

Engineering Program Review

2011-2012

1. Program Description

A. Description

Ventura College offers a two-year lower-division engineering program that prepares students for transfer to colleges and universities in California and across the nation. The first two years of the engineering curriculum, at most colleges and universities, are similar with specialization commencing in the junior year. Completion of the lower division core courses listed is essential in facilitating progress as an upper division engineering transfer student. It is important that engineering students meet with an engineering transfer counselor and/or the Engineering Department for specific requirements for transfer.

B. Program Student Learning Outcomes - Successful students in the program are able to:

1. Be able to apply fundamental concepts of mathematics (through calculus), science and engineering.
2. Identify, formulate, and solve basic engineering problems.
3. Conduct experiments and analyze and interpret data.
4. Make basic design decisions concerning appropriate-level engineering problems.

C. College Level Student learning Outcomes

1. Critical Thinking and Problem Solving
2. Communication
3. Information Competency

D. Estimated Costs (Required for Certificate of Achievement ONLY)

	Cost
Enrollment Fees	1620
Books	1205
Supplies	150
Total	2975

E. Criteria Used for Admission

Meet prerequisites for courses.

F. Vision

Ventura College will be a model community college known for enhancing the lives and economic futures of its students and the community.

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G. Mission

Ventura College, one of the oldest comprehensive community colleges in California, provides a positive and accessible learning environment that is responsive to the needs of a highly diverse student body through a varied selection of disciplines, learning approaches and teaching methods including traditional classroom instruction, distance education, experiential learning, and co-curricular activities. It offers courses in basic skills; programs for students seeking an associate degree, certificate or license for job placement and advancement; curricula for students planning to transfer; and training programs to meet worker and employee needs. It is a leader in providing instruction and support for students with disabilities. With its commitment to workforce development in support of the State and region's economic viability, Ventura College takes pride in creating transfer, career technical and continuing education opportunities that promote success, develop students to their full potential, create lifelong learners, enhance personal growth and life enrichment and foster positive values for successful living and membership in a multicultural society. The College is committed to continual assessment of learning outcomes in order to maintain high quality courses and programs. Originally landscaped to be an arboretum, the College has a beautiful, park-like campus that serves as a vital community resource.

H. Core Commitments

Ventura College is dedicated to following a set of enduring Core Commitments that shall guide it through changing times and give rise to its Vision, Mission and Goals.

- Student Success
- Respect
- Integrity
- Quality
- Collegiality
- Access
- Innovation
- Diversity
- Service
- Collaboration
- Sustainability
- Continuous Improvement

I. Degrees/Certificates

Program's courses are designed to articulate to UC and CSU for transfer students.

J. Program Strengths, Successes, and Significant Events

The Engineering Program continues to successfully transfer 25 – 35 students each year to competitive programs at universities to complete their baccalaureate degrees in engineering while having less than one FTEF.

The Engineering Program supports MESA, Math Engineering and Science Achievement, and the Ventura College Student Chapter of SHPE, the Society of Professional Hispanic Engineers as well as being actively involved in the California Engineering Liaison Council which is currently collaborating with Academic

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Senate for California Community Colleges in developing a statewide Transfer model Curriculum Degree for Engineering.

ENGRV02, Engineering Graphics and Design, has been significantly enhanced and now articulates with CSUN's ME186, a course which previously only articulated with one course at one community college in the state.

ENGRV18, Properties of Engineering Materials, has an expanded laboratory course offering, offered for the first time in fall, 2011. The expanded lab component will be a great benefit to student learning.

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K. Organizational Structure

President: Robin Calote

Executive Vice President: Ramiro Sanchez

Dean: David Oliver

Department Chair: Michelle Millea

Instructors and Staff

Name	Michelle Millea
Classification	Professor
Year Hired	1992
Years of Work-Related Experience	7 years engineering experience
Degrees/Credentials	B.S., M.S., P.E.

Name	George Warren
Classification	Adjunct Professor
Year Hired	2007
Years of Work-Related Experience	40 years engineering experience
Degrees/Credentials	B.S., M.S., PhD, P.E.

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2. Performance Expectations

A. Program Student Learning Outcomes - Successful students in the program are able to:

1. Be able to apply fundamental concepts of mathematics (through calculus), science and engineering.
2. Identify, formulate, and solve basic engineering problems.
3. Conduct experiments and analyze and interpret data.
4. Make basic design decisions concerning appropriate-level engineering problems.

B. Student Success Outcomes

1. The program will work to maintain and improve its retention rate from the average of the **program's** prior three-year retention rate. The retention rate is the number of students who finish a term with any grade other than W or DR divided by the number of students at census.
2. The program will work to maintain and improve its retention rate from the average of the **college's** prior three-year retention rate. The retention rate is the number of students who finish a term with any grade other than W or DR divided by the number of students at census.
3. The program will work to maintain and improve the student success rates from the average of the **program's** prior three-year success rates. The student success rate is the percentage of students who receive a grade of c or better.
4. The program will work to maintain and improve the student success rates from the average of the **college's** prior three-year success rates. The student success rate is the percentage of students who receive a grade of C or better.
5. Students will complete the program earning certificates and/or degrees.

C. Program Operating Outcomes

1. The program will maintain WSCH/FTEF above the current goal set by the district.
2. Inventory of instructional equipment is in need of review and revision to make it functional, current, and will then become adequate to maintain a quality-learning environment and a useful piece of information. Inventory of all equipment over \$200 will be maintained and a replacement schedule will be developed. Service contracts for equipment over \$5,000 will be budgeted if funds are available.
3. The Engineering Program will continue to improve its curriculum and learning environment. The program should review curriculum and assess equipment, needs including maintenance, to ensure student needs are met.

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D. Courses to Student Learning Outcomes Map

Course to Program-Level Student Learning Outcome Mapping (CLSLO)

I: This program-level student learning outcome is **INTRODUCED** in this course.

P: This program-level student learning outcome is **PRACTICED** in this course.

M: This program-level student learning outcome is **MASTERED** in this course.

Leave blank if program-level student learning outcome is not addressed.

Courses	PLSLO #1	PLSLO #2	PLSLO #3	PLSLO #4
ENGR V01		P		M
ENGR V02	P	M		P
ENGR V12	M	M		M
ENGR V16	M	M		M
ENGR V16L	M	M	M	M
ENGR V18	M	M	M	M

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3. Operating Information

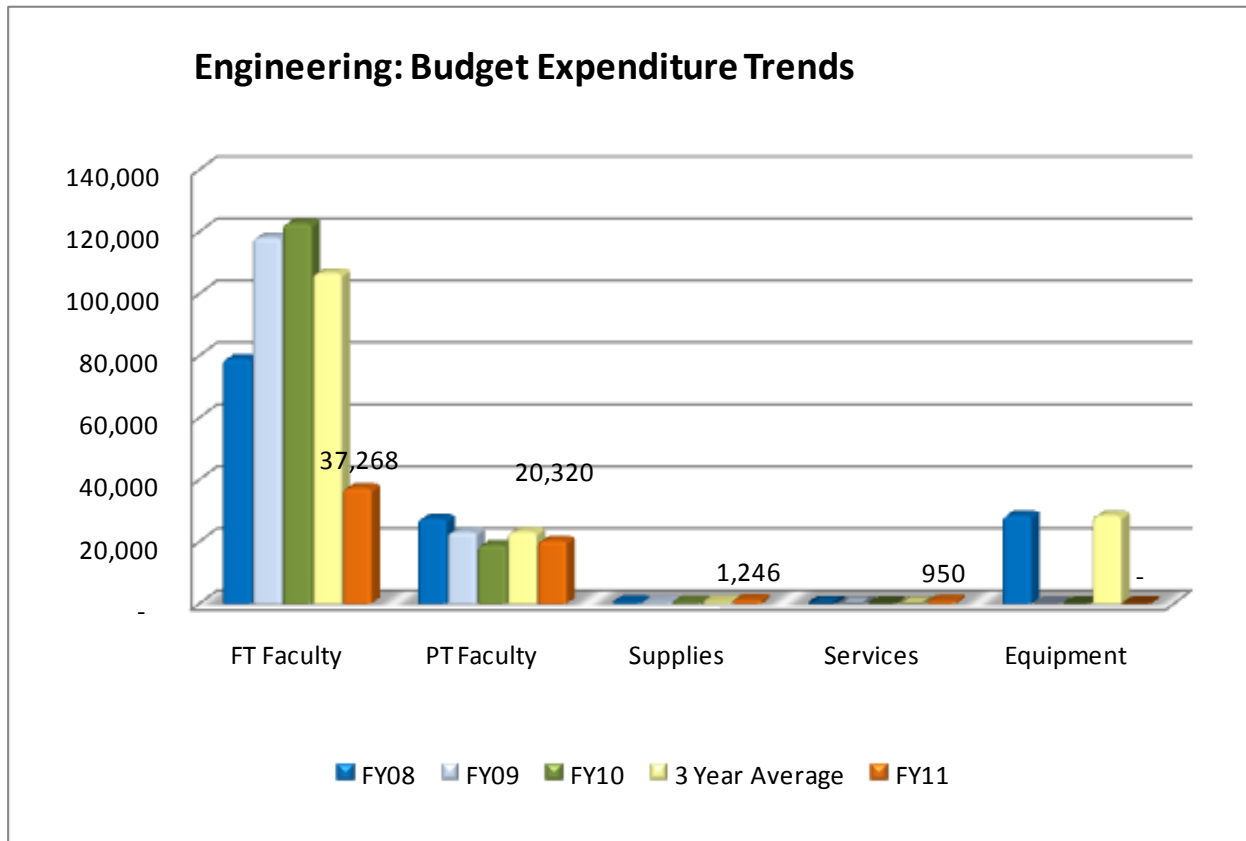
A1: Budget Summary Table

To simplify the reporting and analysis of the Banner budget detail report, the budget accounts were consolidated into nine expense categories. The personnel categories include employee payroll expenses (benefits). The “3 Year Average” was computed to provide a trend benchmark to compare the prior three year expenses to the FY11 expenses. The “FY11 College” expense percentages are included to provide a benchmark to compare the program’s expenses to the overall college expenses.

