

## **CADD - CAREER AND TECHNICAL EDUCATION – SUPPLEMENTAL QUESTIONS 2014**

CTE programs must conduct a full program review every 4 years. The full review includes answering these supplemental questions. Every two years (once between full reviews) these supplemental questions must be answered and submitted to Academic Affairs for posting on the College website. Use labor market data, advisory committee input, and institutional data to respond to the following questions:

### **1. How strong is the occupational demand for the program?**

The following categories of CADD related occupations were surveyed by ECC Institutional Research in Local, County, and State regions:

- Architectural and Civil Drafters
- Electrical and Electronics Drafters
- Mechanical Drafters
- Engineering Technicians, Except Drafters, All Other

In all cases there was a decline in demand in the 2008 – 2013, during the “great recession” period.

The outlook for the next five years is flat and steady across surveyed regions.

The next 5 years will be crucial to the overall CADD training effort to ensure that workers will be able to step into high paying technical positions in local industries. The delayed economic rebound (post recession) locally and nationally will enable the economy to eventually return to a statistically normal condition.

See attached information from Institutional Research for detailed data.

### **2. How has the demand changed in the past 5 years and what is the outlook for the next 5 years?**

According to the CTE 4-year Program Review from El Camino Institutional Research Statistics:

"Employment in Computer Aided Design Draft experienced double digit declines over the past five years, reducing by as much as 21%. Demand over the next five years will be relatively flat. According to the Occupational Outlook Handbook, new software programs are making the work more efficient, hence alleviating the need for additional workers." I will add that the smallest decline was 5% for Engineering Technicians.

Other relevant data that may not be defined or collected, and may have an impact on statistics, involves occupations that require a CADD skill set. These include: engineer, machinist, inspector, analyst; and others within the overall manufacturing population. Also, the future direction of CADD is into “Metadata/Big data” at an enterprise level; where management, accounting, planning, marketing will need some level of training.

As for the conclusion explaining the decline (Occupational Outlook Handbook), I would offer an alternative conclusion, as both an instructor and practitioner in the field for 25 years. Although there may have been slight improvements in CADD software over the past 5 years; a much more likely cause for the decline was outsourcing and business consolidation to lower overall costs as a result of the recession.

See attached information from Institutional Research for detailed data.

### **3. What is the district’s need for the program?**

The CADD department reflects the best intentions of the Industry and Technology Division, and El Camino College, in that it supports local Industry requirements and trains students using the latest Technology.

CADD is used to design, engineer, test, and manufacture everything that is man-made in the Automotive, Aerospace, and Product Design Industries; and also crosses-over many techno/business boundaries (Art, Architecture, Manufacturing, IT, etc.).

The El Camino CADD program utilizes Catia software; the Industry wide gold standard in advanced 3D technology. This technology is prominently used by local Aerospace and Automotive companies and their suppliers. Twenty seven years ago, El Camino was selected as 1 of 6 schools nationwide to train utilizing Catia software; and is still considered an academic leader in the dissemination of this technology. We also train using Autodesk Products; recognized as the leading CADD software in the USA on a "per seat" basis.

The CADD department predominantly serves the South Bay which encompasses a population of almost one million residents and is home to one of the largest manufacturing bases in the country. Communities, employers, and academic institutions expect trained and qualified technology personnel to make a positive impact on the local economy.

We accomplish this by focusing on (2) main types of students:

- 1) Traditional students earning a degree, certificate or transferring to other academic institutions
- 2) Non-traditional students from Industry learning new technologies and processes (retraining/recertification)

Ultimately, our goal is to immerse all of our students in the development of the high tech skills needed for success in higher education and employment opportunities.

#### **4. What is the state's need for the program?**

When the current recessionary environment fades; companies are anticipated to be hiring in all engineering disciplines. These are high paying jobs with the probability of upward mobility. Traditionally, aerospace companies are the largest market; which covers OEM's (Boeing, Northrop Grumman) down to local contractors and suppliers. These companies have historically been important employers for California.

Also, due to the entrepreneurial, high tech environment in the State, there has been an emergence of "micro corporations" armed with new technologies. As 3d printers, mills, and robotic arms becoming more affordable and main stream, CADD design and data management becomes increasingly interesting and necessary to a greater population of people and professions.

The CADD department is prepared to train future generations of designers, engineers, and other technical personnel through traditional classes and online offerings.

