

Santa Rosa Junior College

Program Resource Planning Process

Engineering 2021

1.1a Mission

Engineering Transfer Program Mission:

- To provide the academic and professional training for students pursuing engineering careers through course offerings and a robust range of engineering support activities and services.
- To improve the technological literacy in our general population and the awareness of the essential role engineering plays in our society and economy.

1.1b Mission Alignment

The Engineering Transfer Program aligns directly with the district's central educational mission by delivering coursework and support services that build the knowledge and skills of our engineering transfer students. SRJC is the only academic institution in Sonoma County delivering the complete spectrum of lower division engineering coursework and thus has a crucial role to play in meeting the engineering needs of our community as well as the aspirations of our region's students. Engineering is central to our region's economic development and global competitiveness.

1.1c Description

The Engineering Transfer Program provides the standard core of lower division engineering courses to prepare students to transfer to four-year universities and complete an engineering bachelor's degree. The program also offers an AS degree in Engineering. Engineering is one of the largest cohorts of STEM students with about 50 engineering students transferring each year and about 240 engineering students on campus any one semester. Our students are in demand by the top engineering schools and are extremely successful at those institutions.

In addition to developing math, science and engineering concepts and applying them to the world in which we live, the engineering courses develop analytical thinking, problem solving, visualization, design, and laboratory skills. The program has linkages with local engineering industry partners who have paid for classes, provided guest speakers and field trips, supplied internship opportunities, and built an engineering endowment. The Engineering Transfer Program hosts numerous student clubs and has a strong linkage to MESA (Math Engineering Science Achievement), all of which build students' professional skills through enrichment activities.

1.1d Hours of Office Operation and Service by Location

Santa Rosa :

The engineering classes and labs are typically offered Mondays through Fridays in the Spring and Fall semesters during daytime hours on the Santa Rosa Campus. These past few years, ENGR 45 lecture (Materials) and ENGR 10 (Intro) have moved to the evenings to accommodate adjunct faculty work schedules.

Each summer, we offer a section of ENGR 10 (Intro to Engineering) and ENGR 6 (Matlab). We have offered ENGR 25 (Graphics) in the summer as well when enrollment and facility availability has allowed.

Petaluma :

ENGR 10 (Intro to the Engineering Profession) is no longer being offered at the Petaluma campus.

1.2 Program/Unit Context and Environmental Scan

Engineering Transfer Program

High School Student & Industry Demand for Engineering

The national, regional, and local job market for engineers remains extremely strong. To meet their engineering needs, companies hire foreign engineers using the H1-B visa system (recently bumped up from 65,000 to 85,000 per year). Both national and state-wide statistics continue to show strong student demand for engineering. The engineering education pipeline is full at every level with students eager for the training that leads to a rewarding career. With a modest investment and restructuring, SRJC would be more effective at interfacing with this pipeline and opening the door to more of our local youths achieving their goals through a career in engineering.

Local Program's Status and Future

Counter to the trends at almost every other CCC engineering program, SRJC Engineering has shrunk in recent years. Outside factors such as fires and demographic shifts have been exacerbated by the forced split from physics. Returning to the robust engineering and physics enrollments of the past would be greatly accelerated by

restoring the Engineering & Physics Department. Being in separate departments continues to require extra "inter-department" communications and coordination around scheduling, scholarships, grant activities, fieldtrips, prerequisites and curriculum, foundation use, and staff support. Engineering and Physics growth hinges on how effectively we can collaborate to expand the enrichment activities for our shared students.

Student Enrichment

Last year's relaunch of the TEC and SWE clubs (The Engineer's Club and Society of Women Engineers) have energized some effective student leadership and engagement. The S-STEM grant collaboration continues. MESA has been instrumental in continuing the Job Shadow and Recognition Ceremony activities.

Project Based Instruction

The retrofit to accommodate HR has had a significant negative effect on our ability to deliver project based instruction with the Bussman 1447/48 light fabrication/maker space. We hope that as the dust settles, we can return the space and storage areas to a functional mode and restart the project opportunities that build program energy and interest. We hope to restart the Friday morning open lab times for students to work on Engr 49 projects, MESA poster projects, TEC club projects, and projects in engineering classes like ENGR 45 & ENGR 25. ENGR 770 is on the books to collect the apportionment for those activities. In the future, as budget pressures allow, we can bring back the engineering project classes: Engr 101, Engr 102, Engr 103.