Category	Title	FY08	FY09	FY10	3 Year Average	FY11	FY11 Program	FY11 College
1	FT Faculty	78,982	118,114	122,701	106,599	37,268	-65%	12%
2	PT Faculty	27,366	23,143	18,867	23,125	20,320	-12%	-10%
7	Supplies	583	600	522	568	1,246	119%	24%
8	Services	100	100	-	100	950	850%	-17%
9	Equipment	28,395	-	-	28,395	-	-100%	-42%
	Total	135,426	141,957	142,090	139,824	59,784	-57%	0%

A2: Budget Summary Chart

This chart illustrates the program’s expense trends. The data label identifies the FY11 expenses (the last bar in each group). The second-to-last bar is the program’s prior three year average.

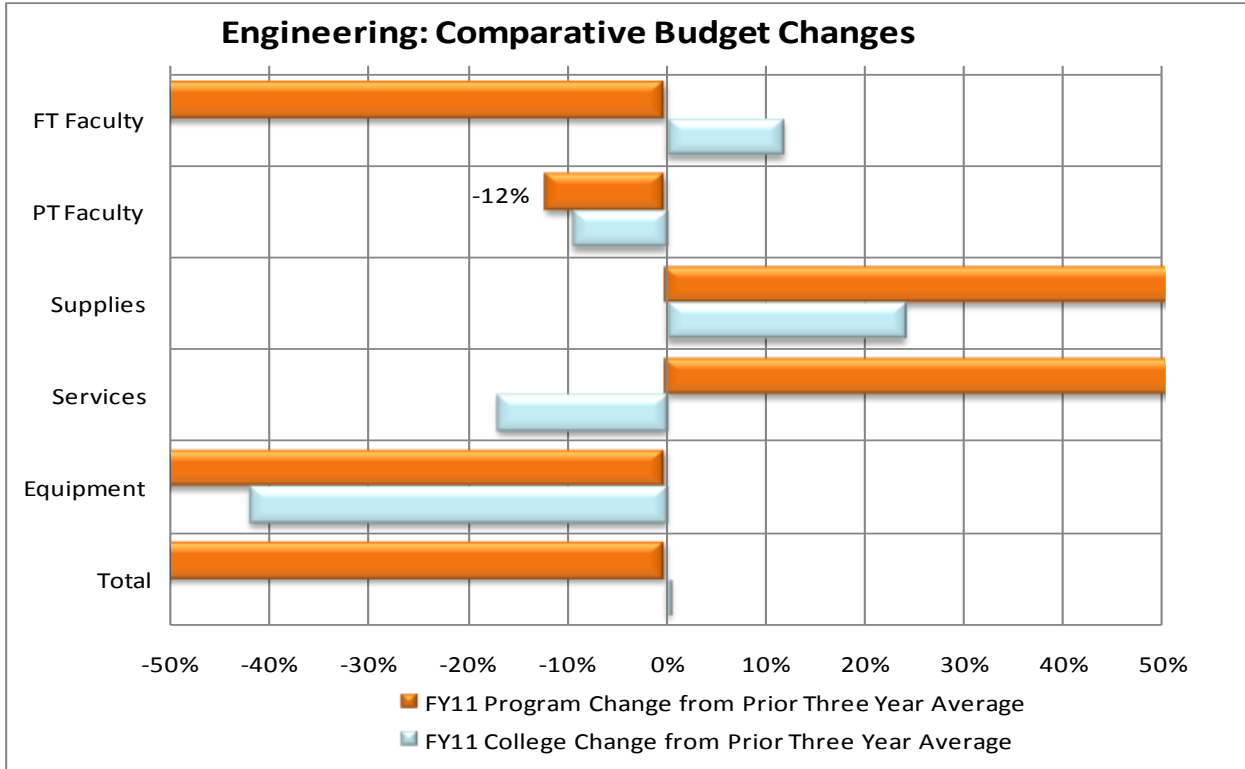


A3: Comparative Budget Changes Chart

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This chart illustrates the percentage change from the prior three year average expense to the FY11 expenses. The top bar for each budget category represents the program’s change in expenses and includes the data label. The second bar represents the college’s change in expenses.



A4: Budget Detail Report

The program’s detail budget information is available in *Appendix A – Program Review Budget Report*. This report is a PDF document and is searchable. The budget information was extracted from the District’s Banner Financial System. The program budget includes all expenses associated to the program’s Banner program codes within the following funds: general fund (111), designated college equipment fund (114-35012), State supplies and equipment funds (128xx), and the technology refresh fund (445). The *Program Review Budget Report* is sorted by program (in alphabetical order) and includes the following sections: total program expenses summary; subtotal program expenses for each different program code; detail expenses by fund, organization and account; and program inventory (as posted in Banner). To simplify the report, the Banner personnel benefit accounts (3xxx) were consolidated into employee type benefit accounts (3xxx1 = FT Faculty, 3xxx2 = PT Faculty, 3xxx3 = Classified, etc.).

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A5: Interpretation of the Program Budget Information

Prior to FY 11, the full-time faculty pay and benefits had been incorrectly allocated to engineering only. In FY11, a proportional allocation between Math and Engineering has correctly attributed the full-time pay distribution.

The P/T faculty expense has followed the college decline. In FY08 F/T sabbatical led to a greater expenditure in P/T faculty.

The supply budget has been approximately \$600 for the past three years. A donation of \$2000 allowed for a larger expenditure in FY11. This is inadequate for the supplies of engineering courses, including three four lab sections and should be rectified.

Equipment expenditures were markedly less in FY09 through 11 due to a large expenditure in FY08 from a two-year STEM grant. These funds were non-recurring. No institutional support is given to Engineering for equipment or maintenance of equipment, a situation that should be rectified.

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B1: Program Inventory Table

This chart shows the inventory (assets) as currently posted in the Banner Financial System. This inventory list is not complete and will require review by each program. Based on this review an updated inventory list will be maintained by the college. A result of developing a complete and accurate inventory list is to provide an adequate budget for equipment maintenance and replacement (total-cost-of-ownership). The college will be working on this later this fall.

Item	Vendor	Org	Fund	Purchased	Age	Price	Perm Inv #	Serial #
431TE3102 Agilent Digital Oscilloscope	Techni-Tool	30070	12807	4/21/2008	3	1,268	N00018448	CN48016524
431TE3102 Agilent Digital Oscilloscope	Techni-Tool	30070	12807	2/19/2008	3	1,268	N00018452	CN48026804
431TE3102 Agilent Digital Oscilloscope	Techni-Tool	30070	12807	2/19/2008	3	1,268	N00018453	CN48016520
431TE3102 Agilent Digital Oscilloscope	Techni-Tool	30070	12807	2/19/2008	3	1,268	N00018451	CN48016501
431TE3102 Agilent Digital Oscilloscope	Techni-Tool	30070	12807	4/21/2008	3	1,268	N00018450	CN48016506
431TE3102 Agilent Digital Oscilloscope	Techni-Tool	30070	12807	4/21/2008	3	1,268	N00018449	CN48026808
431TE3102 Agilent Digital Oscilloscope	Techni-Tool	30070	12807	4/21/2008	3	1,268	N00018447	CN48028636
431TE3102 Agilent Digital Oscilloscope	Techni-Tool	30070	12807	4/21/2008	3	1,268	N00018442	CN47382770
431TE3102 Agilent Digital Oscilloscope	Techni-Tool	30070	12807	4/21/2008	3	1,268	N00018440	CN47311728
431TE3102 Agilent Digital Oscilloscope	Techni-Tool	30070	12807	4/21/2008	3	1,268	N00018441	CN47331791
Total						12,678		

B2: Interpretation of the Program Inventory Information

The equipment list provided by Banner is incomplete and does not accurately reflect the program's holdings. An inventory is underway to provide an accurate equipment list.