#### **5. How does the program address needs that are not met by similar programs in the region?**

Increasingly, students and employers are turning to ECC and the CADD department to pick up the fall-off in local technology and engineering graphics training. As previously discussed in the "district" section of CTE; the department has a long history and reputation for excellence in Catia training which is highly valued in the aerospace and automotive industries.

In addition, local University engineering programs (ex: Cal State Long Beach, UCLA, Cal State Los Angeles) offer limited or no CADD classes for students. Many CSU engineering students are advised to supplement their education with CADD classes, particularly basic Drafting and Catia, at El Camino. We have made it a priority that our CADD classes transfer to CSU and/or UC schools. We are continually updating our technology and curriculum to keep abreast of current local and State requirements for Industry, and transfer requirements to institutions of higher education.

#### **6. Are the students satisfied with their preparation for employment?**

CADD classes have maintained a steady fill rate during this review period. Many CADD students do not require a degree or certificate to advance in their current employment. They focus attention on learning the latest technological tools and processes students need in the current industry environment.

In a recent survey that was administered earlier this year (CTE Outcomes Survey) Institutional Research found that students had a favorable experience when completing their training at El Camino College. 60% were "very satisfied" with the education and training they received at El Camino College and 33% were satisfied for an overall satisfaction rate of 93%. This the overall experience among all students that completed at least 9+ units in a CTE program. Institutional research does not have data for individual programs.

**7. Are the employers in the field satisfied with the level of preparation of our graduates?**

The CADD program is fortunate to have a great reputation with local companies. We have placed students with Northrop Grumman, Boeing, Gulfstream, and various smaller local manufacturers. We expect that employment interest in technology based programs including CADD will continue to remain steady for the foreseeable future.

No employer satisfaction data is available from the ECC Institutional office in 2014. Procedures to obtain this data are not in place at ECC or the Chancellors office at this time.

**8. What are the completion, success, and employment rates for the students?**

Completions for 2012-13 were (3), and for 2013-14 were (4). Retention rate was 91%, and success rate was 81%.

The employment rate equals 72.5%. This metric comes from the CTE Outcomes survey administered earlier this year among all students that completed 9+ CTE units. Institutional Research does not have data for individual programs.

See attached information from Institutional Research for detailed data.

**9. What is the role of the advisory committee and what impact does it have on the program?**

Our Advisory committee plays an important role in continuing to shape the CADD program. Our committee is made up of representatives from CSULA, Boeing, Northrop Grumman, and other local industry representatives. The committee is used to exchange and gather information, and questions posed may result in new training or software that responds to current academic and employer needs. The feedback is invaluable to our program as technology and the processes in use change much faster than in other academic disciplines.

In 2014 we have added SolidWorks software and upgraded all other application software to meet current Industry requirements.

Through our committee we are also able to identify future trends in Industry and education, and decide what would be best for our program and students moving forward.

**10. If there is a licensure exam for students to work in their field of study, please list the exam and the pass rate. If there are multiple licensure exams in the program, include them all.**

The CADD department currently offers Program Certificates and Associate Degrees. We do not offer individual course software exams. However, our training will allow students to complete certificates offered by CADD software vendors Autodesk (AutoCAD, Inventor), and Dassault Systems (Catia, SolidWorks).



## CTE 4 YEAR PROGRAM REVIEW: Computer Aided Design Draft

### Topline:

- Employment in Computer Aided Design Draft experienced double digit declines over the past five years, reducing by as much as -21%. Demand over the next five years will be relatively flat. According to the Occupational Outlook Handbook, new software programs are making the work more efficient, hence alleviating the need for additional workers.

### Occupations shown in report include:

Architectural and Civil Drafters (17-3011)

Drafters, All Other (17-3019)

### Key Figures:

Annual Openings Estimate (2013) <sup>1</sup>	126
Related Completions (2012) <sup>2</sup>	1,066
Current Job Postings <sup>3</sup>	208

### Completions for 2012-2013:

Associate	0
Certificate	1

### Demand over the past 5 years (2008-2013):

Region	2008 Jobs	2013 Jobs	Change	% Change	Median Hourly Earnings
All Available Counties	10,884	8,600	(2,284)	(21%)	\$25.84
State	18,737	14,913	(3,824)	(20%)	\$26.25
Los Angeles County	4,417	3,516	(901)	(20%)	\$26.32
Nation	132,159	107,032	(25,127)	(19%)	\$22.89

<sup>1</sup> EMSI's estimate of labor market demand for the specified occupation among all available counties

<sup>2</sup> The number of people who received either a degree or certificate related to the occupation during the year indicated for all available counties

<sup>3</sup> Current job postings from Indeed among all available counties

Source: EMSI (Economic Modeling); All available counties include Los Angeles, Orange, San Diego, Riverside, San Bernardino, Ventura and Kern.

Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook. Completions for 2012-2013 come from the California Community College Chancellor's Website.

## Occupation Breakdown - % Change (2008 vs. 2013):

Occupation	Description	All Available Counties	State	Los Angeles County	Nation
17-3019	Drafters, All Other	(13%)	(12%)	(11%)	(10%)
17-3011	Architectural and Civil Drafters	(22%)	(21%)	(22%)	(20%)
	Total	(21%)	(20%)	(20%)	(19%)

## Demand for next 5 years (2013-2018):

Region	2013 Jobs	2018 Jobs	Change	% Change	Median Hourly Earnings
All Available Counties	8,600	8,523	(77)	(1%)	\$25.84
State	14,913	14,821	(92)	(1%)	\$26.25
Los Angeles County	3,516	3,496	(20)	(1%)	\$26.32
Nation	107,032	106,553	(479)	0%	\$22.89

## Occupation Breakdown - % Change (2013 vs. 2018):

Occupation	Description	All Available Counties	State	Los Angeles County	Nation
17-3019	Drafters, All Other	2%	4%	1%	5%
17-3011	Architectural and Civil Drafters	(1%)	(1%)	(1%)	(1%)
	Total	(1%)	(1%)	(1%)	0%

## Top Industries % Change (2013 vs. 2018):

NAICS Code	Description	All Available Counties	State	Los Angeles County	Nation
561320	Temporary Help Services	12%	15%	10%	18%
541310	Architectural Services	12%	13%	12%	10%
541330	Engineering Services	7%	5%	9%	9%
238220	Plumbing, Heating, and Air-Conditioning Contractors	5%	5%	0%	9%
551114	Corporate, Subsidiary, and Regional Managing Offices	(5%)	(8%)	(7%)	5%
	Total	7%	6%	6%	9%

Source: EMSI (Economic Modeling); All available counties include Los Angeles, Orange, San Diego, Riverside, San Bernardino, Ventura and Kern.

Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook. Completions for 2012-2013 come from the California Community College Chancellor's Website.

# Grade Distribution, Success, and Retention

## CADD

### Fall

Program CADD  
Term Fall

Preliminary Success Standard

70.6%

5 year Success Average

72.7%

5 year Success Minimum

68.5%

Do Not select more than one term or Program.

