

LAMAR UNIVERSITY
COLLEGE OF ARTS AND SCIENCES
Calendar Year 2018

Department: Computer Science

Unit Goals for 2018 and Accomplishments

1. Continue to involve students in undergraduate and graduate research, programming competitions, and other academic activities.
 - a. This goal was accomplished as our Faculty engaged undergraduate and graduate students in doing research.
2. Maintaining our programs accreditation (e.g., ABET, SACS), considering new programs (e.g., Computer Game Development, Cybersecurity) and improve our effective recruitment and retention practices.
 - a. This goal was accomplished as our Faculty are doing yearly assessment for the ABET-accredited program. Dr. Roden completed the WEAVE report for the undergraduate programs, and Dr. Andrei completed the WEAVE report for the graduate program, both necessary for SACS accreditation. Dr. Roden is the coordinator of Computer Game Development program approved in Fall 2017 and Dr. Xingya Liu is the coordinator of the Cybersecurity program approved in Spring 2018.
 - b. Dr. Roden and Dr. Xingya Liu attended the ABET Assessment Conference in April 2019. The purpose was to learn about revisions to the ABET assessment methodology for Computer Science programs. In addition, the two colleagues learned about procedures for obtaining university certification by NSA in cybersecurity.
3. Thirdly, we shall continue to cooperate for getting support from the higher administration, advisory board, industry, and collaborate with other academic departments.
 - a. This goal was accomplished as we received support from the higher administration, advisory board and industry. We also collaborated very well with other departments.
4. Fourthly, we shall continue to submit proposals to funding agencies.
 - a. Most of our Faculty are permanently involved in grant writing. Dr. Wang and Dr. Andrei got awarded with a TWC grant in Spring 2018 for organizing the Summer Code Camps for Girls from middle-schools. Dr. Zhang, Dr. Wang and Mr. Sun got a National Science Foundation grant in support for Student research.
5. Lastly, we shall continue our cooperation with high schools and community colleges from many counties, including Golden Triangle and Harris County.
 - a. Dr. Jane Liu continue her efforts to cooperate with high schools from Golden Triangle and Harris County materialized in programming competitions organized by DCS LU.

1. Compare enrollment (SCH + Student FTE) data for the past three (3) years. Comment on trended data and actions taken this year.

Enrollment:

		Fall 2016		Fall 2017		Fall 2018	
		Female	Male	Female	Male	Female	Male
CIS	White	2	21	3	21	3	10
	Black	4	15	4	8	5	10
	Hispanic	0	1	1	6	2	5
	Asian	0	1	1	4	0	3
	American-Indian	0	0	0	0	0	0
	Multiracial	0	0	0	2	0	2
	Intl	0	0	0	0	0	0
	Unknown	1	0	1	5	0	0
	TOTAL	7	38	10	46	10	30
	GRAND TOTAL	45		56		40	
CS	White	13	112	11	83	16	93
	Black	5	27	5	25	9	40
	Hispanic	1	5	7	30	10	34
	Asian	5	19	5	29	4	35
	American-Indian	2	4	0	1	0	1
	Multiracial	0	0	0	3	0	3
	Pacific Islander	0	0	0	0	0	1
	Intl	0	2	0	2	0	3
	Unknown	3	4	1	21	0	0
	TOTAL	33	175	29	194	39	210
	GRAND TOTAL	202		223		249	
	UNDERGRADUATE TOTAL	247		279		289	
MCS	White	0	2	0	4	1	3
	Black	0	0	0	1	0	0
	Hispanic	0	0	0	0	0	0
	Asian	16	56	0	2	0	0
	American-Indian	0	0	0	0	0	0
	Multiracial	0	0	0	0	0	0
	Intl	17	117	18	69	26	51
	Unknown	0	0	0	0	0	0
	TOTAL	33	176	18	76	27	54
	GRAND TOTAL	209		94		81	

Semester credit
hours

	Fall 2016	Fall 2017	Fall 2018
CIS	536	683	494
CS	2218	2503	3073
MCS	1874	784	664
TOTAL	4628	3970	4231

The **undergraduate** student enrollment increased in Fall 2018 by **3.6%** compared to Fall 2017. Although there is a drop of the number of Computer Information Science majors by **29%**, there is an increase of **12%** of the main ABET accredited Computer Science majors. We believe this could be because of the accreditation, efforts lead by Dr. Jane Liu for First-year Success program addressed to freshman students.