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C1: Productivity Terminology Table

Sections	A credit or non-credit class. Does not include not-for-credit classes (community education).
Census	Number of students enrolled at census (typically the 4 th week of class for fall and spring).
FTES	Full Time Equivalent Students A student in the classroom 15 hours/week for 35 weeks (or two semesters) = 525 student contact hours. 525 student contact hours = 1 FTES. Example: 400 student contact hours = $400/525 = 0.762$ FTES. The State apportionment process and District allocation model both use FTES as the primary funding criterion.
FTEF	Full Time Equivalent Faculty A faculty member teaching 15 units for two semesters (30 units for the year) = 1 FTE. Example: a 6 unit assignment = $6/30 = 0.20$ FTEF (annual). The college also computes semester FTEF by changing the denominator to 15 units. However, in the program review data, all FTE is annual. FTEF includes both Full-Time Faculty and Part-Time Faculty. FTEF in this program review includes faculty assigned to teach extra large sections (XL Faculty). This deviates from the district practice of not including these assignments as part of FTEF. However, it is necessary to account for these assignments to properly produce represent faculty productivity and associated costs.
Cross Listed FTEF	FTEF is assigned to all faculty teaching cross-listed sections. The FTEF assignment is proportional to the number of students enrolled at census. This deviates from the practice of assigning load only to the primary section. It is necessary to account for these cross-listed assignments to properly represent faculty productivity and associated costs.
XL FTE	Extra Large FTE: This is the calculated assignment for faculty assigned to extra large sections (greater than 60 census enrollments). The current practice is not to assign FTE. Example: if census > 60, 50% of the section FTE assignment for each additional group of 25 (additional tiers).
WSCH	Weekly Student Contact Hours The term "WSCH" is used as a total for weekly student contact hours AND as the ratio of the total WSCH divided by assigned FTEF. Example: 20 sections of 40 students at census enrolled for 3 hours per week taught by 4.00 FTEF faculty. $(20 \times 40 \times 3) = 2,400$ WSCH / 4.00 FTEF = 600 WSCH/FTEF.
WSCH to FTES	Using the example above: $2,400$ WSCH x 35 weeks = 84,000 student contact hours = $84,000 / 525 = 160$ FTES (see FTES definition). Simplified Formulas: $FTES = WSCH/15$ or $WSCH = FTES \times 15$
District Goal	Program WSCH ratio goal. WSCH/FTEF The District goal was set in 2006 to recognize the differences in program productivity.

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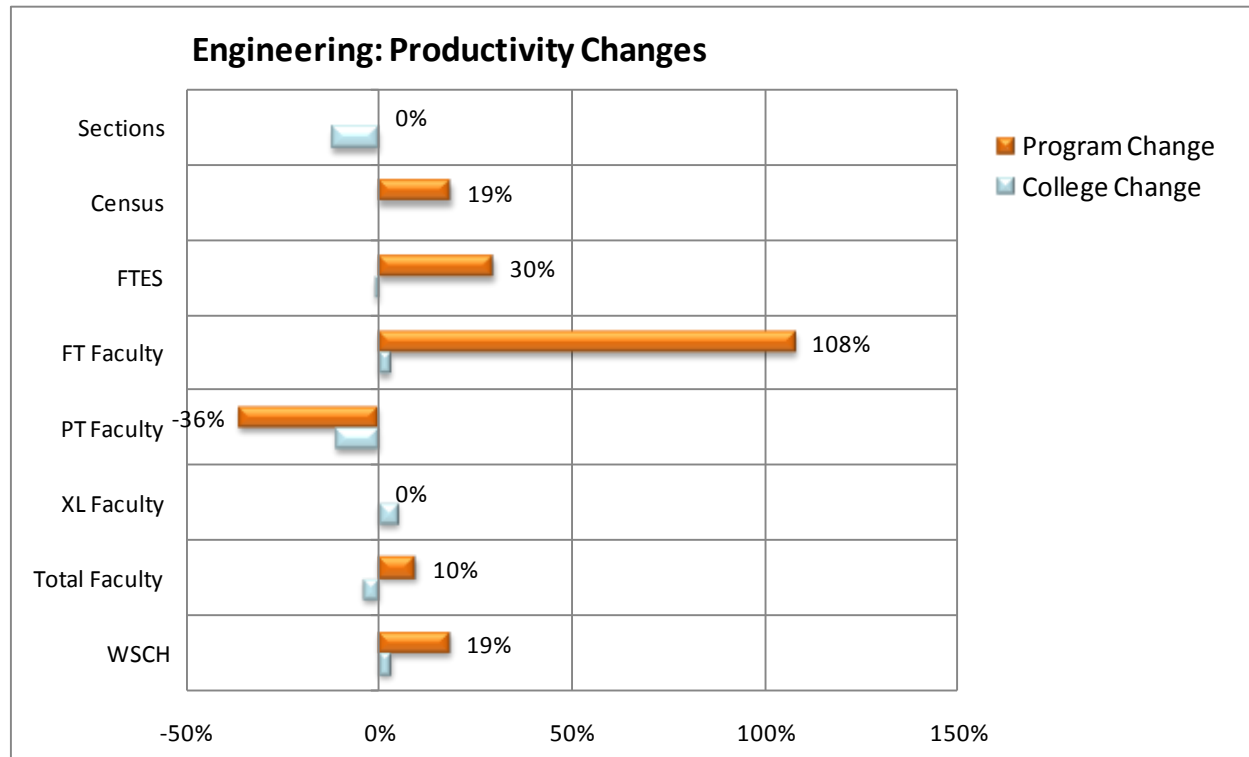
C2: Productivity Summary Table

This table is a summary of the detail information provided in the *Program Review Productivity Report*. The “3 Year Average” was computed to provide a trend benchmark to compare the results of the prior three years to the FY11 results. The “FY11 College” percentages are included to provide a benchmark to compare the program’s percentages.

Title	FY08	FY09	FY10	3 Year Average	FY11	Program Change	College Change
Sections	10	10	10	10	10	0%	-12%
Census	214	252	277	248	295	19%	0%
FTES	19	23	28	23	30	30%	-1%
FT Faculty	-	0.27	0.60	0.29	0.60	108%	3%
PT Faculty	0.87	0.60	0.40	0.62	0.40	-36%	-11%
XL Faculty	-	-	-	-	-	0%	5%
Total Faculty	0.87	0.87	1.00	0.91	1.00	10%	-4%
WSCH	328	397	420	379	450	19%	3%

C3: Comparative Productivity Changes Chart

This chart illustrates the percentage change from the prior three year average productivity to the FY11 productivity. The top bar for each budget category represents the program’s change in productivity and includes the data label. The second bar represents the college’s change in productivity.



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C4: Interpretation of the Program Productivity Information

Productivity within the program has increased in all categories over the past three years. Attribution of twice the FTEF to engineering reflects the approximate percentage of load for the only full-time instructor. The increase of 19% in WSCH/FTEF reflects larger enrollments and the demands of the student population.

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D1: District WSCH Ratio Productivity Table

This table shows the District WSCH ratio (WSCH/FTEF) for each course by year for this program. Courses not offered during FY11 (last year) or without faculty load (independent study) are excluded. Because these are ratios, the combined average is computed using total WSCH and total FTEF (not the average of ratios). The formula used in this table distributes FTEF to all cross-listed sections (proportional to census enrollment) but does not include the associated faculty costs of extra large assignment.

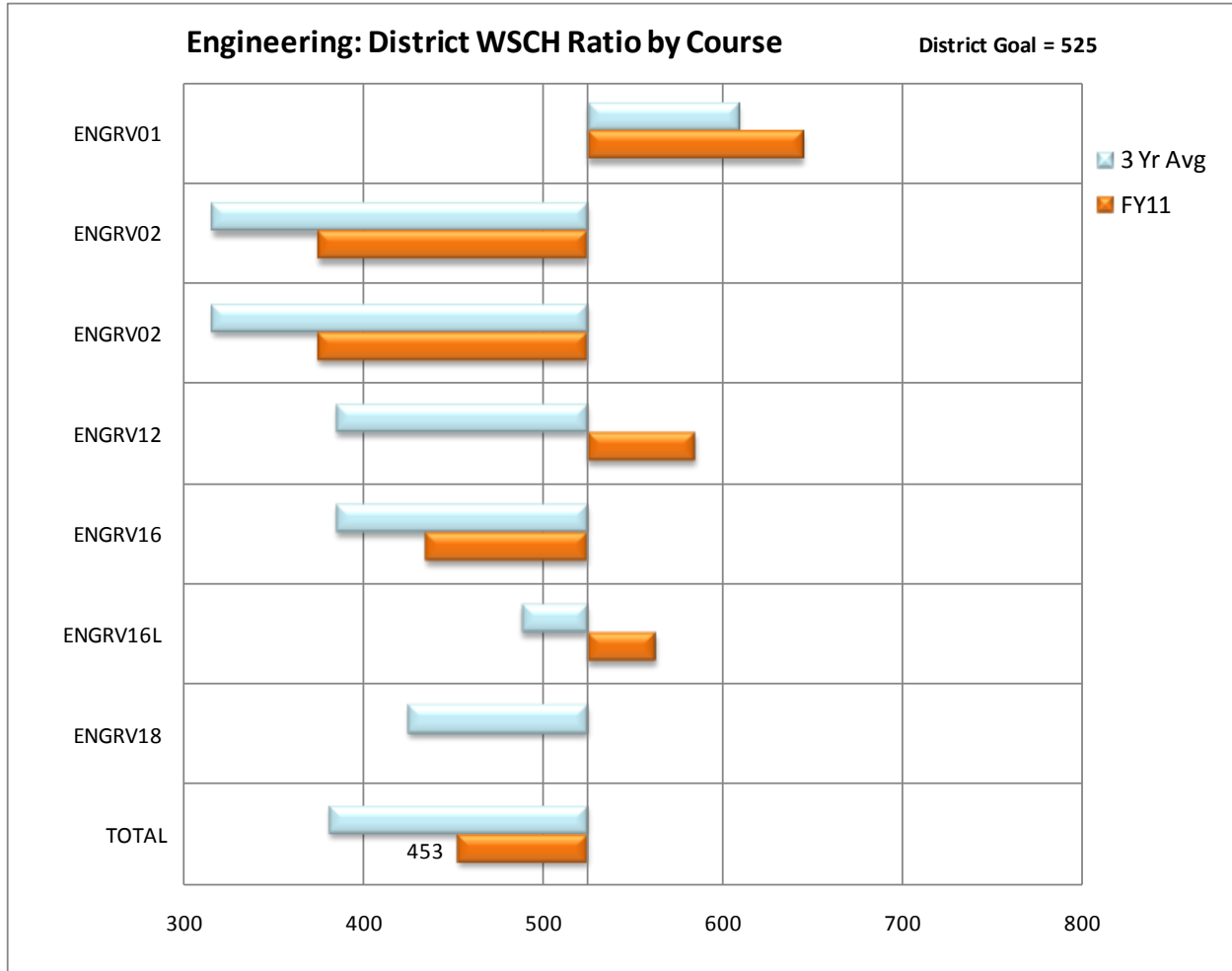
District WSCH Ratio = $WSCH / (PT\ FTE + FT\ FTE)$.