Year	COURSE	Method	Weeks	Grade Distribution										Total	Successful	Retained	Succ.	Reten.	
				'A'	'B'	'C'	'P'	'D'	'F'	'NP'	Inc P	Inc NP	'DR'						'W'
2009	CADD-10	Lecture	16	10	2	1	-	2	7	-	-	-	2	2	26	13	22	50.0%	84.6%
	CADD-28	Lecture	16	11	-	2	-	-	2	-	-	-	-	1	16	13	15	81.3%	93.8%
	CADD-31	Distance	8	7	1	-	-	-	9	-	-	-	1	2	20	8	17	40.0%	85.0%
		Lecture	8	26	2	4	-	-	3	-	-	-	2	8	45	32	35	71.1%	77.8%
	CADD-32	Lecture	8	24	4	1	-	-	4	-	-	-	3	1	37	29	33	78.4%	89.2%
	CADD-33	Lecture	8	15	-	-	-	-	1	-	-	-	-	1	17	15	16	88.2%	94.1%
	CADD-37	Lecture	8	13	2	2	-	-	1	-	-	-	-	-	18	17	18	94.4%	100.0%
	CADD-45	Lecture	16	7	10	1	-	-	7	-	-	-	1	3	29	18	25	62.1%	86.2%
	CADD-5	Lecture	16	19	12	3	-	2	17	-	-	-	-	6	59	34	53	57.6%	89.8%
	CADD-99	Indepen	16	1	-	-	-	-	-	-	-	-	-	1	1	1	100.0%	100.0%	
2009 Total				133	33	14	-	4	51	-	-	-	9	24	268	180	235	67.2%	87.7%
2010	CADD-10	Lecture	16	15	1	3	-	1	5	-	-	-	1	10	36	19	25	52.8%	69.4%
	CADD-28	Lecture	16	16	-	-	-	-	-	-	-	-	1	2	19	16	16	84.2%	84.2%
	CADD-31	Distance	8	2	-	1	-	-	13	-	-	-	-	5	21	3	16	14.3%	76.2%
		Lecture	8	16	-	5	-	-	13	-	-	-	8	8	50	21	34	42.0%	68.0%
	CADD-32	Lecture	8	13	2	1	-	-	-	-	-	-	3	1	20	16	16	80.0%	80.0%
	CADD-33	Lecture	8	16	-	2	-	-	-	-	-	-	3	-	21	18	18	85.7%	85.7%
	CADD-37	Lecture	8	13	5	-	-	-	1	-	-	-	1	1	21	18	19	85.7%	90.5%
	CADD-45	Lecture	16	10	6	2	-	-	3	-	-	-	-	2	23	18	21	78.3%	91.3%
	CADD-5	Lecture	16	22	6	3	-	-	7	-	-	-	2	3	43	31	38	72.1%	88.4%
	CADD-99	Indepen	16	1	1	-	-	-	-	-	-	-	-	2	2	2	100.0%	100.0%	
2010 Total				124	21	17	-	1	42	-	-	-	19	32	256	162	205	63.3%	80.1%
2011	CADD-10	Distance	16	8	3	-	-	-	-	-	-	-	2	6	19	11	11	57.9%	57.9%
		Lecture	16	10	4	1	-	-	5	-	-	-	-	1	21	15	20	71.4%	95.2%
	CADD-31	Distance	16	7	-	-	-	-	4	-	-	-	-	7	18	7	11	38.9%	61.1%
		Lecture	8	20	2	4	-	-	6	-	-	-	3	11	46	26	32	56.5%	69.6%
	CADD-32	Lecture	8	27	2	2	-	-	1	-	-	-	7	3	42	31	32	73.8%	76.2%
	CADD-33	Lecture	8	15	1	2	-	-	-	-	-	-	2	-	20	18	18	90.0%	90.0%
	CADD-37	Lecture	8	17	3	2	-	-	-	-	-	-	5	3	30	22	22	73.3%	73.3%
	CADD-45	Lecture	16	22	2	-	-	-	1	-	-	-	-	2	27	24	25	88.9%	92.6%
	CADD-5	Lecture	16	29	7	6	-	5	11	-	-	-	1	5	64	42	58	65.6%	90.6%
2011 Total				155	24	17	-	5	28	-	-	-	20	38	287	196	229	68.3%	79.8%
2012	CADD-10	Distance	16	8	3	-	-	-	-	-	-	5	-	11	27	11	16	40.7%	59.3%
		Lecture	16	18	3	3	-	-	-	-	-	-	-	4	28	24	24	85.7%	85.7%
	CADD-31	Distance	16	7	1	-	-	1	8	-	-	-	-	4	21	8	17	38.1%	81.0%
		Lecture	8	28	-	4	-	1	3	-	-	-	-	6	42	32	36	76.2%	85.7%
	CADD-32	Lecture	8	14	-	3	-	-	2	-	-	-	-	1	20	17	19	85.0%	95.0%
	CADD-33	Lecture	8	17	1	1	-	-	1	-	-	-	-	-	20	19	20	95.0%	100.0%
	CADD-37	Lecture	8	12	3	1	-	-	1	-	-	2	-	-	19	16	19	84.2%	100.0%
	CADD-45	Lecture	16	9	7	2	-	-	-	-	-	3	-	7	28	18	21	64.3%	75.0%
	CADD-5	Lecture	16	26	5	7	-	-	10	-	-	-	-	9	57	38	48	66.7%	84.2%
2012 Total				139	23	21	-	2	25	-	-	10	-	42	262	183	220	69.8%	84.0%

California Community Colleges Chancellor's Office  
Program Awards Summary Report