Similar ratios are for the semester credit hours. There is a total of **12%** increase in the number of SCH in Fall 2018 (3567 SCH for both majors) compared to Fall 2017 (3186 SCH for both majors). Although the CIS program encountered a decrease of **28%**, we got a significant increase in SCH for the CS program, that is, **23%**. Because the number of CS and CIS majors increased by **3.6%**, but their SCH increased by **12%**, we infer that the data demonstrates that undergraduate students took more classes (by about **8.4%**) in 2018 compared to 2017.

Regarding the **graduate** studies, the graduate student enrollment decreased in Fall 2018 by **14%** compared to Fall 2017. The number of semester credit hours decreased in Fall 2018 by **15%** compared to Fall 2017. We recently updated the criteria for graduate admission by allowing more students to be given the chance to be admitted in our Master program, and at the same time keeping the Master program competitive.

2. Examine unit's ability to contribute to teaching, research, and service missions of the organization.

All Ph.D. holders are awarded as Graduate Faculty, that is, allowed to teach and to serve as mentors for both graduate and undergraduate students. Our Faculty are very active in research, as demonstrated by 53 publications and presentations in a department with 11 tenure-track Faculty. Most of these research works involved undergraduate and graduate students.

In addition, our Faculty are very active in serving the department, college, university, academic community, and local area.

In conclusion, our department has proven its strong abilities to contribute to teaching, research and service missions to the university.

3. Compare graduation rates for past three (3) years, what do these numbers/trends mean and what do you need to change or improve?

The below table indicates the graduation rates for the past three years relative to the last six years:

Graduation rates for the past three years	FY 2016	FY 2017	FY 2018	Three years total

11010100	2	BS	Computer Science	31.3%	12.9%	27.5%	24.3%
11010100	2	BSCISC	Computer Information Science	0.0%	0.0%	16.7%	10.0%
11070100	3	MSCS	Computer Science	68.2%	44.4%	68.2%	61.3%

The below table indicates the number of degrees awarded for the past three years:

Degrees Awarded for the past three years				FY 2016	FY 2017	FY 2018	Three years total
11010100	2	BS	Computer Science	14	18	15	47
11010100	2	BSCISC	Computer Information Science	1	2	4	7
11070100	3	MSCS	Computer Science	108	160	47	315

The graduation rate for our undergraduate CS students in Fall 2018 increased by **14.6%** compared to Fall 2017 and with **16.7%** for CIS majors. We had more graduate students graduating in Fall 2018 by **23.8%** compared to Fall 2017. The main reason is probably because we had a large population of graduate students admitted in Fall 2016.

The number of degrees awarded in 2018 looks different than the graduation rate of the same year. We graduated less undergraduate CS students in 2018 compared to 2017 by **16.7%**. But we had a **100%** increase in the number of CIS students awarded in 2018 compared to 2017. So, we only have a decrease of **5%** of the graduation rate for the overall undergraduate students. We believe that our efforts to engage students in tutoring, research and other academic activities will contribute to increasing this number.

The number of degrees awarded in 2018 for Master in Computer Science decreased by **70%** compared to 2017. This is due to the fact that we used to have many graduate students back in 2016.

We believe that our new admission criteria for the graduate program will allow us to increase the number of graduating students as well as the graduation rates.

4. Institutional Effectiveness Plans—Summarize how your unit is doing in setting, evaluating and using data to make revise, maintain, add or eliminate topics or courses.

We have two active committees which are charged with department effectiveness plans. These are Assessment Committee and Curriculum Committee. We analyze the

evaluations of all courses offered by our department. Depending on the output from this committee, we inform the Curriculum Committee members about the recommendations done by the Assessment Committee members. Last year, we retired some courses which were not offered for more than 5 years. However, we design and offer new courses necessary in hot topics, such as Data Analytics and Computation, as well as Cybersecurity.