District WSCH Ratio: Weekly Student Contact Hours/(FT FTE+PT FTE)									
Course	Title	FY08	FY09	FY10	3 Yr Avg	FY11	Change	Dist Goal	% Goal
ENGRV01	Introduction to Engineering	535	604	686	609	645		525	83%
ENGRV02	Engineering Graphics & Design	220	320	384	316	375		525	77%
ENGRV02	Engineering Graphics	220	320	384	316	375		525	116%
ENGRV12	Engineering Statics	375	465	315	385	585		525	116%
ENGRV16	Electronic Circuits & Devices	360	390	405	385	435		525	89%
ENGRV16L	Elec Circuits & Devices Lab	450	518	495	488	563		525	133%
ENGRV18	Engineering Materials	431	375	469	425	525		525	133%
TOTAL	Annual District WSCH Ratio	329	390	418	381	453	19%	525	86%

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D2: District WSCH Ratio Productivity Chart

This chart illustrates the course level District WSCH ratio. The top bar shows the program's three year average. The second bar shows the program's FY11 WSCH ratio. The axis represents the District WSCH ratio goal set in 2006. The program's (or subject's) total WSCH ratio is shown as the TOTAL at the bottom of the chart.



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D3: College WSCH Ratio Productivity Table

This table shows the College's WSCH ratio (WSCH/FTEF) for each course by year for the program. Courses not offered during FY11 (last year) or without faculty load (independent study) are excluded. Because these are ratios, the combined average is computed using total WSCH and total FTEF (not the average of ratios). The formula used in this table includes the associated faculty costs of extra large sections. Faculty teaching extra large sections are paid stipends equal to 50% of their section FTE assignment for each group of 25 students beyond the first 60 students (calculated in this table as XL FTE). This College WSCH Ratio is a more valid representation of WSCH productivity. The College WSCH Ratio will be used in the program review process.

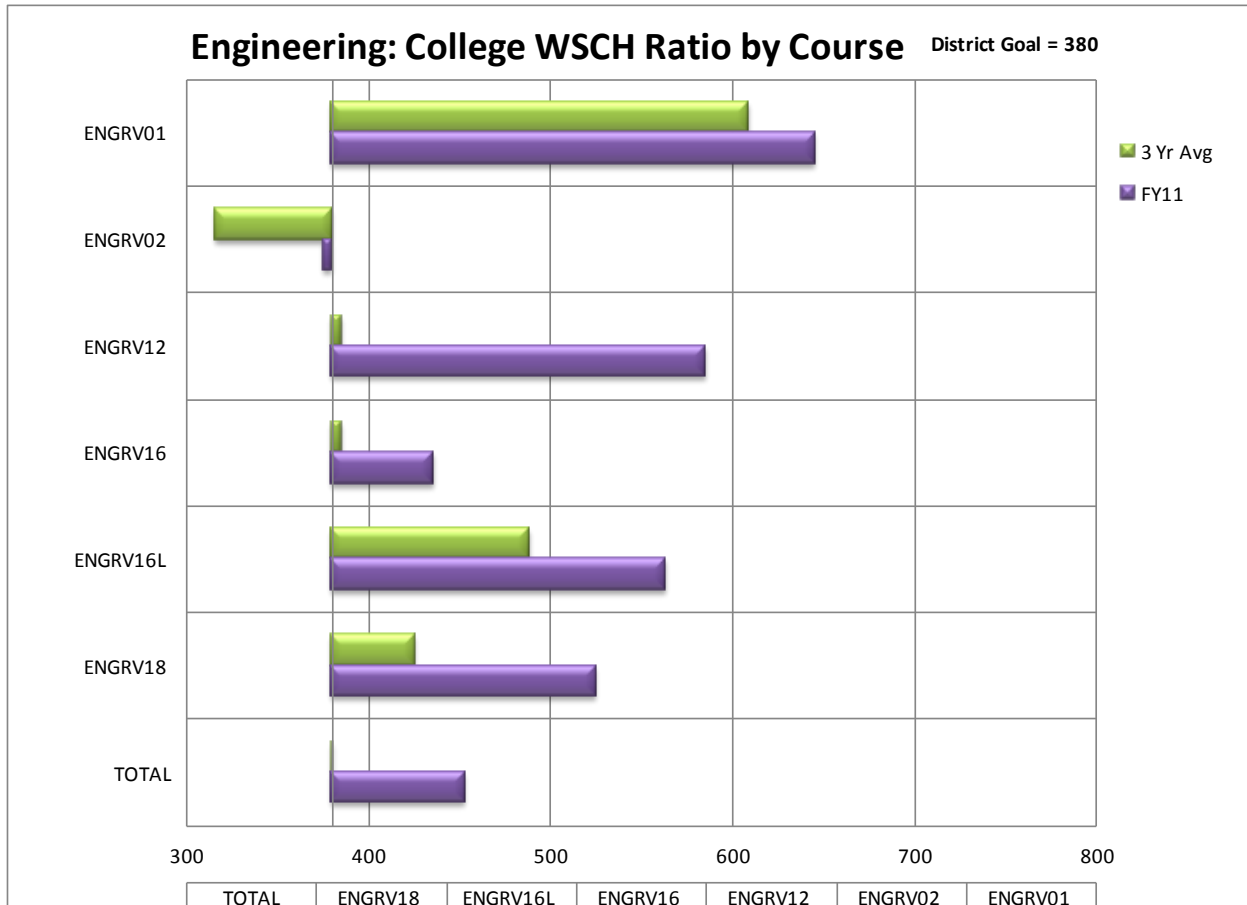
$$\text{College WSCH Ratio} = \text{WSCH} / (\text{PT FTE} + \text{FT FTE} + \text{XL FTE})$$

College WSCH Ratio: Weekly Student Contact Hours/(FT FTE + PT FTE + XL FTE)									
Course	Title	FY08	FY09	FY10	3 Yr Avg	FY11	Change	Dist Goal	% Goal
ENGRV01	Introduction to Engineering	535	604	686	609	645	6%	380	170%
ENGRV02	Engineering Graphics & Design	220	320	384	316	375	19%	380	99%
ENGRV02	Engineering Graphics	220	320	384	316	375	19%	380	99%
ENGRV12	Engineering Statics	375	465	315	385	585	52%	380	154%
ENGRV16	Electronic Circuits & Devices	360	390	405	385	435	13%	380	114%
ENGRV16L	Elec Circuits & Devices Lab	450	518	495	488	563	15%	380	148%
ENGRV18	Engineering Materials	431	375	469	425	525	24%	380	138%
TOTAL	Annual College WSCH Ratio	329	390	418	381	453	19%	380	119%

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D4: College WSCH Ratio Productivity Chart

This chart illustrates the course level College WSCH ratio. The top bar shows the program's three year average. The second bar shows the FY11 WSCH ratio. The axis represents the District WSCH ratio goal set in 2006. The program's (or subject's) total WSCH ratio is shown as the TOTAL at the bottom of the chart. The computation used for the College WSCH Ratio includes XL FTE (extra-large sections) and the assignment of FTEF to all cross-listed sections (proportional to census enrollment).



D5: Productivity Detail Report

The program's detail productivity information is available in *Appendix B – Program Review Productivity Report*. This report is a PDF document and is searchable. The productivity information was extracted from the District's Banner Student System. The productivity information includes all information associated with the program's subject codes. The *Program Review Productivity Report* is sorted by subject code (alphabetical order) and includes the following sections: productivity measures and WSCH ratios by course by year.

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D6: Interpretation of the Program Course Productivity Information

The WSCH/FTEF ration has been trending upward for the past three year and significantly increased in FY-11. The district goal of 380 is has been met or exceeded by all classes with the exception of ENGR V02. ENGR V02 has increased substantially over the average of the prior three years and stands at 99% of the 380 district expectation.

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E1: Student Success Terminology

Census	Number of students enrolled at Census (typically the 4 th week of class for fall and spring). Census enrollment is used to compute WSCH and FTES for funding purposes.
Retain	Students completing the class with any grade other than W or DR divided by Census Example: 40 students enrolled, 5 students dropped prior to census, 35 students were enrolled at census, 25 students completed the class with a grade other than W or DR: Retention Rate = 25/35 = 71%
Success	Students completing the class with grades A, B, C, CR or P divided by Census Excludes students with grades D, F, or NC.