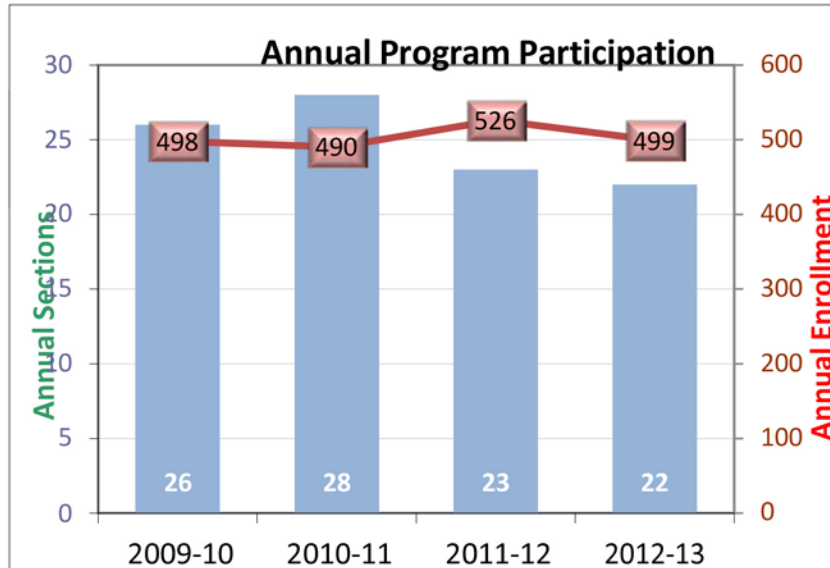
		Annual 2012-2013	Annual 2013- 2014
El Camino Total		233	241
Associate of Science (A.S.) degree	Total	70	76
	Automotive Collision Repair-094900	2	2
	Automotive Technology-094800	6	8
	Computer Electronics-093410	10	11
	Construction Crafts Technology-095200	2	4
	Drafting Technology-095300	3	4
	Electronics and Electric Technology-093400	1	
	Engineering, General (requires Calculus) (Transfer)-090100	29	29
	Environmental Control Technology-094600	4	4
	Machining and Machine Tools-095630	5	11
	Manufacturing and Industrial Technology-095600	3	
	Mill and Cabinet Work-095250	1	
	Welding Technology-095650	4	3
Certificate requiring 60+ semester units	Total		1
	Welding Technology-095650		1
Certificate requiring 30 to < 60 semester units	Total	46	59
	Automotive Collision Repair-094900	8	9
	Automotive Technology-094800	17	10
	Computer Electronics-093410	2	1
	Construction Crafts Technology-095200	3	5
	Drafting Technology-095300	1	2
	Electronics and Electric Technology-093400		1
	Environmental Control Technology-094600	6	18
	Machining and Machine Tools-095630	5	12
	Manufacturing and Industrial Technology-095600	3	1
	Welding Technology-095650	1	
Certificate requiring 18 to < 30 semester units	Total	117	105
	Automotive Technology-094800	41	33
	Computer Electronics-093410	4	4
	Drafting Technology-095300	1	4
	Environmental Control Technology-094600	44	34
	Machining and Machine Tools-095630	27	25
	Mill and Cabinet Work-095250		1
	Welding Technology-095650		4

