

Status for College of Engineering, Applied Science & Technology (EAST) for spring 2024 for 4-year review for Dean David Ferro. March 14, 2024.

Preamble:

Thank you for reviewing my college’s (and my) activities for the last four+ years. This past August, I marked twelve years as dean of EAST (formally COAST). I’m honored to have had this opportunity to help lead the college. Below you will find my philosophical statement, college focus, a table with brief overviews of various college projects/initiatives, some recognitions, one of our exemplary students, college SWAT/PEST analysis, some results of our efforts to expand representation in both students and faculty, enrollment/graduation/retention numbers for the past decade, some images of our new homes. References supplied separately.

Deaning Philosophy:

Respect and value people and their time. Give people room to try things. Make mistakes, own and learn from them, and succeed. Find the right people; promote them. Match skills to projects. Encourage entrepreneurship. Find the resources to support people’s passions. Avoid micromanaging. Realize that none of us are smarter than all of us. Listen. Lead by example. Practice smart money management. Be agile. Value rhetoric in the service of empiricism. Focus on the mission. Realize not everything works. Value hard work. Value excellence. See and take advantage of opportunities. Work artfully. Be capable of change. Communicate. Care. Be forthright. Admit mistakes. Have fun.

College Focus:

The college principally focuses on cost effectively placing students/graduates in industry/government high-skill and high-growth settings with the skills to succeed as collaboratively determined by community partners and the college. Our research is applied and benefits undergraduate and graduate students while serving community needs. We do this with faculty and staff with academic and industry education and experience leading out with considerable ‘hands-on’ and project-oriented education.

Some Projects:

The projects listed don’t include all the fun day-to-day activities: everything from roaming the halls and watching students practice their project presentations to working with HR, university legal, and college leaders concerning a faculty, staff, or student member. Anyway, enjoy. If you want to see many of the activities going on in the college check out our Facebook page “Weber State EAST” or the News & Projects pages at <https://weber.edu/east/news-projects.html>.

EAST 2020-2024

Project/Goal	Status	To Do / Future Goals
Accreditation- programs (ABET)	CS in fall 2019, ME fall 2020, MFET, PDD, MET in fall 2021 successful. MSE in 2022. IDT in 2023. 2024 reviews coming for ME, ECE, MSE fall 2024.	Stay on track

AAS increases	On track to increase graduation rate for Associates; narrowing gap between BS and AAS. Useful metric for increased funding.	Stay on track.
Budget	Overall great shape. Four years of budget cuts have been annoying but R&R, scholarships are strong and we still have money for hires. Got \$.5M in Engineering Initiative funding 2022. In 2024, added \$1.45M one-time for Hypersonics Engineering (split 50/50 with USU - \$725,000). {Talent Dev. Incentive Loan Prog. ran now continues at a low level !!}.	Looking to have University match (required) Engineering Initiative monies. Look to manage the coming 25/26 cut.
Buildings-new/mod	Status of our three-prong approach: Davis building completed fall 2020, Tech Ed building replacement (Noorda) completed fall 2022, and Engineering Technology reconstruction happened Jan-Sept in 2022 (phase 1). Phase 2 on hold because of the university's space utilization discussion. MARS building now in college - working on upgrading. Also modifying Noorda for roof experiments.	Raised funds. Got state funding of 50 million. Continue managing logistics with people between buildings. Work to accommodate NUAMES as best as possible. Work to actually finish buildings - AV an issue still.
Curriculum-math	Applied Calculus. Need Calculus focused on application, taught by applied qualified individuals (math, engineering, CS), with recitation sections. Continue to work on this. Math created a couple sections with us but does not seem interested in expanding or continuing. Two year expiration of Math courses and arbitrary articulation policies imposed by Math dept. affects student retention and completion efforts. This continues to be the case in 2024.	Pursue
Curriculum-1700 and concurrent	We lost many SCHs with 1700 no longer a gen. ed. category. This included losing concurrent enrollment. Most of our SCH losses have now settled out. We added CS, Web, PDD classes as concurrent enrollment. We also created a Computer Literacy Center to compensate.	Continue increasing concurrent enrollment.
Curriculum-New	Implemented: Mechanical Engineering, Manufacturing Systems Engineering, MS in Computer Science, MS in Systems (35 students in 2 years), BS in BioEngineering, BS in Energy Engineering, Collaboration for Data Analytics and Data Science BS and MS. MS in Advanced Composites with USU. Hill AFB, WSU/EAST collaboration for cyber security readiness training pathway for HAFB personnel completing the 2-year Associate of Applied Science in AF Leadership and Management Studies. See more below.	Run successfully. Still no PS support for MS in Sales Engineering. Continue to work on that. Review LEAN/SixSigma certificate again for market viability.
Development-philanthropy	Assorted. Figures from the last four years: 2019 at ~1.5M, 2020 at ~6.9M, 2021 at ~1.3M, 2022 at ~785K, 2023 at ~470K.	Lots of opportunities for naming with the new buildings, chairs. Focus on non-CMT areas needed.
Development-Grants, Appropriations	Five SWIs totaling (annually) at ~\$1.54M continuing. Deep Tech continues at ~\$700K annually. Advanced Composites and Systems Engineering appropriations at \$520K onetime, \$500K annually. Alyssa's Deep Tech \$500K. Hypersonics Engineering (with USU) at 1.4M More details below.	More Deep Tech and Eng. Init. money proposals. Continue encouraging faculty/chairs with internal, Perkins, and external grants.