E2: Student Success Summary

The following two tables summarize the detail information provided in the *Appendix C - Program Review Student Success Report*. The first table shows the number of students. The second table shows the percentage of students. Both tables show the distribution of student grades by year for the program (subject). They show the number of students who were counted at census, completed the class (retention), and were successful. The “3 Year Average” was computed to provide a trend benchmark to compare the prior three year expenses to the FY11 success measures. The “College” success percentages are included to compare the results of the program to the results of the college.

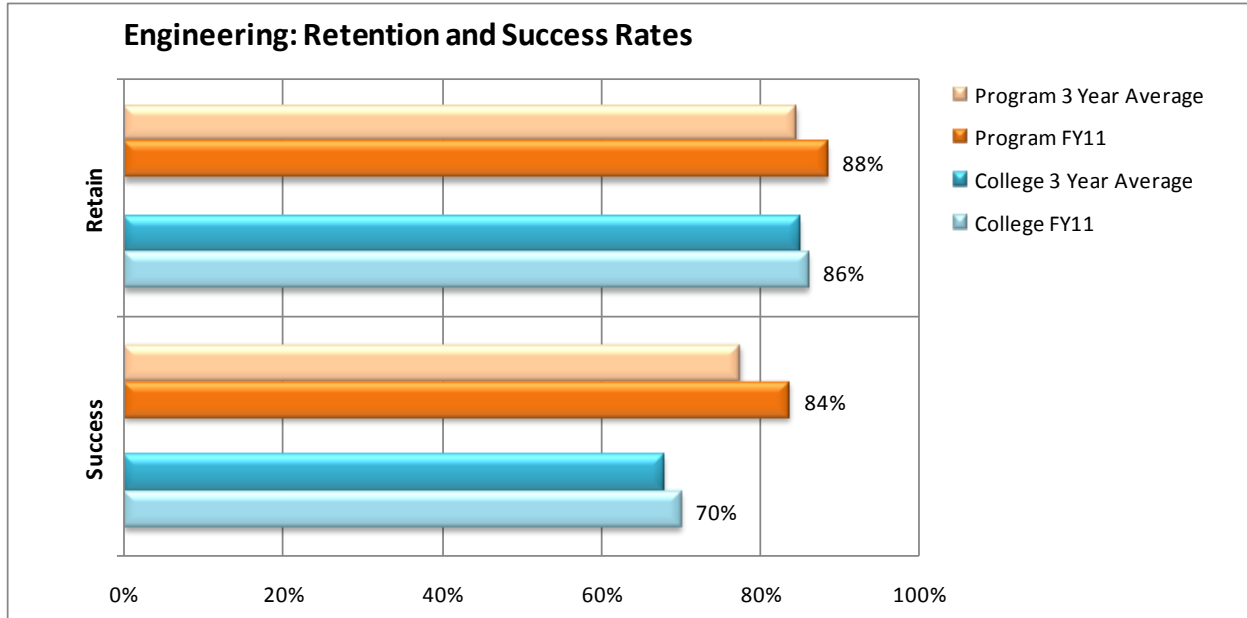
Subject	Fiscal Year	A	B	C	P/CR	D	F	W	NC	Census	Retain	Success
ENGR	FY08	63	51	28	-	4	5	36	-	187	151	142
ENGR	FY09	95	50	31	-	5	17	23	-	221	198	176
ENGR	FY10	85	51	42	-	7	7	38	-	230	192	178
ENGR	3 Year Avg	81	51	34	-	5	10	32	-	213	180	165
ENGR	FY11	122	54	34	-	5	5	29	2	251	222	210
Subject	Fiscal Year	A	B	C	P/CR	D	F	W	NC	Census	Retain	Success
ENGR	FY08	34%	27%	15%	0%	2%	3%	19%	0%		81%	76%
ENGR	FY09	43%	23%	14%	0%	2%	8%	10%	0%		90%	80%
ENGR	FY10	37%	22%	18%	0%	3%	3%	17%	0%		83%	77%
ENGR	3 Year Avg	38%	24%	16%	0%	2%	5%	15%	0%		85%	77%
ENGR	FY11	49%	22%	14%	0%	2%	2%	12%	1%		88%	84%
College	3 Year Avg	33%	19%	12%	5%	5%	10%	15%	2%		85%	68%
College	FY11	33%	20%	13%	3%	5%	10%	14%	2%		86%	70%

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E3: Retention and Success Rates

This chart illustrates the retention and success rates of students who were counted at census. Each measure has four bars. The first bar represents the program's prior three year average percent. The second bar shows last year's (FY11) percent. The third and fourth bars represent the overall college percents.

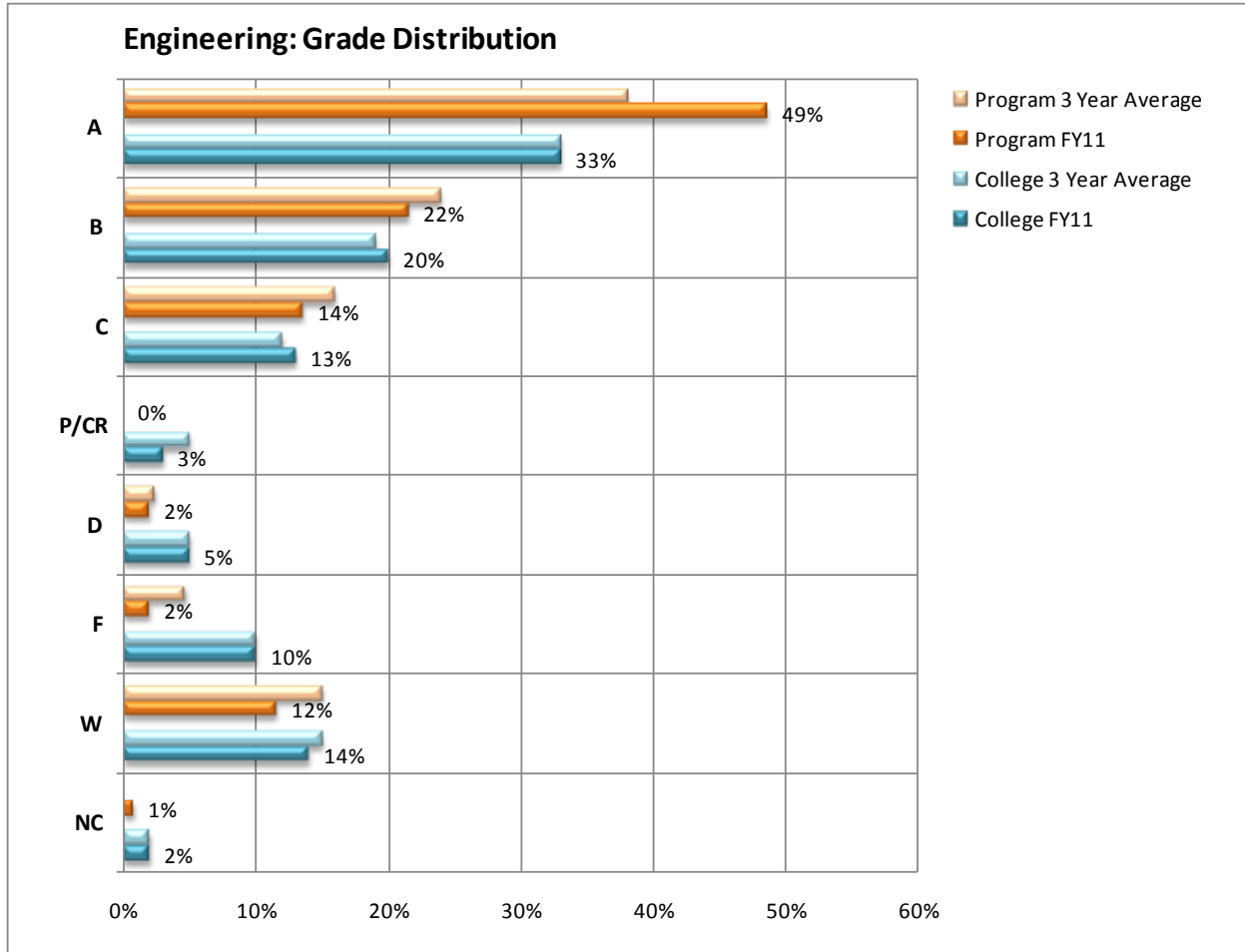


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E4: Grade Distribution

This chart illustrates the program’s distribution of grades (by subject). Each grade has four bars. The first bar represents the program’s prior three year average percent of grades. The second bar shows last year’s (FY11) grade distribution percents. The third and fourth bars represent the overall college distribution percents.



E5: Student Success Detail Report

The program student success detail information is available in *Appendix C – Program Review Student Success Report*. This report is a PDF document and is searchable. The student success information was extracted from the District’s Banner Student System. The student success information includes all information associated with the program’s subject codes. The *Program Review Student Success Report* is sorted by subject code (alphabetical order) and includes the following sections: comparative summary and course detail by term. The following table defines the terminology.

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E6: Interpretation of Program Retention, Student Success, and Grade Distribution

Retention data closely mirrors the college as a whole; however, the success rate is 14% higher than the college success rate. Engineering students tend to be focused on academic success.

