Engineering and Computer Science

College of Engineering and Computer Science

Introduction

The College of Engineering and Computer Science offers a Bachelor of Science in Engineering with concentrations in Chemical, Civil, Electrical, and Mechanical Engineering, a Bachelor of Science in Computer Science with general and applied pathways and a Master of Engineering degree with concentrations in Chemical, Civil, Electrical, Mechanical Engineering, and Engineering Management. The College of Engineering and Computer Science maintains national accreditations for the Bachelor of Science in Engineering and the Bachelor of Science in Computer Science degrees by ABET. The College meets the educational needs of its students, serves the local community, including industry, and society at large by providing cultural and educational leadership, stimulating students toward maximum intellectual and professional growth while providing an atmosphere conducive to student development. The College of Engineering and Computer Science also provides the facilities and opportunities necessary to search for truth and the expansion of knowledge through research, design, and other forms of creative expression.

Performance Objective 1 Expand degree offerings in the College of Engineering and Computer Science.

1 Assessment and Benchmark

Benchmark: Create separate academic programs for each discipline currently under the BS in Engineering (BSE) degree.

1.1 Data

2017-2018:
Submitted a Letter of Intent to develop a Bachelor of Science in Mechanical Engineering (BSME) to the Board of Supervisors and Board of Regents during the spring of 2018.

1.1.1 Analysis of Data and Plan for Continuous Improvement

2 Assessment and Benchmark

Benchmark: Establish a minimum of four tenured or tenure-track faculty members per engineering discipline in an effort to support degree offering expansion.

2.1 Data

Number of Tenure-Track or Tenured Faculty Members:

	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Fall 2022
Chemical Engineering	2*				
Civil Engineering	2				
Electrical Engineering	5				
Mechanical Engineering	3				

*One faculty member in Chemical Engineering of the two currently in the department will leave the program in December 2018.

2.1.1 Analysis of Data and Plan for Continuous Improvement

3 Assessment and Benchmark

Benchmark: Establish a minimum of six tenured or tenure-track computer science faculty members in an effort to support student enrollment growth.

3.1 Data

Number of Tenure Track or Tenured Faculty Members:

	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Fall 2022
Computer Science	5				

3.1.1 Analysis of Data and Plan for Continuous Improvement

Performance Objective 2 Demonstrate student success.

1 Assessment and Benchmark

Benchmark: 60% of graduates will have a job in their field by the time of graduation.

1.1 Data

2017-2018:
Will collect data during the 2018-2019 academic year from the senior exit interviews.

1.1.1 Analysis of Data and Plan for Continuous Improvement

2 Assessment and Benchmark

Benchmark: 50% of graduates will have at least one coop or internship experience in their field by the time of graduation.

2.1 Data

2017-2018:
Will collect data during the 2018-2019 academic year from the senior exit interviews.

2.1.1 Analysis of Data and Plan for Continuous Improvement

3 Assessment and Benchmark

Benchmark: Maintain a retention rate between the freshman and sophomore years of more than 60%.

3.1 Data

Engineering Program Attrition and Retention Data:

Fall Semester	Freshman	Sophomore	% Attrition	% Retention
1998	166	73	58.43	41.57
1999	198	69	53.03	46.97
2000	141	93	52.48	47.52
2001	153	67	50.98	49.02
2002	136	75	50.00	50.00
2003	167	68	47.90	52.10
2004	150	87	52.67	47.33
2005	140	71	52.14	47.86
2006	141	67	58.16	41.84
2007	162	59	48.15	51.85
2008	154	84	40.91	59.09
2009	176	91	45.45	54.55
2010	179	96	56.42	43.58
2011	193	78	48.19	51.81
2012	191	100	32.46	67.54
2013	192	129	32.29	67.71
2014	263	130	47.15	52.85
2015	349	139	51.29	48.71
2016	220	170	36.36	63.64
2017	197	140		
2018				
Average	183.40	94	48.13	51.87

Computer Science Program Attrition and Retention Data:

Fall Semester	Freshman	Sophomore	% Attrition	% Retention
2006	33	16	57.58	42.42
2007	59	14	64.41	35.59
2008	27	21	22.22	77.78
2009	32	21	62.50	37.50
2010	38	12	68.42	31.58
2011	45	12	64.44	35.56

2012	34	16	38.24	61.76
2013	50	21	44.00	56.00
2014	41	28	19.51	80.49
2015	60	33	53.33	46.67
2016	83	28	49.40	50.60
2017	101	42		
2018				
Average	54.82	24	49.46	50.54

3.1.1 Analysis of Data and Plan for Continuous Improvement

2017-2018:
The average retention rate of engineering and computer science students was 57% from the fall of 2016 to the fall of 2017.

4 Assessment and Benchmark

Benchmark: Increase the College of Engineering and Computer Science fall undergraduate enrollment by 3% per year.