Development-NOORDA gift	All installments received from Noorda Foundation in fall 2021. We were unsuccessful in approaching Noorda a second time.	Be happy we were able to use Noorda Foundation money so effectively. Remaining money works as endowment.
Dean-Industry Advisory Board (IAB) management.	Dean's IAB worked for funding for new buildings. Successful.	Dean IAB meeting virtually and in person scheduled in May 2024.
General Education	ETC 2001 now required in CS. Online, FLEX, and brick-and-mortar versions scheduled for fall 2022.	Continue to develop the course for all majors in college following MOU with SBS.
International	Interior Design (IDT) conducted their trips and sent students abroad. Travel was down during covid. Twelve students to Finland in 2023 for 4 week course at Metropolia. Twelve scheduled this year.	Continue to find ways to balance our study abroad with partners. Add other countries. Some good possibilities with New Zealand.
Marketing	Billboards, visits, stickers, conference kiosk, more, created. Advertising nationally in engineering circles.	Review marketing. Need to address faculty and administrators in engineering colleges nationwide to build reputation. Re-fashion kiosk for MARS.
Outreach	PREP, parent-daughter, Girls Go Digital, FIRST (FLL, FLLJr.) were run despite covid. In 2019 we created four 'bootcamps' open to all students, some working with A&H and SBSS (got Perkins support).	Continue and continue assessment. Look for more funding. Looking at a summer Bridge program.
Organization-Electronic Engineering Technology (EET)	Surveyed students, industry, faculty. Discussed with SLCC. We moved EET to Noorda Interdisciplinary Center for flexibility. Decided to discontinue (fall '24) the program and teach-out our students. We keep several courses and solar certificates as useful.	Teach out. For both this and FM below we will work with the data group to catch up with our re-organization from 2019. EET should be complete by Fall of 2024.
Organization-FM (and general)	Similar process to above. Eliminating the Facilities Management program. Completed this year. Program name change from Network Management Technology (NMT) to Cybersecurity and Network Management. Increases profile and recognition, and aligns with designation as a Center for Academic Excellence in Cyberdefense Education (CAE-CDE).	Completed this year.
Personnel-diversity	Brought in anthropologist from Harvey Mudd college (well-known for diversity) several years ago to run discovery sessions and college-wide presentations. We have hired diverse candidates successfully. See table below. Complicated by 2024 legislative mandate.	Continue to run our committee for hiring and recruiting; Continue no hiring in demographic categories but hiring committees trained on bias recognition.
Personnel-faculty-mentoring	Departments assign mentors for new faculty. Also revamped training.Scholarship Committee: Randy Hurd new EAST merit scholar for 22-23, Randy Hurd will assist college in scholarship efforts/mentoring. College-level mentoring of P&T process	Continue to reward service/scholarship/teaching
Personnel-hires	Budget allowed hires but no space for years. Noorda building opening helped with that. Difficulty in hiring lab support. Will hire ~7 people this year.	Will look to support MSE, ME, CS, ECE next year. Could use more lab support staff. Need resources for that.
Personnel-Recognition	Numerous Awards were promoted and won with faculty and staff including Career Champion, Entrepreneurial Spirit, FYE Instructor of the Year, Community Engagement, Presidential Outstanding Staff, Super Staff and EAST Merit Scholar.	Continue to promote faculty, students, and staff.