The grade distribution shows a much higher proportion of A's than the college as a whole. This is primarily due to the introductory to engineering course that filters out students without the interest, background or commitment to the field of study. The introduction to engineering courses focuses on academic planning and success factors as well as exploring a career in engineering. Students staying in the course are dedicated to a goal of getting a BS in engineering. And put in a high level of effort, resulting in high grades in the one-unit course.

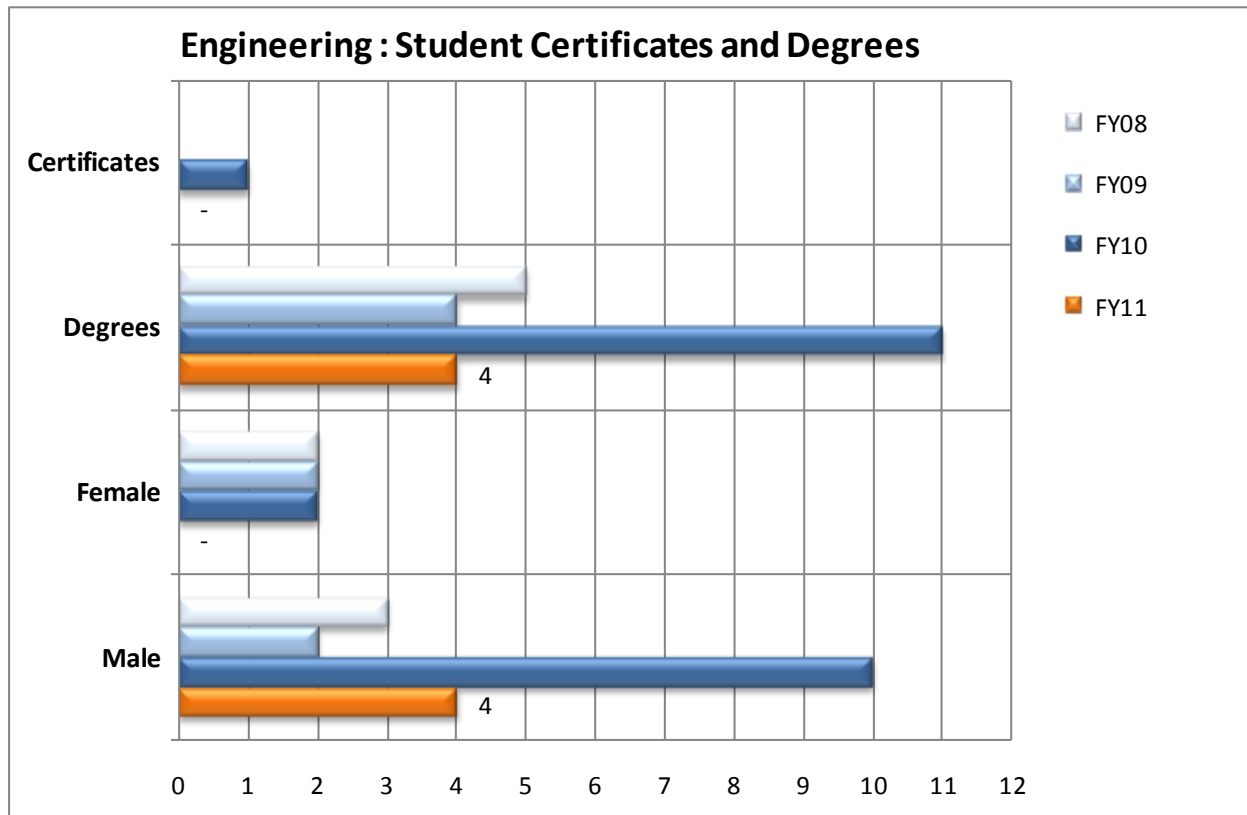
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F1: Program Completion – Student Awards

This table shows the number of students who completed a program certificate or degree during the fiscal year. Gender distribution is included. The following chart illustrates this information.

Program	FY	Certificates	Degrees	Female	Male
Engineering	FY08	-	5	2	3
Engineering	FY09	-	4	2	2
Engineering	FY10	1	11	2	10
Engineering	FY11	-	4	-	4
Total Awards in 4 Years		1	24	6	19



F2: Interpretation of the Program Completion Information

The number of degrees and certificates is relatively low due to the fact that the vast majority of Engineering students transfer to the university. The degree and certificate program requires 45 units. Nearly 100% of the students transfer to the university without an associate degree. These students are not interested in completing the extra courses needed for the A.S. degree. Students will be made aware of the availability of Certificates and encouraged to apply upon completion of the program.

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G1: Student Demographics Summary Tables

This table shows the program and college census enrollments for each demographic category. It also shows the average age of the students. The program FY11 results can be compared to its prior three year average, the college FY11 results, and the college prior three year average.

Subject	FY	Hispanic	White	Asian	Afr Am	Pac Isl	Filipino	Nat Am	Other	Female	Male	Other	Avg Age
ENGR	FY08	59	78	10	2	-	6	1	31	25	161	1	26
ENGR	FY09	84	88	15	3	2	6	-	23	30	191	-	24
ENGR	FY10	113	75	10	1	-	13	-	18	37	193	-	24
ENGR	3 Year Avg	85	80	12	2	1	8	-	24	31	182	-	24
ENGR	FY11	111	97	9	2	-	20	1	11	35	216	-	23
College	3 Year Avg	11,806	11,169	988	1,005	217	827	403	2,302	15,888	12,694	134	27
College	FY11	13,034	10,566	977	1,040	196	886	402	1,688	15,734	13,014	40	24

This table shows the program and college percentage of census enrollments for each demographic category.

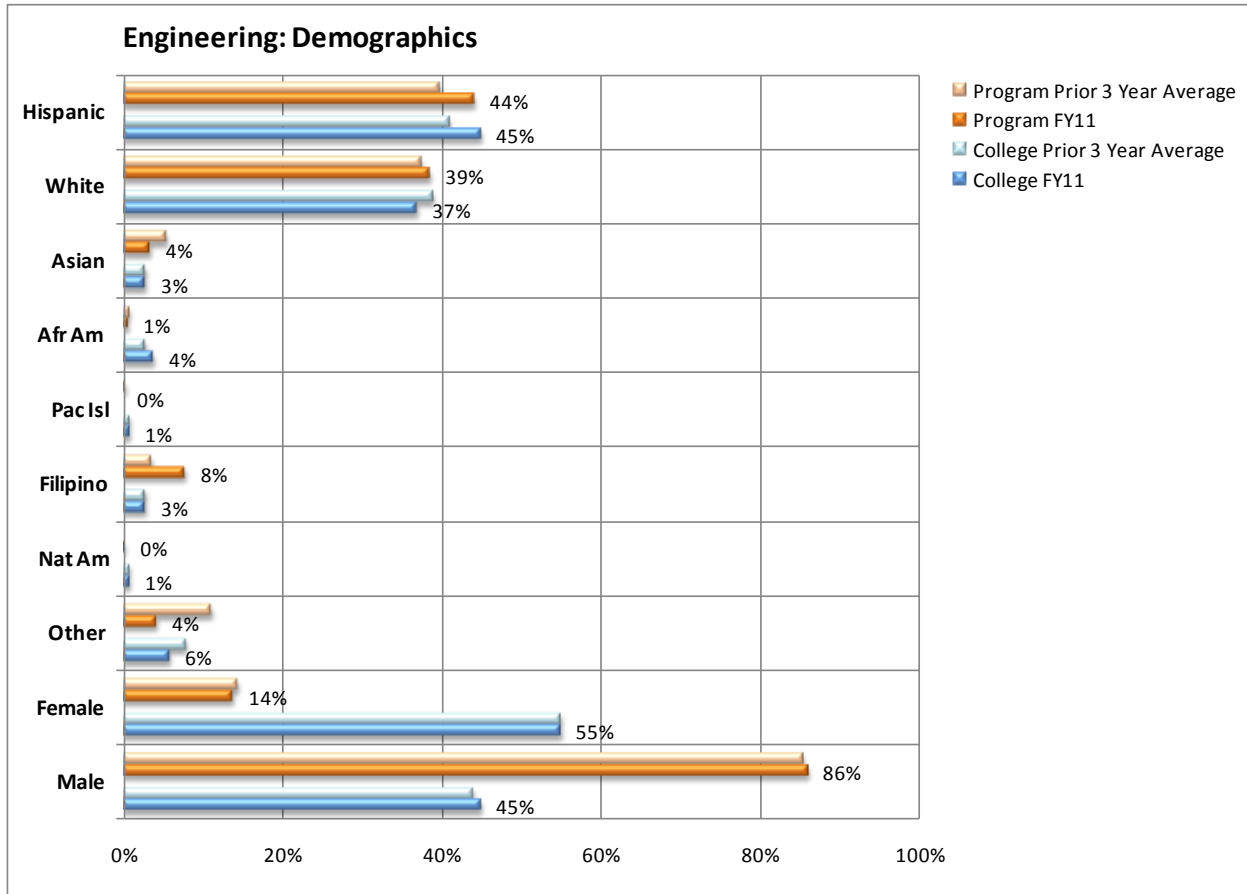
Subject	FY	Hispanic	White	Asian	Afr Am	Pac Isl	Filipino	Nat Am	Other	Female	Male	Other	Avg Age
ENGR	FY08	32%	42%	5%	1%	0%	3%	1%	17%	13%	86%	1%	26
ENGR	FY09	38%	40%	7%	1%	1%	3%	0%	10%	14%	86%	0%	24
ENGR	FY10	49%	33%	4%	0%	0%	6%	0%	8%	16%	84%	0%	24
ENGR	3 Year Avg	40%	38%	6%	1%	0%	4%	0%	11%	15%	85%	0%	24
ENGR	FY11	44%	39%	4%	1%	0%	8%	0%	4%	14%	86%	0%	23
College	3 Year Avg	41%	39%	3%	3%	1%	3%	1%	8%	55%	44%	0%	27
College	FY11	45%	37%	3%	4%	1%	3%	1%	6%	55%	45%	0%	24

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G2: Student Demographics Chart

This chart illustrates the program's percentages of students by ethnic group. . Each group has four bars. The first bar represents the program's prior three year percent. The second bar shows last year's (FY11) percent. The third and fourth bars represent the overall college percents.