Technological Literacy

An important trend in engineering education is the move to foster technological literacy of our society through the development of general education courses related to engineering. Down the road, as we move into our new facilities and budgets allow, the program hopes to expand in this area by offering the approved Engr 12 How Stuff Works course and developing the Engr 14 America's Technological Infrastructure course.

2.1a Budget Needs

The Engineering Transfer Program is requesting two modest \$200 budget augmentations. One to offset the shift of the MATLAB software license from the IT budget to the programs budget. This caused a ~15% cut to our meager \$1.5K supplies budget. The other augmentation is to address the fact we always run into the red in Spring as basic graphics expenses trickle in.

2.1b Budget Requests

Rank	Location	SP	M	Amount	Brief Rationale
0001	Santa Rosa	02	01	\$200.00	Restore the cuts to the engineering supplies budget cause by shifting the costs of the MATLAB license from IT to the program.
0002	Santa Rosa	02	01	\$200.00	Basic graphics budget for the program is always into the red, even though all allowable costs have been shifted to student fee accounts.

2.2a Current Classified Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Engineering SLIA (shared with Physics)	9.00	10.00	Support Engineering Labs 9 hrs per week

2.2b Current Management/Confidential Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Engineering Coordinator	2.00	10.00	Coordinate scholarships, budget, hiring, purchases, staff, student enrichment. Mentor adjunct faculty.

2.2c Current STNC/Student Worker Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Temporary Student Lab Aids	8.00	2.00	Fill in for absent SLIA

2.2d Adequacy and Effectiveness of Staffing

The currently staffing of the Engineering Transfer Program is adequate to maintain our current reduced offerings. Historically, the support system for the engineering labs has relied on sharing lab staff with physics, electronics, applied technology, and IT.

Fortunately, those staffers are genuinely helpful people willing to help out with engineering when asked. The addition of a 18 hr/wk Engineering/Physics SLIA position was important to stabilizing the patchwork lab support situation. Going into this next year, this person's top priority is still to support ENGR 45 (Materials). The second priority is to help with the expansion of engineering projects in the MakerSpace (ENGR 25 Graphics & Design, and other student projects). Third is to jump in with ENGR 16 (Circuits & Devices), then ENGR 6 (Matlab).

Expansion of the Engineering Transfer Program will require an increase in support. The next step is to stabilize the funding for the engineering coordinator position and to increase those hours. Through the 1990's, the Engineering Transfer Program tripled in size. This was facilitated by having shared faculty with physics and 30% release time for coordinating engineering and advising engineering students. The students benefited from a much wider spectrum of engineering enrichment activities and the increase number of students drove increased enrollment in math, chemistry, and physics. The program is participating in grants, partnerships, and student clubs that help move the program forward, and the college needs to step up as well.

2.2e Classified, STNC, Management Staffing Requests

Rank	Location	SP	M	Current Title	Proposed Title	Type
0001	Santa Rosa	02	07	Engineering Coordinator (2 hr/wk, from chair load)	Engineering Coordinator (4 hrs/wk, funded)	Unknown

2.3a Current Contract Faculty Positions

Position	Description
Engineering	Engineering transfer focus, qualified in physics & ap tech.

2.3b Full-Time and Part-Time Ratios

Discipline	FTEF Reg	% Reg Load	FTEF Adj	% Adj Load	Description
Engineering	1.0000	49.5100	1.0200	50.4900	

2.3c Faculty Within Retirement Range

The FT engineering faculty member is of retirement age, but won't likely retire for another 7 years.

2.3d Analysis of Faculty Staffing Needs and Rationale to Support Requests

The Engineering Transfer Program would really benefit from an increased full time faculty support. The effective historical system at SRJC (and at most other CCC's) was (and is) to put engineering in the same department with physics so as to facilitate collaboration on the curriculum and enrichment activities that drive enthusiasm and enrollments. Until that day, we'll do the best we can to forge stronger connections with the physics faculty who share in the education of our engineering students.

2.3e Faculty Staffing Requests

Rank	Location	SP	M	Discipline	SLO Assessment Rationale
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2.4b Rationale for Instructional and Non-Instructional Equipment, Technology, and Software

Instructional: The Engineering Transfer Program has been making gradual progress on outfitting the materials lab (2039, for ENGR 45) in preparation for the move to the new STEM building primarily from Foundation accounts. We could use some IELM help by funding the microscopes (#1). Assuming we are able to conduct in-person lab instruction in the Spring, the soldering tips in 1452 wear out quickly with all the electronics use and ENGR 16 really needs to move to chisle points to facilitate the beginners with their DIP packages (#2).