Student Workers

1. Number employed and how utilized

Our department needs to have a webmaster position in order to maintain the departmental’s website, four technicians to take care of our networks needed for teaching, research, and tutoring, one office assistant to handle stationary, mail, and other departmental jobs. In addition, we need a larger number of graders as most of our courses are programming-intensive, so there is a need to run each such program and do individual testing. We also offer research positions, case-by-case depending on their impact on and benefits to Lamar University.

SPRING 2018

Undergraduate Students	How Utilized?	Graduate Students	How Utilized?	GRAND TOTAL
	Office Assistant	1	Office Assistant	\$770.00
	Webmaster	1	Webmaster	\$1120.00
	Research			\$7560.00
	Technicians	4	Technicians	\$7280.00
2	Graders	54	Graders	\$22092.00

SUMMER 2018

Undergraduate Students	How Utilized?	Graduate Students	How Utilized?	GRAND TOTAL
	Office Assistant	1	Office Assistant	\$1980.00
	Webmaster	1	Webmaster	\$1200.00
3	Technicians/Tutor	1	Technicians/Tutor	\$3900.00
	Graders	14	Graders	\$11680.00
	Research Assistants	1	Research Assistants	\$320.00

FALL 2018

Undergraduate Students	How Utilized?	Graduate Students	How Utilized?	GRAND TOTAL
	Office Assistants	2	Office Assistants	\$2160.00
	Webmaster	1	Webmaster	\$720.00
3		2		\$6240.00

	Technicians/Tutor		Technicians/Tutor	
2		28		\$33,360.00
	Graders		Graders	
	Research Assistants	3	Research Assistants	\$1540.00

2. Total costs/semester and year

Total Costs/Semester and Year

Total Cost for Spring 2018:	\$38,822.00
Total Cost for Summer 2018:	\$19,080.00
Total Cost of Fall 2018:	\$44,020.00
2018 Total:	\$101,922.00

Is your budget sufficient for student workers? If not, provide a plan of action that indicates the needs of your department, estimated costs and benefits.

We actually struggled to be able to pay the student workers this academic year (2018) due to the large number of students willing to work for the department. We have to maintain a balance between helping students and instructors, and at the same time to preserve the quality of our program. We also need to increase the number of Research Assistants in order to publish papers, implement software projects, and increase the visibility of DCS and LU nationwide. We will consider approaching the Higher Administration for a budget adjustment, if needed.

Faculty Productivity Measures

1. Publications

 4 # of Manuscripts submitted not yet published

 34 # of Manuscripts published

 34 Refereed

 0 Non-refereed

 0 # Books published (book chapters)

 38 TOTAL #

2. Professional Presentations

 6 Local presentations

 2 State / Regional

 5 National

 2 International

 15 TOTAL #

3. Research Grants (# and amount)

We list below only the grants received in 2018 as new awards. There are many continuing grants from last years.

Internally Funded – Lamar University of TSUS

Grant Title	Amount
Research Enhancement Grant, Lamar University, Dr. Kami Makki (Co-PI), Dr. Mary Vasefi (PI) Title – Alzheimer’s Disease Advancement Prevention by Utilizing Artificial Intelligence Techniques, April 2018 – August 2019.	\$15,000
Clustering Algorithm for Big Spatio-temporal Data Analysis, Program: LU Research Enhancement Grant (REG), Sujing Wang (PI), Duration: 09/01/2018 - 08/31/2019.	\$14,963
Paul Latiolais (PI), Stefan Andrei (co-PI), Nicholas Brake, Srinivas Palanki, Monica Harn, Donna Meeks, Kevin Dodson, Jeff Dyson, Craig Escamilla, Toni Mulvaney, Henry Venta. Lamar University Visionary Initiative Grant “ <i>Interdisciplinary Freshman Experience at Lamar University</i> ”, 2016 – 2019	\$120,000
Monica Harn (PI), Stefan Andrei (co-PI), Vinaya Manchaiah (co-PI), Ashley Dockens (co-PI), Jamie Hartwell Azios (co-PI), Elizabeth Long (Senior Personnel). Lamar University Visionary Initiative Grant “ <i>A Center for Applications of Digital Technologies in Health and Disability</i> ”, 2016 – 2019	\$240,000
“Flare and Abnormal Situation Management Research for Petroleum and Chemical Process Industries”, Lamar University Visionary Initiatives, Co-PI; Sujing Wang, 09/01/2016 - 08/31/2018.	\$150,000
Total	\$539,963