G3: Student Demographics Detail Report

The program student success detail information is available in *Appendix D – Program Review Student Demographics Report*. This report is a PDF document and is searchable. The student success information was extracted from the District's Banner Student System. The student demographic information includes all information associated with the program's subject codes. The *Program Review Student Demographics Report* is sorted by subject code (alphabetical order) and includes the following sections: comparative summary by year, and detail demographics by term and course.

G4: Interpretation of the Program Demographic Information

While the racial demographic distribution closely mirrors the college as a whole, the gender distribution is skewed toward male. This follows the demographics of engineering undergraduates nationally where 17% of engineering undergraduates are female. The distribution of Hispanic students is almost nine times higher than the national demographic of 5.4%.

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4. Performance Assessment

A1: Program-Level Student Learning Outcomes

Program-Level Student Learning Outcome 1	Performance Indicators
Be able to apply fundamental concepts of mathematics (through calculus), science and engineering.	80% of the students assessed should be able to successfully answer specified exam questions directly related to the outcome.
Operating Information	
Exam questions addressing this SLO will be included in applicable courses and tested in Fall 2011 and Spring 2012. The course-level SLO data collected from the courses that require this outcome will be aggregated to evaluate this program level SLO.	
Analysis – Assessment	
Insufficient data to perform aggregate analysis. Analysis will occur later in the year.	

Program-Level Student Learning Outcome 2	Performance Indicators
Identify, formulate, and solve basic engineering problems.	80% of the students assessed should be able to successfully answer specified exam questions directly related to the outcome.
Operating Information	
Exam questions addressing this SLO will be included in applicable courses and tested in Fall 2011 and Spring 2012. The course-level SLO data collected from the courses that require this outcome will be aggregated to evaluate this program level SLO.	
Analysis – Assessment	
Insufficient data to perform aggregate analysis. Analysis will occur later in the year.	

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Program-Level Student Learning Outcome 3	Performance Indicators
Conduct experiments and analyze and interpret data.	80% of the students assessed should be able to successfully conduct specified experiments and answer questions directly related to the interpretation of data.
Operating Information	
Laboratory questions addressing this SLO will be included in applicable courses and evaluated in Fall 2011 and Spring 2012. The course-level SLO data collected from the courses that require this outcome will be aggregated to evaluate this program level SLO.	
Analysis – Assessment	
Insufficient data to perform aggregate analysis. Analysis will occur later in the year.	

Program-Level Student Learning Outcome 4	Performance Indicators
Make basic design decisions concerning appropriate-level engineering problems.	80% of the students assessed should be able to successfully make level-appropriate design decisions.
Operating Information	
Design problems addressing this SLO will be included in applicable courses and evaluated in Fall 2011 and Spring 2012. The course-level SLO data collected from the courses that require this outcome will be aggregated to evaluate this program level SLO.	
Analysis – Assessment	
Insufficient data to perform aggregate analysis. Analysis will occur later in the year.	

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4B: Student Success Outcomes

Student Success Outcome 1	Performance Indicators
The program will increase its retention rate from the average of the program's prior three-year retention rate. The retention rate is the number of students who finish a term with any grade other than W or DR divided by the number of students at census.	The program will increase the retention rate by 2% or more above the average of the program's retention rate for the prior three years.
Operating Information	
Program 3-year average is 85%.	
Analysis – Assessment	
Increasing the retention rate by 2% or more will require the program to attain a retention rate of 87% or more. The program suggests initiatives to aid realization of this goal.	

Student Success Outcome 2	Performance Indicators
The program will increase its retention rate from the average of the college's prior three-year retention rate. The retention rate is the number of students who finish a term with any grade other than W or DR divided by the number of students at census.	The program will increase the retention rate by 2% or more above the average of the college retention rate for the prior three years.
Operating Information	
Program 3-year average is 85%. The College 3-year average rate is 85%	
Analysis – Assessment	
Increasing the retention rate by 2% or more will require the program to attain a retention rate of 87% or more. The program suggests initiatives to aid realization of this goal.	

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Student Success Outcome 3	Performance Indicators
The program will increase the student success rates from the average of the program's prior three-year success rates. The student success rate is the percentage of students at census who receive a grade of C or better.	The program will increase student success rate by 2% or more above the program's average student success rate for the prior three years.
Operating Information	
Program 3-year average is 77%.	
Analysis – Assessment	
Increasing the retention rate by 2% or more will require the program to attain a success rate of 79% or more, 11% higher than the college's current 3-year average. The program suggests initiatives to aid realization of this goal.	

Student Success Outcome 4	Performance Indicators
The program will increase the student success rates from the average of the college's prior three-year success rates. The student success rate is the percentage of students at census who receive a grade of C or better.	The program student success will increase by 5% over the average of the college's student success rate for the prior three years.
Operating Information	
Program 3-year average is 77%.	
Analysis – Assessment	
The college's 3-year average is 68%. The Engineering program is on target to meet this goal.	

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Student Success Outcome 5	Performance Indicators
Students will complete the program earning certificates and/or degrees.	Increase the number of students earning a certificate to a minimum of 20% of the number of students enrolled in second-year courses.
Operating Information	
The program has awarded 24 degrees and 1 certificate in the past 4 years.	
Analysis – Assessment	
Though most engineering students are focused on transfer to a university rather than a degree or certificate, the opportunity to be awarded a degree or certificate will be presented to the students and encouraged.	

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C. Program Operating Outcomes

Program Operating Outcome 1	Performance Indicators
The program will maintain WSCH/FTEF above the 380 goal set by the district.	The program will exceed the efficiency goal of 380 set by the district by 2%.
Operating Information	
The program is operating at 119% of the goal set by the college.	
Analysis – Assessment	
The program will work to maintain a high ratio	

Program Operating Outcome 2	Performance Indicators
Inventory of instructional equipment is functional, current, and otherwise adequate to maintain a quality-learning environment. Inventory of all equipment over \$200 will be maintained and a replacement schedule will be developed. Service contracts for equipment over \$5000 will be budgeted if funds are available.	A current inventory of all equipment in the program will be maintained. Equipment having a value over \$5000 will have a service contract. A schedule for service life and replacement of outdated equipment will reflect the total cost of ownership.
Operating Information	
The inventory list is out of date and needs to be reviewed (3B1)	
Analysis – Assessment	
Review of inventory list to be done.	

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Program Operating Outcome 3	Performance Indicators
Operating Information	
Analysis – Assessment	

Program Operating Outcome 4	Performance Indicators
Operating Information	
Analysis – Assessment	

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5. Findings

Finding 1: There is a significant drop in enrollment from the first year engineering courses to the second year courses.

Finding 2: Students lack problem solving skills and the ability to apply knowledge from math and science courses to solve engineering problems.

Finding 3: Student academic planning and understanding of the curriculum for engineering as well as the skills to succeed in engineering are lacking.

Finding 4: The college does not adequately support the Engineering program's equipment needs.

Finding 5: Facilities for engineering courses are lacking in space and audio visual equipment.

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6. Initiatives

Initiative

Expand contact hours in Introduction to Engineering Course (ENGRV01)

Initiative ID: ENGR 3-11

Links to Finding 1

From D3 and D4 we see that there is a significant drop in enrollment from the first year engineering courses to the second year courses. We seek to improve the performance of students by expanding student contact hours in ENGRV01 (from 1-unit to 1 ½ units). The most important topic to be covered in the expansion is the student's individualized academic plan, streamlining their path to an AS and transfer (the importance of this has been demonstrated by SB1440, designed to provide a quicker path to transfer and reduced time to graduation). Additional topics for consideration are introduction of engineering applications of Excel, guest speakers from industry and field trips. Faculty must rewrite curriculum.

Benefits: Improving student individualized academic plans will streamlining the students' paths to an AS and transfer, a cost saving measure.

Request for Resources

Personnel: Additional 0.033 FTE per academic year

Funding Sources

No new resources are required (use existing resources)	
Requires additional general funds for personnel, supplies or services (includes maintenance contracts)	X
Requires computer equipment funds (hardware and software)	
Requires college equipment funds (other than computer related)	
Requires college facilities funds	
Requires other resources (grants, etc.)	