Software: Software items include yearly renewal of the Matlab license that drains 15% of our discretionary budget (\$200) ITG support would be appreciated. The other software item (MultiSim) is working toward independence from electronics and enabling the physics program to also use the software in Physics 42, prior to students entry into ENGR 16.

Non-Instructional: The faculty office in 627 (Analy Village), needs larger monitors to facilitate efficient computer work without eye strain on the many discipline specific software packages (3D modeling CAD, Matlab, Multisim).

2.4c Instructional Equipment Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0001	Santa Rosa	02	01	Microscopes w video capture for ENGR 45	4	\$2,330.00	\$9,320.00	Vince Bertsch	2039	Kristen Alexander
0002	Santa Rosa	02	01	Soldering Stations, chisle point tips for ENGR 16	20	\$115.00	\$2,300.00	Vince Bertsch	1452	Danny Millspaugh
0003	Santa Rosa	02	01	Virtual Bench, NI: VB-8012 for ENGR 16 Demo	1	\$2,600.00	\$2,600.00	Vince Bertsch	Linley	Kristen Alexander
0004	Santa Rosa	02	01	LCR Meters for ENGR 16 (Proster)	10	\$40.00	\$400.00	Vince Bertsch	Linley	Kristen Alexander
0005	Santa Rosa	02	01	Replacement ProtoBoards for ENGR 16	20	\$30.00	\$600.00	Vince Bertsch	1452	Danny Millspaugh
0006	Santa Rosa	02	01	Sample Presses (to make 4) for ENGR 45	2	\$2,200.00	\$4,400.00	Vince Bertsch	2039	Kristen Alexander
0007	Santa Rosa	02	01	Electronic Equipment BNC Leads, sets for ENGR 16	20	\$20.00	\$400.00	Vince Bertsch	1452	Danny Millspaugh
0008	Santa Rosa	02	01	Digital Multi Meter for ENGR 16 (Fluke)	2	\$440.00	\$880.00	Vince Bertsch	Linley	Kristen Alexander
0009	Santa Rosa	02	01	Virtual Bench, NI: VB-8012 for ENGR 16	9	\$2,600.00	\$23,400.00	Vince Bertsch	Linley	Kristen Alexander

2.4d Non-Instructional Equipment and Technology Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0001	Santa Rosa	02	07	ITG: Large Monitors 25" or more for office	2	\$360.00	\$720.00	Vince Bertsch	Analy Village 627	Vince Bertsch

2.4f Instructional/Non-Instructional Software Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0001	Santa Rosa	02	07	MATLAB Site License - required for ENGR 6	1	\$200.00	\$200.00	V. Bertsch	TBD	Gamal Mansour
0002	Santa Rosa	02	07	MultiSim Site License - required for ENGR 16	30	\$650.00	\$19,500.00	V. Bertsch	TBD	Gamal Mansour

2.5a Minor Facilities Requests

Rank	Location	SP	M	Time Frame	Building	Room Number	Est. Cost	Description
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2.5b Analysis of Existing Facilities

No requests at this time. The program is in temporary facilities in four different buildings while the new STEM building is under construction.

3.1 Develop Financial Resources

This year, the Engineering Transfer Program effectively used the engineering student enrichment endowment to fund student memberships in SWE (Society of Women Engineers) and SHPE (Society of Hispanic Professional Engineers). The engineering equipment endowments funded the purchase of two Tensile Testing Machines. The Ted Davis STEM donation also allowed for the purchase of myDAQ protoboards and other equipment for the engineering labs. The engineering faculty member is continuing his involvement with the MILES S-STEM grant. In past years, local industry has been tapped to support significant student enrichment activities, scholarships, and even pay to reinstate cut classes.

3.2 Serve our Diverse Communities

The Engineering Transfer Program has seen a significant demographic shift over the past 5 years from 20% Hispanic to about 33% Hispanic. The program has recruited students into a SHPE chapter (Society of Hispanic Professional Engineers) to enrich this expanding demographic. Enrollments by women in the program hovers at about 15% down significantly from the 25% of a decade ago. This Fall, the program relaunched a SWE group (Society of Women Engineers) that had been disbanded due to department reorganizations. The group became an official SWE Chapter as of February 2020 (many universities don't have chapters). The diversity of our faculty took a hit these past three years as two faculty withdrew to care for children and parents. Restoring diversity to our adjunct faculty ranks may be challenging with the limitations of our contract and a flat schedule size.