Personnel-retention	Good except for losing four people to retirements.	Find more ways to implement salary increases for highly skilled individuals.
Personnel-review	Did PREP with all staff and solidified annual reviews. Allyson S initially and now Brian R. took many.	Continue
Strategic Plans	Completed strategic plans in 2018. Updated 2020. Consolidated and aligned strategy with university and academic affairs strategic plans. Used for annual reviews for departments/programs.	Continue
Students-Recruitment	In 2019 we created a report on where exactly slowdowns in enrollments lie (after 10 years of highest growth in university) and created a plan to address.	Continue to implement solutions based on findings.
Students-recruitment-retention-completion-placement	CS and PS worked together in Ogden School District to recruit. Gaming, coding, and web dev workshops provided to the community through CEC to recruit. CMT worked with Hispanic Community to get scholarships. College received and has maintained bronze medal for diversity in engineering from ASEE national org. Created Team. Increased advising touchpoints. See Student Retention data below.	Continue.
Xproject-ConceptCenter* *Typically, Xprojects are more recent projects	Many projects. Running in black. Current projects include sticky/frozen tape with Valerie Herzog and redesigns of Goode Skis.	Increase number of projects, students, faculty involved. Link more to class projects and MARS
Xproject-Speakers	Twelve speakers with Peterson Speaker Series, both academic and development. Mostly online in 20-22. Working with other colleges as well. Good attendance last two years.	Continue to assess the latest approaches to increase attendance.
Xproject-LingoFest	Ran annual conference remotely in '20, '21. Paused in '22, '23	Revitalize
Xprojects-FLEX	Implemented FLEX in CS. Now ~500 students. FLEX has settled out at this level.	After assessment continue at this level
Xproject-Falcon Hill - MARS	Took on more operations. 20M for support from the state. Hired executive director Ben Garcia. Numerous proposals for grants and contracts. NSF EPIIC grant focused on MARS was successful in 2024	Write many more grants and contracts
Xproject-Computer Literacy Center CLC	Implemented in '18. All modules now created for replacing 1700. Revitalized in 2021 and now building more instructional videos, working with Community Innovation Pathway, and also websites (KWCR and UAMMI)	Continue to expand
Xprojects-oral history	Oral history project completed.	update over time
Xproject-Department of Labor (DOL) grant	DOL grant (~2M) continues. 1 year extension to cover up through 23-24 approved - The Utah Tech Apprenticeship Program (UTAP) is a strategic, innovative and scalable solution that leverages the strong partnership between industry and post-secondary education to create apprenticeship opportunities in the state of Utah, and ultimately scale its proven model nationwide.	Continue

	https://jobs.utah.gov/apprent/) Collaboration with DWS on State Apprenticeship Expansion Funding grant.	
Xprojects-Net0-House	Jeremy Farner, collaborated with FM and students, built net-0 house in Ogden. Won at Solar Decathlon in DC. Three other home upgrades completed.	Look to retrofit one every two years or quicker.
Xproject-instructor ladder creation	Fac. Sen. has put finally together a process. However, it has not been implemented. Working on doing what we can locally.	Continue locally
Xproject-NSA Center	NSA Center of Academic Excellence-Cyber Defense Education (CAE-CDE) Designation - The Center helps strengthen Weber State's partnerships with the local Defense Industrial Base (DIB) community, including Hill Air Force Base, Boeing, BAE Systems, Northrop Grumman and Raytheon. The university will continue to develop a talent pipeline for government and DIB jobs that benefits the local economy, provides resources to the federal government and further hardens the defenses of northern Utah and surrounding areas.	Continue. Event on March 15, 2024
Xproject-Learn & Work	UT Learn & Work for Computing and Network Security (200K), User Experience and Design (66K), and Facilities Management (75K). - The third round of Learn and Work grants provided curriculum development funding and scholarships for ~100 EAST students to complete certifications in high-demand technology disciplines.	Continue
Xproject-Machine Learning/Data Science Grant	Machine Learning/Data Science Emerging Technology Initiative Grant (~1.1M over 3 years) - To place graduates and interns proficient in the emerging technology fields of <u>Machine Learning, Artificial Intelligence, and Data Science</u> with Utah industry partners. Create a Master Level/Post Baccalaureate Certification in "Computational Data Science and Machine Learning." Establish a "Machine Learning & Data Science Research Center" at WSU. Scholarships provided to 12 students for cert completion. (https://ushe.edu/wp-content/uploads/pdf/agendas/20211001/10-01-2021_TAB_A.pdf)	Continue, review in year 3
Xproject-Computing Innovation Pathway	Computing Innovation Pathway USHE Innovation Grant (~447K) - The pathway serves to support the technical career and professional development of underrepresented student populations in the Weber/Davis/Morgan county areas, with a primary focus on supporting English as a Second Language (ESL) and low-income community members who seek training, academic credentials, and career advancement in the high-demand disciplines of computing and information technology (IT). Three of ten instructional cohorts completed.	Continue
Xproject-MS in DS	Establish Master of Science in Data Science Interdisciplinary Program - Program began Fall 2022. Graduate degree in the rapidly growing field of Data Science. For WSU, first of its kind large-scale interdisciplinary effort for a graduate program involving participation and collaboration from five different colleges.	Continue