State Funded

Grant Title	Amount
2018-2019: Stefan Andrei (PI), Sujing Wang (co-PI), Otilia Urbina (co-PI) for <i>Camp Code for Girls</i> grant awarded by Texas Workforce Commission. More details are presented at https://www.lamar.edu/news-and-events/news/2018/07/gender-gap-in-programming-focus-of-all-girls-coding-camps.html and https://www.lamar.edu/arts-sciences/computer-science/news/index.html	\$89,753
Real-time Routing optimization for Hazardous Material Transportation under Uncertainties, Program: Texas Hazardous Waste Research Center (THWRC), Sujing Wang (Co-PI), Duration: 04/01/2018 - 07/15/2019.	\$15,000
Impact of Chemical/Petrochemical Plant Turnaround on Regional Air Quality, Program: Texas Air Research Center (TARC), Sujing Wang (Co-PI), Duration: 04/01/2018 - 07/15/2019.	\$23,500

Texas State University System (TSUS) Chancellor's Faculty Fellowship - First Year Success, PI: Jane Liu, Jan. 2017-May. 2018.	\$33,500
Total	\$161,753

National Funded

Grant Title	Amount
REU: MRI: <i>Acquisition of a High-Performance Computing Cluster for Research and Education at Lamar University</i> , Program: National Science Foundation (NSF REU), Jing Zhang (PI), Sujing Wang (co-PI), Duration: 10/1/2018 - 9/30/2019.	\$24,000
National Science Foundation Grant (2012-2018) " <i>Addressing the Gulf Coast Region's Graduation Rate Crisis in Mathematics and Computer Science</i> ", Award No. DUE-1154606 (PI: Kumer Das, co-PIs: Dr. Lawrence Osborne, Dr. Daniel Dale, Dr. Stefan Andrei)	\$583,096
"CC*DNI Networking Infrastructure: Data Driven Network Infrastructure Upgrade for Lamar University Research", 2016-2019, NSF 1541242, Priscilla Parsons (PI), Patrick Stewart (Co-PI), Lawrence J. Osborne (Co-PI), Stefan Andrei (Senior Personnel).	\$376,917
National Science Foundation, "Acquisition of Equipment to Develop an Ubiquitous Wireless Sensor Network for Measurement, Modeling, and Prediction in Water Resource Management", Dr. Bo Sun (PI) and Dr. Qin Qian (co-PI), 2016-2018.	\$216,000
Total	\$1,200,013

4. Teaching/Program Grants (# and amount)

Internally Funded – Lamar University or TSUS

Grant Title	Amount

State Funded

Grant Title	Amount
Total	

Nationally Funded

Grant Title	Amount

Total	

5. Faculty holding office in national/international professional organization - **Only**

Faculty	Organization	Office
Stefan Andrei	Senior ACM member (international award)	www.acm.org

6. Faculty Honors

Faculty	Honors
Peggy Doerschuk	University Professor TSUS Star Award
Jane Liu	University Professor

7. Student Honors and Accomplishments

Does your Department have a Mirabeau Scholar? Yes **No**

If yes, please state their involvement and progress to date.

Here is the list of other scholarships (department level) awarded to our students in 2018:

Student	Honors/Accomplishments
Carolyn Langhoff	Spring 2018 Crawford/Lewis Scholarship
Thomas King	Spring 2018 Crawford/Lewis Scholarship
Caitlin Ambeau	Spring 2018 Crawford/Lewis Scholarship
Lauren Forse	Spring 2018 Bill Nylin Scholarship
Bailey Moore	Spring 2018 Bill Nylin Scholarship
Judah Roden	Spring 2018 Bobby Waldron Scholarship
Madison Boudreaux	Fall 2018 Crawford/Lewis Scholarship
Brittany Thibodeaux	Fall 2018 Crawford/Lewis Scholarship
Rommel Sanchez	Fall 2018 Crawford/Lewis Scholarship
Prateek Sharma	Fall 2018 Crawford/Lewis Scholarship
Judah Roden	Fall 2018 Bill Nylin Scholarship
Zachary Mostellar	Fall 2018 Bill Nylin Scholarship
Raunak Sarbajna	Fall 2018 Bill Nylin Scholarship
Victoria Carlson	Fall 2018 Bobby Waldron Scholarship

8. Development activities undertaken by you or faculty in your area.

All faculty do student mentoring and advising in Graduate Project class, course projects, research projects, and more.