5.7a Students Served - by Ethnicity

The number of students in each Discipline at first census broken down by ethnicity (duplicated headcount).

Engineering	Ethnicity	2016-17	Percent	2017-18	Percent	2018-19	Percent	2019-20	Percent
	White	164	47.7%	172	43.4%	141	42.3%	133	39.9%
	Asian	34	9.9%	37	9.3%	21	6.3%	16	4.8%
	Black	1	0.3%	13	3.3%	6	1.8%	7	2.1%
	Hispanic	103	29.9%	135	34.1%	107	32.1%	113	33.9%
	Native American	0	0.0%	1	0.3%	0	0.0%	0	0.0%
	Pacific Islander	1	0.3%	0	0.0%	0	0.0%	0	0.0%
	Filipino	5	1.5%	4	1.0%	7	2.1%	5	1.5%

5.7b Students Served - by Gender

The number of students in each Discipline at first census broken down by gender (duplicated headcount).

Engineering	Gender	2016-17	Percent	2017-18	Percent	2018-19	Percent	2019-20	Percent
	Male	294	85.5%	328	82.8%	278	83.5%	261	78.4%
	Female	43	12.5%	61	15.4%	45	13.5%	62	18.6%
	Unknown	7	2.0%	7	1.8%	10	3.0%	10	3.0%
	ALL Genders	344	100.0%	396	100.0%	333	100.0%	333	100.0%

5.7c Students Served - by Age

The number of students in each Discipline at first census broken down by age (duplicated headcount).

Engineering	Age Range	2016-17	Percent	2017-18	Percent	2018-19	Percent	2019-20	Percent
	0 thru 18	65	18.9%	76	19.2%	74	22.2%	68	20.4%

	19 and 20	133	38.7%	111	28.0%	93	27.9%	84	25.2%
	21 thru 25	101	29.4%	145	36.6%	110	33.0%	139	41.7%
	26 thru 30	26	7.6%	34	8.6%	32	9.6%	22	6.6%
	31 thru 35	7	2.0%	21	5.3%	18	5.4%	13	3.9%
	36 thru 40	7	2.0%	3	0.8%	3	0.9%	5	1.5%
	41 thru 45	3	0.9%	2	0.5%	0	0.0%	2	0.6%
	46 thru 50	0	0.0%	1	0.3%	1	0.3%	0	0.0%
	51 thru 60	2	0.6%	2	0.5%	2	0.6%	0	0.0%
	61 plus	0	0.0%	1	0.3%	0	0.0%	0	0.0%
	ALL Ages	344	100.0%	396	100.0%	333	100.0%	333	100.0%

3.3 Cultivate a Healthy Organization

The Engineering Transfer Program would greatly benefit from more interaction between the engineering faculty and with the closest discipline, physics.

3.4 Safety and Emergency Preparedness

Handled at the department level. See the Applied Technology PRPP.

3.5 Establish a Culture of Sustainability

Handled at the department level. See the Applied Technology PRPP.

4.1a Course Student Learning Outcomes Assessment

All the engineering courses have up-to-date COR's with SLO's. All engineering SLO assessments were completed during the last 6 year cycle. For this cycle, three courses have been assessed (27%): ENGR 16, 34, 6. SLO still to be completed: ENGR 10, 25, 45, 49, 770, as well as courses that have not been scheduled recently: ENGR 101, 102, 103. Progress on SLO Assessments will be made this year, after our transition to new facilities. Top priorities are: Program SLO Assessment (with data collected last Spring) and ENGR 25 SLO Assessment (in conjunction with COR update due this year). The next good candidates are ENGR 49 & 770 which should have ramped up utilization this year and ENGR 10 which will likely be taught by the full timer Spring 2020.

4.1b Program Student Learning Outcomes Assessment

Engineering Transfer Program SLO's are incorporated into the Engineering Major (Approved by state: 7/15/09). The program's SLO's align closely with ABET (Accrediting Board for Engineering and Technology) and university articulation requirements. Program SLO Assessment was completed in Summer 2011. Data was collected in Spring 2015 and Spring 2019 to complete this cycle's Program SLO Assessment during the Summer of 2019.