	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014	Spring 2014
	Credit	Credit	Credit	Credit	Credit	Degree Applicable	Degree Applicable	Degree Applicable	Degree Applicable	Degree Applicable	Transferable	Transferable	Transferable	Transferable	Transferable	Vocational	Vocational	Vocational	Vocational	Vocational
	Enrollment Count	Retention Count	Success Count	Retention Rate	Success Rate	Enrollment Count	Retention Count	Success Count	Retention Rate	Success Rate	Enrollment Count	Retention Count	Success Count	Retention Rate	Success Rate	Enrollment Count	Retention Count	Success Count	Retention Rate	Success Rate
mino Total	1,630	1,426	1,285	87.48%	78.83%	1,630	1,426	1,285	87.48%	78.83%	1,628	1,424	1,283	87.47%	78.81%	1,560	1,365	1,230	87.50%	78.85%
elayed Interaction (Internet Based) Total	42	23	16	54.76%	38.10%	42	23	16	54.76%	38.10%	42	23	16	54.76%	38.10%	42	23	16	54.76%	38.10%
Drafting Technology-095300	42	23	16	54.76%	38.10%	42	23	16	54.76%	38.10%	42	23	16	54.76%	38.10%	42	23	16	54.76%	38.10%
on Distance Education Methods Total	1,588	1,403	1,269	88.35%	79.91%	1,588	1,403	1,269	88.35%	79.91%	1,586	1,401	1,267	88.34%	79.89%	1,518	1,342	1,214	88.41%	79.97%
Automotive Collision Repair-094900	95	91	82	95.79%	86.32%	95	91	82	95.79%	86.32%	93	89	80	95.70%	86.02%	95	91	82	95.79%	86.32%
Automotive Technology-094800	218	187	175	85.78%	80.28%	218	187	175	85.78%	80.28%	218	187	175	85.78%	80.28%	218	187	175	85.78%	80.28%
Computer Electronics-093410	50	37	26	74.00%	52.00%	50	37	26	74.00%	52.00%	50	37	26	74.00%	52.00%	50	37	26	74.00%	52.00%
Construction Crafts Technology-095200	100	88	83	88.00%	83.00%	100	88	83	88.00%	83.00%	100	88	83	88.00%	83.00%	100	88	83	88.00%	83.00%
Drafting Technology-095300	211	193	173	91.47%	81.99%	211	193	173	91.47%	81.99%	211	193	173	91.47%	81.99%	211	193	173	91.47%	81.99%
Electronics and Electric Technology-093400	108	86	64	79.63%	59.26%	108	86	64	79.63%	59.26%	108	86	64	79.63%	59.26%	108	86	64	79.63%	59.26%
Engineering Technology, General (requires Trigonometry)-092400	46	39	34	84.78%	73.91%	46	39	34	84.78%	73.91%	46	39	34	84.78%	73.91%	46	39	34	84.78%	73.91%
Engineering, General (requires Calculus) (Transfer)-090100	70	61	55	87.14%	78.57%	70	61	55	87.14%	78.57%	70	61	55	87.14%	78.57%					
Environmental Control Technology-094600	238	228	206	95.80%	86.55%	238	228	206	95.80%	86.55%	238	228	206	95.80%	86.55%	238	228	206	95.80%	86.55%
Industrial Electronics-093420	32	31	30	96.88%	93.75%	32	31	30	96.88%	93.75%	32	31	30	96.88%	93.75%	32	31	30	96.88%	93.75%
Machining and Machine Tools-095630	150	126	119	84.00%	79.33%	150	126	119	84.00%	79.33%	150	126	119	84.00%	79.33%	150	126	119	84.00%	79.33%
Mill and Cabinet Work-095250	112	93	93	83.04%	83.04%	112	93	93	83.04%	83.04%	112	93	93	83.04%	83.04%	112	93	93	83.04%	83.04%
Other Engineering and Related Industrial Technologies-099900	24	23	19	95.83%	79.17%	24	23	19	95.83%	79.17%	24	23	19	95.83%	79.17%	24	23	19	95.83%	79.17%
Welding Technology-095650	134	120	110	89.55%	82.09%	134	120	110	89.55%	82.09%	134	120	110	89.55%	82.09%	134	120	110	89.55%	82.09%

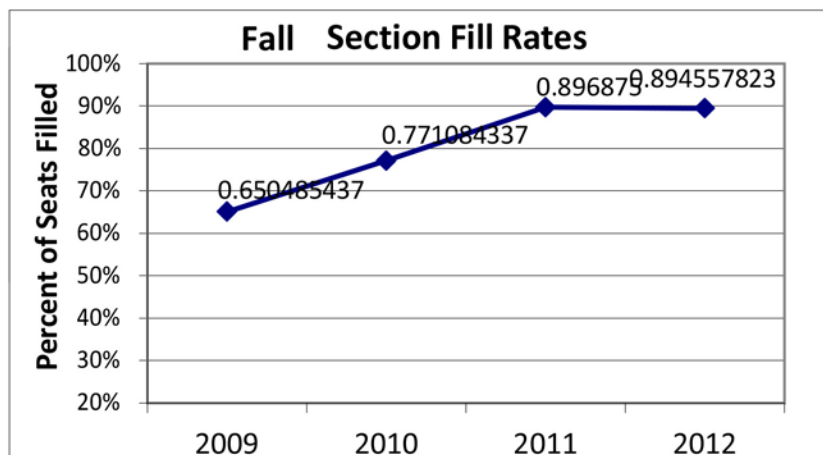


**Program Participation (4-year Trend)**  
**CADD**  
**Years: 2009-10 to 2012-13**

	2009-10	2010-11	2011-12	2012-13	Yr Average
Annual Enr	498	490	526	499	503



	2009-10	2010-11	2011-12	2012-13
Students	338	333	336	321
Enrollment	1.47	1.47	1.57	1.55



**Enrollment by Time of Day**

Fall Term	2009	2010	2011	2012
Day	17.2%	17.2%	17.8%	22.1%
Night	58.6%	54.3%	43.9%	44.1%
Weekend/	24.3%	28.5%	38.3%	33.8%