Most of our faculty have publications co-authored with undergraduate and/or graduate students.

STAIRSTEP, coordinated by Dr. Sujing Wang, is our impressive research undergraduate program which has a positive attitude in the department and LU in general.

TSUS Fellowship, awarded to Dr. Jane Liu, was a very effective way to make the freshman students aware of Computer Science and its applications. Dr. Liu is the coordinator of Cardinal Community activities, very similar with the previous efforts done in her Fellowship.

9. HEAF summary (goals accomplished, dollars spent and major goal for next year)

HEAF Goals Accomplished	Dollars Spent
7 Alienware computers for room 218	\$23,799.93
9 Dell OptiPlex 7760 AO Desktops for Faculty	\$17,569.17
Total	\$41,369.10

Major HEAF goals for next year:

Goals for next year	Dollars to be Spent
13 Dell Alienware, room 218	\$44,199.87
10 Appl iMacs for Unix lab room	\$11,950.00
Renovation of lab 214	\$20,000.00
Replace the existing 2 DNS servers and CS web server, which was bought in 2008.	\$4,531.80
1 laptop: Replace Dr. Zhang's laptop which was bought in 2015. The laptop has some problems and it is out of warranty.	\$2311.34
Total:	\$82,993.01

Major goals for course fee monies for this year:

Goal Accomplished	Dollars Spent

Total:	

10. Evaluation of accomplishments of your unit this year.

1. Most of the Department of Computer Science Faculty are involved in research, publishing papers and writing grants.
2. All of the Department of Computer Science Faculty are involved in teaching, improving their courses and revising their online courses.
3. All Faculty submitted their assessment materials, necessary for the ABET yearly assessment. We completed the yearly ABET assessment of our Bachelor in Computer Science program.
4. In addition, Faculty uploaded their assessment results in the CS website.
5. All Faculty reviewed publications including journals, books, and conferences.
6. We got some of the Computer Equipment we requested in 2018 (9 Dell Computer Workstations, 7 Dell Alienware out 15 requested).
7. We cooperated and helped each other to fulfil students, staff, faculty, and higher Administrators requests.
8. We cooperated with other departments from the college and university as well as other universities and professional associations.

11. Report of centers in your department (*goals accomplished, problems, and major goals for next year*).

N/A

12. Report of activities/accomplishments of Endowed Chairs in your department.

N/A

13. Report any initiatives under taken this year by your unit.

Our department organized the Spring 2018 Advisory Board on March 4, 2018. All Advisory Board members, students, faculty and participating staff appreciated the event.

Aside from these initiatives, we had on February 27, 2018 our Third Computer Science Career Forum at Lamar University. It was a very successful event for students, faculty and industry.

14. Identify special projects or initiative you plan for next year.

- a) We shall continue to involve students in undergraduate and graduate research, programming competitions, and other academic activities.
- b) We shall maintain our programs accreditation (e.g., ABET, SACS), continuing our new programs (e.g., Computer Game Development, Cybersecurity) and improve our effective recruitment and retention practices.
- c) We shall continue to cooperate for getting support from the higher administration, advisory board, industry, and collaborate with other academic departments.

- d) We shall continue to submit proposals to funding agencies.
 - e) We shall continue our cooperation with high schools and community colleges from Golden Triangle and Harris County.
 - f) We shall organize the Spring 2019 Advisory Board Conference, too.
 - g) In addition, we shall continue co-organizing the Computer Science Career Forum, 2019 edition.
 - h) We will continue designing online courses (8 weeks – when possible; otherwise 15 weeks).
15. Any **BRAG** points not identified in the above.