4.1c Student Learning Outcomes Reporting

Type	Name	Student Assessment Implemented	Assessment Results Analyzed	Change Implemented
Course	Engr 6 Matlab Programming	Spring 2014	Spring 2014	N/A
Course	Engr 10 Intro to Engineering	Spring 2014	Spring 2014	N/A
Course	Engr 16 Circuits and Devices	Spring 2014	Spring 2014	N/A
Course	Engr 25 Engineering Graphics	Fall 2013	Fall 2013	N/A
Course	Engr 34 Statics	Fall 2013	Fall 2013	N/A
Course	Engr 45 Engineering Materials	Fall 2013	Fall 2013	N/A
Course	Engr 49 Independent Study	Spring 2014	Spring 2014	N/A
Course	Engr 101 Design Project	Fall 2012	Fall 2012	N/A
Course	Engr 102 Robotics Project	Fall 2013	Fall 2013	N/A
Course	Engr 770 Suppl Instructr E&AT	N/A	N/A	N/A

4.2a Key Courses or Services that address Institutional Outcomes

Course/Service	1a	1b	1c	2a	2b	2c	2d	3a	3b	4a	4b	5	6a	6b	6c	7
Engineering Job Shadow Program				X				X	X							X
ENGR 10		X		X	X		X	X	X	X		X	X	X		X
ENGR 101	X	X		X				X	X	X	X	X				
ENGR 102	X	X		X				X	X	X	X	X				
ENGR 770		X			X		X			X		X				X
The Engineer's Club				X	X							X				X

4.2b Narrative (Optional)

5.0 Performance Measures

The Engineering Transfer Program has a strong record of successful preparation and transfer of students to 4-year institutions. The program has consistently high course fill and completion rates. The program's productivity numbers remain lower than the 17.5 FTES/FTEF metric because of small class sizes and single course offerings each semester. Of concern is the ~20% decline in enrollment over the past four years; imperiling course offerings. This reduction is only partly accounted for in the enrollment reductions across campus caused by demographic shifts and the fires. The other factors that have influenced this decline include:

1) Retiring of the FT shared faculty between engineering and physics. This increased the workload of the sole remaining FT faculty member through increase adjunct mentoring needs and consolidation of all program coordination tasks.

- 2) Reduction of coordination time for engineering with the merger into Applied Technology.
- 3) Increased inefficiencies and disruption of student cohorts with the split between Engineering and Physics.
- 4) Sabbatical leave of the lone FT engineering faculty. (now solved)
- 5) Shift of lone FT engineering faculty to chair the Engr&ApTech Department. (now solved)

5.1 Student Headcounts The number of students enrolled in each Discipline at first census (duplicated headcount).

Engineering	X2015	F2015	S2016	X2016	F2016	S2017	X2017	F2017	S2018	X2018	F2018	S2019
Santa Rosa Campus	26	180	184	54	150	168	79	159	163	70	155	
Petaluma Campus	0	22	23	0	30	16	0	29	23	0	23	
All Locations	26	202	207	54	180	184	79	188	186	70	178	149

5.1 Effective Class Schedule: Course Offerings, Times, Locations, and Delivery Modes (annual)

The Engineering Transfer Program effectively schedules classes. The greatest scheduling challenge is avoiding conflicts between the engineering and physics classes. Coordination could be improved. Another challenge is accomodating adjunct faculty's limited availability. Most adjunct's have full time jobs and that pushes engineering classes into the evenings. Most engineering students also have 7 or 7:30 AM math classes.

5.2a Enrollment Efficiency

The Engineering Transfer Program's enrollment efficiency has dipped this past year, reflecting our drop in enrollment. Petaluma has always had lower percentages, and that one class (ENGR 10) has now been cancelled (despite mid 20's enrollment numbers). As a result, we will be turning away students each semester from the ENGR 10 course as we only have three sections (Fall, Spring, Summer, all on SR Campus).

Engineering	X2015	F2015	S2016	X2016	F2016	S2017	X2017	F2017	S2018	X2018	F2018	S2019
Santa Rosa Campus	72.2%	97.8%	115.0%	64.3%	89.3%	105.0%	98.8%	94.6%	90.3%	83.3%	92.3%	
Petaluma Campus	0.0%	61.1%	76.7%	0.0%	83.3%	53.3%	0.0%	80.6%	76.7%	0.0%	63.9%	
All Locations	72.2%	91.8%	108.9%	64.3%	88.2%	96.8%	98.8%	92.2%	88.3%	83.3%	87.3%	

5.2b Average Class Size

The Engineering Transfer Program's average class size has moved down slightly.