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Initiative

Expand contact hours in Engineering Statics Course (ENGRV12)

Initiative ID: ENGR 2-11

Links to Finding 2

As indicated in E2 and E3, though calculus, chemistry and physics are prerequisites, students lack problem solving skills and the ability to apply knowledge from math and science courses to solve engineering problems. Student performance will be enhanced by an additional hour per week of contact time, allowing the course to be more problem intensive, focusing on identifying, formulating and solving basic engineering problems as well as hands-on demonstrations. Faculty must rewrite curriculum. Budget will be required for cost of expanding the course contact hours and equipment for demonstration equipment.

Benefits

Student performance will be enhanced. The scope of material covered in the course will be expanded. Students will learn problem solving skills and the ability to apply knowledge from math and science courses to solve engineering problems. Retention will be favorably impacted in both the course and the program, increasing the number of certificates and degrees awarded.

Request for Resources

Personnel: Additional 0.033 FTE per academic year.
Demonstration Equipment purchases

Funding Sources

Please check one or more of the following funding sources.

No new resources are required (use existing resources)	
Requires additional general funds for personnel, supplies or services (includes maintenance contracts)	X
Requires computer equipment funds (hardware and software)	X
Requires college equipment funds (other than computer related)	X
Requires college facilities funds	
Requires other resources (grants, etc.)	

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Initiative Improve teaching facilities

Initiative ID: ENGR 3-11

Links to Finding 3 The program review does not consider facilities. Engineering does not have a dedicated classroom. Facilities for engineering courses are lacking in space and audio visual equipment. The engineering materials laboratory is crowded and needs a mounted projector that can be operated from the front of the room. An engineering classroom is needed (may be a shared space), equipped as a “smart classroom”.

Benefits Enhance student learning, success and retention

Request for Resources

Outfit SCI-106 as a suitable “smart” classroom for engineering. Mount projector in materials laboratory. Consider options for easing the crowding in the engineering laboratory.

Funding Sources

No new resources are required (use existing resources)	
Requires additional general funds for personnel, supplies or services (includes maintenance contracts)	X
Requires computer equipment funds (hardware and software))	X
Requires college equipment funds (other than computer related)	X
Requires college facilities funds	
Requires other resources (grants, etc.)	

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Initiative: Increase the budget for engineering equipment

Initiative ID: ENGR 4-11

Links to Finding 4 As indicated in A1 and A2, the Engineering program does not have equipment funding identified in the 111 fund.

Much of the Materials laboratory equipment is out of calibration and maintenance is required.
Purchase equipment for strain measurement – amplifiers and conditioners as well as extensometers for long-range displacements.
Purchase maintenance contracts for testing machines.

Upgrade equipment in Engineering Circuits Lab Course (ENGRV16L), much of which is maintenance intensive or outdated.

Benefits Enhance student learning, success and retention. Maintain currency in engineering education to maintain course articulation with universities.

Request for Resources

Increase the budget for engineering equipment – include as part of the 111 fund

Funding Sources

No new resources are required (use existing resources)	
Requires additional general funds for personnel, supplies or services (includes maintenance contracts)	X
Requires computer equipment funds (hardware and software)	
Requires college equipment funds (other than computer related)	X
Requires college facilities funds	
Requires other resources (grants, etc.)	

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Initiative: Purchase required consumables for labs

Initiative ID: ENGR 5-11

Links to Finding 5 As indicated in A1, the Engineering program's supply budget is insufficient for the consumable supplies required for the 4 lab sections taught each year.

Benefits Enhance student learning, success and retention. Maintain currency in engineering education to maintain course articulation with universities.

Request for Resources

Increase the supply budget for the engineering program

Funding Sources

No new resources are required (use existing resources)	
Requires additional general funds for personnel, supplies or services (includes maintenance contracts)	X
Requires computer equipment funds (hardware and software)	
Requires college equipment funds (other than computer related)	
Requires college facilities funds	
Requires other resources (grants, etc.)	

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6A: Initiatives Priority Spreadsheet

The following blank tables represent Excel spreadsheets and will be substituted with a copy of the completed Excel spreadsheets.

Personnel –Faculty Requests

Personnel - Faculty	Program	Program Priority (0, 1, 2, 3...)	Division Priority (R, H, M, L)	Committee Priority (R, H, M, L)	College Priority (R, H, M, L)	Initiative ID	Initiative Title	Resource Description	Estimated Cost	No New Resources Requested	New General Funds	Other
1	Engineering	5				ENGR 1-11	Expand contact hours in Introduction to Engineering Course	Additional 0.033 FTE per academic year	2000		2000	
2	Engineering	4				ENGR 2-11	Expand contact hours in Engineering Statics Course	Additional 0.033 FTE per academic year	2000		2000	

Personnel – Other Requests

Personnel - Other	Program	Program Priority (0, 1, 2, 3...)	Division Priority (R, H, M, L)	Committee Priority (R, H, M, L)	College Priority (R, H, M, L)	Initiative ID	Initiative Title	Resource Description	Estimated Cost	No New Resources Requested	New General Funds	Other
1												
2												
3												
4												
5												

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Computer Equipment and Software

Equipment - Computer Related	Program	Program Priority (0, 1, 2, 3...)	Division Priority (R,H,M,L)	Committee Priority (R, H, M, L)	College Priority (R, H, M, L)	Initiative ID	Initiative Title	Resource Description	Estimated Cost	No New Resources Requested	Technology Fund	Other
1												
2												
3												
4												
5												

Other Equipment Requests

Equipment	Program	Program Priority (0, 1, 2, 3...)	Division Priority (R,H,M,L)	Committee Priority (R, H, M, L)	College Priority (R, H, M, L)	Initiative ID	Initiative Title	Resource Description	Estimated Cost	No New Resources Requested	Equipment Fund	Other
1	Engineering	1				ENGR 3-11	Improve teaching facilities	Equip SCI-101 as a "smart" classroom	2,500		2,500	
2	Engineering	2				ENGR 4-11	Increase the budget for engineering equipment	Increase the budget for engineering equipment – include as part of the 111 fund	7,000-20,000 some years costs would be high as some equipment is quite expensive		7,000-20,000 some years costs would be high as some equipment is quite expensive	

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Facilities Requests

Facilities	Program	Program Priority (0, 1, 2, 3...)	Division Priority (R,H,M,L)	Committee Priority (R, H, M, L)	College Priority (R, H, M, L)	Initiative ID	Initiative Title	Resource Description	Estimated Cost	No New Resources Requested	Facilities Fund	Other
1												
2												
3												
4												
5												

Other Resource Requests

Other Resources	Program	Program Priority (0, 1, 2, 3...)	Division Priority (R,H,M,L)	Committee Priority (R, H, M, L)	College Priority (R, H, M, L)	Initiative ID	Initiative Title	Resource Description	Estimated Cost	No New Resources Requested	General Fund	Other
1	Engineering	3				ENGR 5-11	Purchase required consumables for labs	Increase the supply budget for the engineering program	1000		1000	

6B: Program Level Initiative Prioritization

All initiatives will first be prioritized by the program staff. If the initiative can be completed by the program staff and requires no new resources, then the initiative should be given a priority 0 (multiple priority 0 initiatives are allowed). All other initiatives should be given a priority number starting with 1 (only one 1, one 2, etc.).

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6C: Division Level Initiative Prioritization

The program initiatives within a division will be consolidated into division spreadsheets. The dean may include additional division-wide initiatives. All initiatives (excluding the '0' program priorities) will then be prioritized using the following priority levels:

R: Required – mandated or unavoidable needs (litigation, contracts, unsafe to operate conditions, etc.).

H: High – approximately 1/3 of the total division's initiatives by resource category (personnel, equipment, etc.)

M: Medium – approximately 1/3 of the total division's initiatives by resource category (personnel, equipment, etc.)

L: Low – approximately 1/3 of the total division's initiatives by resource category (personnel, equipment, etc.)

6D: Committee Level Initiative Prioritization

The division's spreadsheets will be prioritized by the appropriate college-wide committees (staffing, technology, equipment, facilities) using the following priority levels.

R: Required – mandated or unavoidable needs (litigation, contracts, unsafe to operate conditions, etc.).

H: High – approximately 1/3 of the total division's initiatives by resource category (personnel, equipment, etc.)

M: Medium – approximately 1/3 of the total division's initiatives by resource category (personnel, equipment, etc.)

L: Low – approximately 1/3 of the total division's initiatives by resource category (personnel, equipment, etc.)

6E: College Level Initiative Prioritization

Dean's will present the consolidated prioritized initiatives to the College Planning Council. The College Planning Council will then prioritize the initiatives using the following priority levels.

R: Required – mandated or unavoidable needs (litigation, contracts, unsafe to operate conditions, etc.).

H: High – approximately 1/3 of the total division's initiatives by resource category (personnel, equipment, etc.)

M: Medium – approximately 1/3 of the total division's initiatives by resource category (personnel, equipment, etc.)

L: Low – approximately 1/3 of the total division's initiatives by resource category (personnel, equipment, etc.)

7A: Appeals

After the program review process is complete, your program has the right to appeal the ranking of initiatives.

If you choose to appeal, please complete the form that explains and supports your position. The appeal will be handled at the next higher level of the program review process.

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7B: Process Assessment

In this first year of program review using the new format, programs will be establishing performance indicators (goals) for analysis next year. Program review will take place annually, but until programs have been through an entire annual cycle, they cannot completely assess the process. However, your input is very important to us as we strive to improve, and your initial comments on this new process are encouraged.