the A.S. Degree in Engineering is in place, but development can proceed. **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013	
YC - Engineering Program Recommendations - Replace Impact Tester - Replace the damaged Impact Tester for the ENGR-45 Lab **Year(s) Requested:** 2011-2012 **Request Date:** 12/13/2011 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** The Impact Tester in the Engineering Lab (Room 713) was broken at some point in the past 4 years. A consultation with the welding faculty indicated that while the broken parts might be able to be welded back into place,	**Plan of Action:** Request a new Impact Tester when institutional equipment funds become available again. **Type:** Equipment/Technology **Budgetary Impact:** $10000 to $25000 depending on availability of used/new equipment	10/03/2012 - No progress. Perhaps at some point the department will find time to write a grant proposal in hopes of getting funding to replace the equipment, but that time is not this year given the other institutional responsibilities that the engineering faculty have had to take on with accreditation, the 4-month advance in the program review process, increased committee responsibilities due to shrinking numbers of faculty, etc. **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013	

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
any subsequent breakage could present a safety and potential liability issue. As a result impact tension tests can no longer be performed for ENGR-45, reducing the usefulness of this testing equipment (and associated laboratory experiment) by 1/3.			
YC - Engineering Program Recommendations - Replace Whiteboard - Replace Left Whiteboard in Room 713. **Year(s) Requested:** 2011-2012 **Request Date:** 01/25/2012 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** The left whiteboard in 713 has degraded such that it can no longer be erased using the supplied eraser or towel. Although the right whiteboard works well, for some reason erasing the left whiteboard requires spraying with water or a cleaner (also supplied) and wiping vigorously with a paper towel. This takes at least 3 minutes of precious lecture time whenever the board needs to be erased. It may be that the left board gets more use because the projector screen covers most of the right board when the overhead projector is used.	**Plan of Action:** Request that Media Services replace the whiteboard in 713. **Type:** Equipment/Technology **Budgetary Impact:** Approximately $200 (based on an internet search of prices, although I would expect that Media Services has negotiated better pricing deals for their standard model)	10/03/2012 - No progress. The left whiteboard is still difficult to erase/reuse during lectures. I don't know if this properly belongs with Media Services or Maintenance. I had hoped to purchase a new one with the last of the engineering budget last year, but battery replacements for the surveying instruments (Engr-3) and restocking of lab samples for Properties of Materials (Engr-45) wiped out the entire budget and then some last year. **Recommendation Progress:** Recommendation Needs Improvement/Attention **Reporting Year:** 2012-2013	
YC - Engineering Program Recommendations - Speakers for Room 713 - Fix or purchase and install speakers for the instructional computer in Room 713. **Year(s) Requested:** 2011-2012 **Request Date:** 12/13/2011 **Recommendation Priority:**	**Plan of Action:** Request speakers for the instructional computer in Room 713. **Type:** Equipment/Technology **Budgetary Impact:** Per the Media Services estimation spreadsheet, wall speakers would cost $258.	09/25/2012 - It was found via experimentation that the speakers work only when the overhead projector is in use. **Recommendation Progress:** Recommendation Addressed/Satisfactory Progress **Reporting Year:** 2012-2013	

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
1. Low Priority **Supporting Evidence (SLO, WSCH, etc.):** The Engineering Department lacks sufficient funding at the moment to supply the newest technologies to its students. To compensate in some areas, videos are available on the Web to demonstrate technology, techniques and processes that could never be duplicated here. However, the current instructional computer lacks any speakers so that these videos can be effectively played in the classroom.			
YC - Engineering Program Recommendations - A.S. Degree in Engineering - Create an Associates of Science degree in Engineering for Yuba College. **Year(s) Requested:** 2012-2013 **Request Date:** 10/04/2012 **Recommendation Priority:** 3. High Priority **Supporting Evidence (SLO, WSCH, etc.):** Yuba College is unable to track any significant metrics on engineering students because the college tracks students based on degrees or certificates that are offered for completion at YC, and not based on transfer goals. Since engineering is currently a transfer-only program, its students are invisible to the college and district. A convenience survey of current engineering students found that at least 80% would be interested in obtaining this degree before transferring.	**Plan of Action:** Define the A.S. Degree in Engineering and submit it for approval. **Type:** Curriculum/SLO **Budgetary Impact:** None. **Perkins Eligible:** No **Location:** Yuba College - All **DE Related:** No		
YC - Engineering Program Recommendations - Initial SLO assessments - Complete initial SLO	**Plan of Action:** Assess the Engr-10 SLOs when the course		