Engineering	X2015	F2015	S2016	X2016	F2016	S2017	X2017	F2017	S2018	X2018	F2018	S2019
Santa Rosa Campus	26.0	22.5	26.3	18.0	21.4	24.0	26.3	22.7	19.9	23.3	22.1	
Petaluma Campus	0.0	22.0	23.0	0.0	30.0	16.0	0.0	29.0	23.0	0.0	23.0	
All Locations	26.0	22.4	25.9	18.0	22.5	23.0	26.3	23.5	20.2	23.3	22.3	

5.3 Instructional Productivity

The Engineering Transfer Program's instructional productivity shows similar slight declines.

Engineering Santa Rosa		X2015	F2015	S2016	X2016	F2016	S2017	X2017	F2017	S2018	X2018	F2018	S2019
	FTES	1.19	22.30	23.86	4.54	17.33	21.55	6.45	18.45	20.34	5.32	21.93	
	FTEF	0.10	1.72	1.54	0.54	1.60	1.55	0.54	1.63	1.71	0.54	1.81	
	Ratio	12.01	12.93	15.48	8.49	10.83	13.92	11.89	11.30	11.93	9.79	12.14	

Engineering Petaluma Campus		X2015	F2015	S2016	X2016	F2016	S2017	X2017	F2017	S2018	X2018	F2018	S2019
	FTES	0.00	1.17	1.23	0.00	1.60	0.85	0.00	1.55	1.23	0.00	1.53	
	FTEF	0.00	0.10	0.10	0.00	0.10	0.10	0.00	0.10	0.10	0.00	0.13	

	Ratio	0.00	11.73	12.27	0.00	16.00	8.53	0.00	15.47	12.27	0.00	11.50
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Engineering All Locations		X2015	F2015	S2016	X2016	F2016	S2017	X2017	F2017	S2018	X2018	F2018	S2019
	FTES	1.19	23.47	25.09	4.54	18.93	22.40	6.45	19.99	21.57	5.32	23.46	
	FTEF	0.10	1.82	1.64	0.54	1.70	1.65	0.54	1.73	1.81	0.54	1.94	
	Ratio	12.01	12.86	15.29	8.49	11.14	13.60	11.89	11.54	11.95	9.79	12.10	

5.4 Curriculum Currency

The Engineering Transfer Program's curriculum is up to date, completing the 4 courses that were due for review last year.

5.5 Successful Program Completion

The Engineering Transfer Program has a terrific track record of student completion success. CSU & UC databases for 2017-2018 report 33 transfers to the CSU system and 32 transfers to the UC system. Some students also transfer to private and out-of-state colleges. The program also awards AS degrees these past 4 years at the following rates: 17, 14, 22, 22.

5.6 Student Success

The Engineering Transfer Program has solid retention and completion numbers.

5.6a Retention The percentage of students receiving a grade of A,B,C,D,CR, or I in each Discipline (duplicated headcount).

Engineering	X2015	F2015	S2016	X2016	F2016	S2017	X2017	F2017	S2018	X2018	F2018	S2019
Santa Rosa Campus	84.6%	81.1%	91.3%	82.7%	74.2%	76.2%	87.2%	88.5%	79.6%	0.0%	82.7%	
Petaluma Campus	0.0%	63.6%	75.0%	0.0%	76.7%	62.5%	0.0%	89.7%	69.6%	0.0%	78.3%	
All Locations	84.6%	79.2%	89.4%	82.7%	74.6%	75.0%	87.2%	88.6%	78.4%	0.0%	82.1%	

5.6b Successful Course Completion The percentage of students receiving a grade of A,B,C, or CR in each Discipline (duplicated headcount).

Engineering	X2015	F2015	S2016	X2016	F2016	S2017	X2017	F2017	S2018	X2018	F2018	S2019
Santa Rosa Campus	84.6%	75.0%	90.2%	82.7%	71.5%	74.4%	85.9%	84.6%	77.2%	0.0%	80.1%	
Petaluma Campus	0.0%	63.6%	75.0%	0.0%	76.7%	62.5%	0.0%	89.7%	69.6%	0.0%	78.3%	
All Locations	84.6%	73.8%	88.5%	82.7%	72.4%	73.4%	85.9%	85.4%	76.2%	0.0%	79.9%	

5.6c Grade Point Average The average GPA in each Discipline (UnitsTotal / GradePoints).