4.1 Data

Fall Semester	ENGR	CS	Total	% increase from previous fall
2002	366	157	523	-4.40
2003	389	111	500	-2.40
2004	373	115	488	-7.79
2005	347	103	450	-2.44
2006	361	78	439	6.38
2007	372	95	467	4.50
2008	408	80	488	7.17
2009	430	93	523	11.09
2010	487	94	581	2.24
2011	498	96	594	4.88
2012	533	90	623	12.84
2013	588	115	703	17.35
2014	706	119	825	17.82
2015	820	152	972	-7.41
2016	726	174	900	0.56
2017	686	219	905	
2018				
Average	505.63	118	605.07	4.03

4.1.1 Analysis of Data and Plan for Continuous Improvement

2017-2018:
The College of Engineering and Computer Science fall 2016 enrollment was 900 students. The College of Engineering and Computer Science fall 2017 enrollment was 905 students. During the last academic year there was an enrollment decrease of 0.56%.

5 Assessment and Benchmark

Benchmark: Increase the College of Engineering and Computer Science fall graduate enrollment by 3% per year.

5.1 Data

Fall Semester	Graduate ENGR	% increase from previous fall
2000	20	
2001	29	45.00
2002	42	44.83
2003	62	47.62
2004	78	25.81
2005	84	7.69
2006	78	-7.14
2007	100	28.21
2008	71	-29.00
2009	80	12.68
2010	55	-31.25
2011	39	-29.09
2012	25	-35.90
2013	32	28.00
2014	40	25.00
2015	50	25.00
2016	37	-26.00
2017	26	-29.73
2018		
Average	52.67	5.65

5.1.1 Analysis of Data and Plan for Continuous Improvement

2017-2018:

Performance Objective 3 Improve curricula for all College of Engineering and Computer Science programs.

1 Assessment and Benchmark

Benchmark: 100% accreditation of College of Engineering and Computer Science undergraduate programs.

1.1 Data

2017-2018:
The Bachelor of Science in Engineering is accredited until September of 2022.
The Bachelor of Science in Computer Science is accredited until September of 2019.

1.1.1 Analysis of Data and Plan for Continuous Improvement

2 Assessment and Benchmark

Benchmark: Perform a minimum of two advisory board reviews of Engineering and/or Computer Science concentrations each academic year.

2.1 Data

2017-2018:
The mechanical engineering concentration and the computer science program were reviewed in the spring of 2018.
The data tables are attached.

CS Review Spring 2018 [PDF 416 KB 4/4/19]

MEEN Review Fall 2018 [PDF 90 KB 4/4/19]

2.1.1 Analysis of Data and Plan for Continuous Improvement

Performance Objective 4 Improve the College of Engineering and Computer Science financial resources.

1 Assessment and Benchmark

Benchmark: Increase the Engineering endowment by 3% per year.

1.1 Data

July	Engineering Endowment	% change from previous year
2015	$802,696	
2016	$835,897	4.14
2017	$841,593	0.68
2018	$864,367	2.71

1.1.1 Analysis of Data and Plan for Continuous Improvement

2017-2018:
In July 2017, the Engineering endowment was valued at $841,593.
In July 2018, the Engineering endowment was valued at $864,367.
The Engineering endowment increase was 2.71%.

2 Assessment and Benchmark

Benchmark: Increase the endowed Engineering scholarships by 3% per year.

2.1 Data

July	Engineering Endowment Scholarships	% change from previous year
2015	$1,696,170	
2016	$1,879,281	10.80
2017	$1,981,018	4.41
2018	$2,062,520	4.11

2.1.1 Analysis of Data and Plan for Continuous Improvement

2017-2018:
In July 2017, the endowed Engineering scholarships were valued at $1,981,018.
In July 2018, the endowed Engineering scholarships were valued at $2,062,520.
The endowed Engineering scholarships increase was 4.11%.

3 Assessment and Benchmark

Benchmark: Increase the endowed Engineering professorships by 3% per year.

3.1 Data

July	Engineering Endowment Professorships	% change from previous year
2015	$1,371,550	
2016	$1,571,550	14.58
2017	$1,571,650	0.01
2018	$1,640,000	4.35

3.1.1 Analysis of Data and Plan for Continuous Improvement

2017-2018:

In July 2017, the endowed Engineering professorships were valued at $1,571,650.
In July 2018, the endowed Engineering professorships were valued at $1,640,000.
The endowed Engineering professorships increase was 4.35%.

4 Assessment and Benchmark

Benchmark: Attract a minimum of $200,000 in external grant funding per year.

4.1 Data

	Academic Year Ending				
	2018	2019	2020	2021	2022
External Grant Funding	$30,680				

4.1.1 Analysis of Data and Plan for Continuous Improvement

2017-2018:
During this academic year, the College of Engineering and Computer Science was able to attract $30,680 in external funding.

Performance Objective 5 Improve the College of Engineering and Computer Science facilities.

1 Assessment and Benchmark

Benchmark: Invest a minimum of $70,000 per year in College of Engineering and Computer Science facilities.

1.1 Data

2017-2018:
The 2018-2019 academic year will be the first year of tracking.

Amount invested in college facilities per year:

	Academic Year Ending			
	2019	2020	2021	2022
Classrooms				
Laboratories				
Equipment				
Total				

1.1.1 Analysis of Data and Plan for Continuous Improvement