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
assessments for all engineering courses by Spring 2013. **Year(s) Requested:** 2012-2013 **Request Date:** 10/04/2012 **Recommendation Priority:** 3. High Priority **Supporting Evidence (SLO, WSCH, etc.):** This conforms to district, college and program goals. Only one engineering course (Engr-10) remains to have its SLOs assessed for the first time, and this course will be offered for the first time in Spring 2013.	is first offered in Spring 2013. **Type:** Curriculum/SLO **Budgetary Impact:** None **Perkins Eligible:** No **Location:** YC Marysville Campus **DE Related:** No		
YC - Engineering Program Recommendations - Plan for engineering expansion - Develop new courses, modalities and structures to allow expansion of the engineering program in incremental ways. **Year(s) Requested:** 2012-2013 **Request Date:** 10/04/2012 **Recommendation Priority:** 3. High Priority **Supporting Evidence (SLO, WSCH, etc.):** One of the engineering department's goals is to make the program the best in the region, and certainly the college and district would appreciate increases in the enrollment numbers for the engineering courses. While enrollment is only one aspect of a strong engineering program, it is important, and this will take planning to allow incremental increases to occur because there are systemic limits on some courses based on their current design.	**Plan of Action:** Develop an on-line or television version of Engr-35 (Statics). **Type:** Curriculum/SLO **Budgetary Impact:** Increased use of DE resources, possible FLEX credit or stipend for course development. **Perkins Eligible:** No **Location:** DE/Online **DE Related:** Yes		
	Plan of Action: Schedule Engr-45 (Properties of Materials) to support a combined-lecture with dual-lab-time format, then work with Curriculum to determine the effect, if any, on the COR. **Type:** Curriculum/SLO **Budgetary Impact:** There would be no increased cost for facilities, but there would be a modest		

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
	increase in instructional costs due to faculty pay for the second lab period and proportional growth in laboratory costs for test samples with student enrollment increases. **Perkins Eligible:** No **Location:** YC Marysville Campus **DE Related:** No		
	Plan of Action: Develop a course in MATLAB (as offered at Santa Rosa Junior College) and/or engineering numerical methods (as offered at Chabot). **Type:** Curriculum/SLO **Budgetary Impact:** Possible FLEX for new course development. MATLAB has been purchased by a grant through MESA to provide this industry-standard software for all the computers in Room 603 (with maintenance and software upgrades) for 5 years. **Perkins Eligible:** No **Location:** YC Marysville Campus **DE Related:** No		
YC - Engineering Program Recommendations - Program cost model - Develop a cost model for the engineering program including maintenance costs for engineering equipment and samples & supplies needed for engineering laboratory and design work.	**Plan of Action:** Use MS Excel to create a simple cost model for the engineering program. **Type:** Equipment/Technology **Budgetary Impact:** None. Possible FLEX credit since this is		

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
Year(s) Requested: 2012-2013 **Request Date:** 10/05/2012 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** The model will provide more quantitative justification for the engineering budget and will roll up to tie in with the college and district cost models.	currently considered beyond the typical duties of faculty or department heads. **Perkins Eligible:** No **Location:** Yuba College - All **DE Related:** No		
YC - Engineering Program Recommendations - ABET accreditation - Complete ABET accreditation for the engineering program. **Year(s) Requested:** 2012-2013 **Request Date:** 10/05/2012 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** ABET is a nonprofit, non-governmental organization that accredits college and university programs in the disciplines of applied science, computing, engineering, and engineering technology. ABET accredits over 3,100 programs at more than 670 colleges and universities in 24 countries. Accreditation by ABET would greatly increase the status of the engineering program at Yuba College, although it is unlikely to occur until YC offers an A.S. Engineering degree option.	**Plan of Action:** Begin preliminary study of the accreditation standards and document the gaps. **Type:** Curriculum/SLO **Budgetary Impact:** None. Possible FLEX credit. **Perkins Eligible:** No **Location:** Yuba College - All **DE Related:** No		
YC - Engineering Program Recommendations - Professional training - Secure training for the engineering faculty in new technologies in engineering.	**Plan of Action:** Attend training in Computer-Aided Design using an industry-standard software tool (such as Solid Works). **Type:**		