Engineering	X2015	F2015	S2016	X2016	F2016	S2017	X2017	F2017	S2018	X2018	F2018	S2019
Santa Rosa Campus	3.08	3.00	3.30	3.27	2.92	2.71	3.31	3.07	2.88	0.00	2.87	
Petaluma Campus	0.00	3.53	3.37	0.00	2.73	3.36	0.00	3.88	3.50	0.00	3.25	
All Locations	3.08	3.03	3.30	3.27	2.90	2.74	3.31	3.14	2.91	0.00	2.90	

5.7 Student Access

The Engineering Transfer Program has seen a significant demographic shift over the past 5 years from 20% Hispanic to about 33% Hispanic. Enrollments by women in the program hovers at about 15% down significantly from the 25% of a decade ago. The program hopes to launch a SHPE chapter and relaunch the SWE chapter in September. Diversity of our faculty took a hit these past two years as two faculty withdrew to care for children and parents. Restoring diversity to our adjunct faculty ranks may be challenging with the limitations of our contract and a flat schedule size.

5.7a Students Served - by Ethnicity

The number of students in each Discipline at first census broken down by ethnicity (duplicated headcount).

Engineering, All Locations	Ethnicity	2015-16	Percent	2016-17	Percent	2017-18	Percent	2018-19	Percent
	White	219	56.4%	164	47.7%	172	43.4%	168	44.3%
	Asian	33	8.5%	34	9.9%	37	9.3%	23	6.1%
	Black	12	3.1%	1	0.3%	13	3.3%	8	2.1%
	Hispanic	92	23.7%	103	29.9%	135	34.1%	124	32.7%
	Native American	1	0.3%	0	0.0%	1	0.3%	0	0.0%
	Pacific Islander	0	0.0%	1	0.3%	0	0.0%	0	0.0%
	Filipino	7	1.8%	5	1.5%	4	1.0%	7	1.8%
	Other Non-White	23	5.9%	25	7.3%	14	3.5%	22	5.8%
	Decline to state	1	0.3%	11	3.2%	20	5.1%	27	7.1%
	ALL Ethnicities	388	100.0%	344	100.0%	396	100.0%	379	100.0%

5.7b Students Served - by Gender

The number of students in each Discipline at first census broken down by gender (duplicated headcount).

Engineering, All Locations	Gender	2015-16	Percent	2016-17	Percent	2017-18	Percent	2018-19	Percent
	Male	320	82.5%	294	85.5%	328	82.8%	314	82.8%
	Female	61	15.7%	43	12.5%	61	15.4%	53	14.0%
	Unknown	7	1.8%	7	2.0%	7	1.8%	12	3.2%
	ALL Genders	388	100.0%	344	100.0%	396	100.0%	379	100.0%

5.7c Students Served - by Age

The number of students in each Discipline at first census broken down by age (duplicated headcount).

Engineering, All Locations	Age Range	2015-16	Percent	2016-17	Percent	2017-18	Percent	2018-19	Percent
	0 thru 18	61	15.7%	65	18.9%	76	19.2%	84	22.2%
	19 and 20	113	29.1%	133	38.7%	111	28.0%	108	28.5%
	21 thru 25	131	33.8%	101	29.4%	145	36.6%	124	32.7%
	26 thru 30	52	13.4%	26	7.6%	34	8.6%	36	9.5%
	31 thru 35	17	4.4%	7	2.0%	21	5.3%	20	5.3%
	36 thru 40	8	2.1%	7	2.0%	3	0.8%	3	0.8%
	41 thru 45	4	1.0%	3	0.9%	2	0.5%	1	0.3%
	46 thru 50	0	0.0%	0	0.0%	1	0.3%	1	0.3%
	51 thru 60	2	0.5%	2	0.6%	2	0.5%	2	0.5%
	61 plus	0	0.0%	0	0.0%	1	0.3%	0	0.0%
	ALL Ages	388	100.0%	344	100.0%	396	100.0%	379	100.0%

5.8 Curriculum Offered Within Reasonable Time Frame

The Engineering Transfer Program is offering the central core courses of our program in a reasonable time frame (all core courses offered Fall and Spring, a few of the 1 year classes in the Summer as well). Unfortunately, the engineering offerings related to project and GE have been shelved due to schedule reductions. These classes have always filled, but are not required for students to complete their transfer requirements.

5.9a Curriculum Responsiveness

The Engineering Transfer Program has membership on the Engineering Liaison Council, the consortium that meets twice yearly to coordinate engineering education for all of California. Through this participation, our curriculum is responsive to the changing expectations of the university programs. Equally important to our students' professional success are the enrichment activities that have been curtailed over the past decade. It will take some effort and some additional grant and district resources if we are to return to our college's former position as an innovative, leading engineering program in the state.

5.9b Alignment with High Schools (Tech-Prep ONLY)

Engineering is not a Tech-Prep program.

5.10 Alignment with Transfer Institutions (Transfer Majors ONLY)

The Engineering Transfer Program aligns well with transfer institutions. We have articulation agreements with Cal Poly SLO, UCD, UCB, UCLA, Chico, Sacramento, San Diego St.... We transfer over 60 students a year.

5.11a Labor Market Demand (Occupational Programs ONLY)

Engineering is not an occupational program.

5.11b Academic Standards

The Engineering Transfer Program maintains high academic standards.

5.6c Grade Point Average The average GPA in each Discipline ($\text{UnitsTotal} / \text{GradePoints}$).

Engineering	X2015	F2015	S2016	X2016	F2016	S2017	X2017	F2017	S2018	X2018	F2018	S2019
Santa Rosa Campus	3.08	3.00	3.30	3.27	2.92	2.71	3.31	3.07	2.88	0.00	2.87	
Petaluma Campus	0.00	3.53	3.37	0.00	2.73	3.36	0.00	3.88	3.50	0.00	3.25	
All Locations	3.08	3.03	3.30	3.27	2.90	2.74	3.31	3.14	2.91	0.00	2.90	

6.1 Progress and Accomplishments Since Last Program/Unit Review

Rank	Location	SP	M	Goal	Objective	Time Frame	Progress to Date
0001	Santa Rosa	02	01	Permatize & increase Engineering Coordinator Release Time	Fund the 5% Engr Coord directly from distric funds rather than by chari load donation. Increase from 5% to 10% release time.	2019-2010	District Funding
0002	Santa Rosa	02	01	Outfit temp materials lab with sufficient equipment	Need 2 more Pasco Tensile Testers ME 8236	Fall 2019	District IELM funding
0003	Santa Rosa	02	01	Increase full time faculty presence in the program	A shared faculty member or improved connection to Physics.	2019-2020	District Reorg
0004	Santa Rosa	02	01	Migrate to temporary facilities	Move to faculty offices, temp materials lab, new classrooms.	Fall 2019	Facutly and staff time
0005	Santa Rosa	02	01	Curriculum COR Updates, 4 classes	COR updates for 4 classes.	2019-2020	District funding or support for adjunct faculty efforts
0006	Santa Rosa	02	01	Student Learning Outcomes Assessment progress	Complete 2 more SLO Assessments this year.	2019-2020	District funding or support for adjunct faculty efforts
0007	Santa Rosa	02	01	Student Engineering Society Memberships	Recruit for and fund both SWE and SHPE student memberships	Fall 2019	Faculty and staff time, foundation resources
0008	Santa Rosa	02	01	Friday Makerspace Program expansion	Bring in more faculty, staff and students. Make Engr 770 a regular and productive activity.	2019-2020	Faculty and staff time, foundation resources
0009	Santa Rosa	02	01	Expand Engineering Enrichment Activities	Participate in S-STEM Grant, MESA Activities, TEC club	2019-2020	Faculty and staff time, foundation resources

6.2b PRPP Editor Feedback - Optional

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6.3a Annual Unit Plan

Rank	Location	SP	M	Goal	Objective	Time Frame	Resources Required
0001	Santa Rosa	02	01	Permatize & increase Engineering Coordinator Release Time	Fund the 5% Engr Coord directly from distric funds rather than by chari load donation. Increase from 5% to 10% release time.	2019-2010	District Funding
0002	Santa Rosa	02	01	Outfit temp materials lab with sufficient equipment	Need 2 more Pasco Tensile Testers ME 8236	Fall 2019	District IELM funding
0003	Santa Rosa	02	01	Increase full time faculty presence in the program	A shared faculty member or improved connection to Physics.	2019-2020	District Reorg
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