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
Year(s) Requested: 2012-2013 **Request Date:** 10/05/2012 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** The engineering field is filled with many tools and technologies that are specific to particular engineering disciplines (such as GTS and GNSS technologies for surveying and civil engineering). Additional training is needed for the engineering faculty to be proficient in these technologies and reduce the need for subject-matter experts to support the laboratory work in some courses.	Staffing - Other **Budgetary Impact:** $800-2500 depending on format of the training and the level of certification desired. **Perkins Eligible:** Yes **Location:** Yuba College - All **DE Related:** No		
	Plan of Action: Attend training in Topcon-GTS total station technology **Type:** Staffing - Other **Budgetary Impact:** Approximately $1000 **Perkins Eligible:** Yes **Location:** Yuba College - All **DE Related:** No		
YC - Engineering Program Recommendations - Update surveying technologies - Purchase at least one global navigation satellite system (GNSS) surveying instrument set for Plane Surveying. **Year(s) Requested:** 2012-2013 **Request Date:** 10/05/2012 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** At least 80% of all surveying work is now accomplished with GNSS technologies over	**Plan of Action:** Secure funding for the purchase of the recommended equipment. **Type:** Equipment/Technology **Budgetary Impact:** $10000-15000 **Perkins Eligible:** Yes **Location:** YC Marysville Campus **DE Related:** No		

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
the prior generation technology of total station measurements. Plane surveying (Engr-3) is offered in the Spring semester of even-numbered years, and students majoring in civil engineering and those interested in surveying as a profession need to be trained in technologies that are current.			
YC - Engineering Program Recommendations - Equipment maintenance schedule - Create and implement an equipment maintenance schedule for the engineering equipment in the department. **Year(s) Requested:** 2012-2013 **Request Date:** 10/07/2012 **Recommendation Priority:** 2. Medium Priority **Supporting Evidence (SLO, WSCH, etc.):** None of the equipment (either it is too old or there are no affordable maintenance plans available to our location) has professional maintenance performed. Therefore, the department must perform this maintenance on an on-going basis.	**Plan of Action:** Collect the available equipment manuals for the engineering equipment and document maintenance that is recommended for each and the necessary timeline. Then implement the maintenance plan. **Type:** Equipment/Technology **Budgetary Impact:** None. Possible reduction in equipment failures. **Perkins Eligible:** No **Location:** YC Marysville Campus **DE Related:** No		
YC - Engineering Program Recommendations - Engineering Travel Budget - A modest travel budget should be obtained for the Engineering Department for planning purposes. **Year(s) Requested:** 2012-2013 **Request Date:** 10/09/2012 **Recommendation Priority:** 2. Medium Priority	**Plan of Action:** Request that the MESH Dean establish a small travel budget of $500-1000 annually for travel needed for the engineering program. **Type:** Equipment/Technology **Budgetary Impact:** $500-1000 annually **Perkins Eligible:** No		

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
Supporting Evidence (SLO, WSCH, etc.): Engineering is a rapidly changing field with new advancements in theory and technology occurring each year. The full-time engineering faculty have used personal funds to attend at least two engineering conferences and/or training sessions each year, but this is not a sustainable way of keeping the department up to date. Although YCFA/FLEX funding has helped offset some costs, more than $1000 in additional travel and conference expenses were incurred in 2011-12.	**Location:** YC Marysville Campus **DE Related:** No		
YC - Engineering Program Recommendations - Cross-list DRAFT-30 with Engineering - Link DRAFT-30 (Technical Drawing with CAD) with the Engineering Program **Year(s) Requested:** 2012-2013 **Request Date:** 10/05/2012 **Recommendation Priority:** 1. Low Priority **Supporting Evidence (SLO, WSCH, etc.):** DRAFT-30 is a pre-requisite to Engr-4 (Engineering Graphics and Design). Cross-listing the course would reflect the interdisciplinary nature of the course, fit well with the plans of an AS Engineering & Cert. Engineering Tech. and allow greater influence of engineering on the CAD software to be used in the course.	**Plan of Action:** Work with Drafting adjunct to appropriately cross-link the course with the Engineering curriculum. **Type:** Curriculum/SLO **Budgetary Impact:** None. **Perkins Eligible:** No **Location:** Yuba College - All		
YC - Engineering Program Recommendations - Engineering Club - Encourage the formation of an Engineering Club	**Plan of Action:** Identify students willing to restart an engineering club and encourage them to form and align with ASEE. **Type:**		

Recommendations	Plans of Action & Budgetary Impact / Tasks	Status	Feedback & Follow-Up
Year(s) Requested: 2012-2013 **Request Date:** 10/05/2012 **Recommendation Priority:** 1. Low Priority **Supporting Evidence (SLO, WSCH, etc.):** The former engineering club has dwindled and died over the past 2 years. It had weak goals that did not benefit all members, and its affiliation with SHPE (Society for Hispanic Professional Engineers) alienated some students who were not Hispanic. A new club could be formed to generate funds for conferences, shared textbooks (for the reserve desk of the library), for new engineering equipment, etc. that would benefit all students. Affiliation with the ASEE would provide a broad umbrella to introduce students to professional engineering societies.	Staffing - Other **Budgetary Impact:** None. **Perkins Eligible:** No **Location:** Yuba College - All **DE Related:** No		