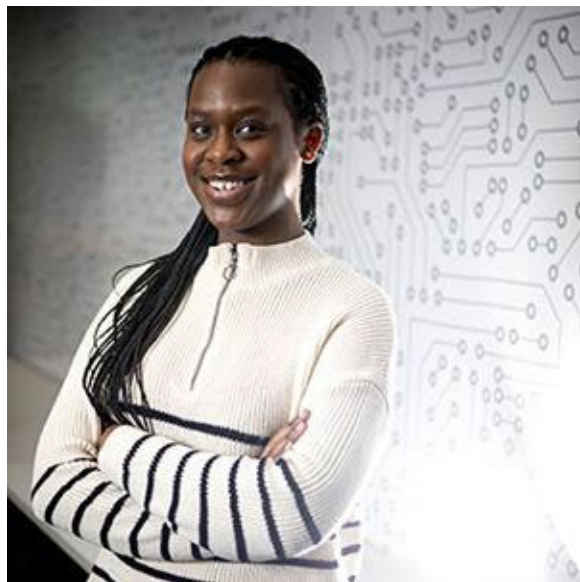
Xproject-Cybersecurity Pathway	STEM and Cybersecurity Pathway and CyberRange Program USHE Innovation Grant (~410K) -The pathway will provide outreach to elementary schools, educational programs and camps in local and regional middle schools, and will offer credit-bearing, concurrent enrollment courses and bootcamps in local and regional high schools. The pathway will continue on to programs, courses, and bootcamps at Weber State University. As an overarching component of the pathway, Weber State got funding for a cyber range, which can be utilized throughout the pathway, with students participating in cybersecurity learning at all education and experience levels.	Continue
Xproject-Cybersecurity and IT Infrastructure Workforce Development	Talent Ready Connections - Cybersecurity and IT Infrastructure Apprenticeship Program (~160K) This program provides significant required technical instruction and upskilling to Utah students and community members in the rapidly expanding Cybersecurity and Computing/IT infrastructure industry. There is an increasing demand for these professionals in a wide variety of state industries, most especially health care, aerospace/defense contracting, and essential public utilities.	Continue
Xproject-P&T document	P&T Document - revised 2021, revised again last year. Mentor Faculty in P&T process, review P&T Canvas courses	Continue
Xproject-CIC grant	Retention grant for CS certificate, also worked on dashboard for retention and employment (will help with SWI annual reporting as well as good for program info), one more year on this. Dashboard shown to the School of Computing Faculty at fall retreat. Grant was extended for one more year. Julie Christensen will complete with Dept Chair.	Continue
Xproject-new EAST Student Success Team	Deep Dives into Student Life Cycle Data - PS-Paige (working on recruiting women for PS), ECE-Alyssa Mock (RSPG grant to recruit/retain women), Web-Pat (data/discussion part of monthly dept meetings starting Fall 23), Cyber-Julie (completed), CMT - Russ (retention efforts for beginning students), ME/MET Bharath Nunna (working on retention); Deep dives in 23-24: Interior Design - Kristen Arnold, Architectural Design - JD, Automotive - Jen Vesper, Computer Science - Pat, MFET - Sam / Angie, PDD - Meg / Angie, Systems - Mary/ David W. Held second Faculty Advisor Training in April; Retention - Tanya added retention effort first week of semester for non-attenders. Aimee - graduate tracking system - working with ME/MET to start	Continue
Xproject-concurrent increases	Work continues on using concurrent money for more recruitment. Note, 2022 Automotive project to provide scholarships covering CE admission and tuition in low-income school students is extended. Pilot schools were Roy and Clearfield. p AST - SoC - started a Concurrent Enrollment Committee to spread the work among more faculty and staff to make better and more frequent connections - started Fall 2022 Auto - Headcount in Concurrent 369 in 2020 to 804 in 22/23. Jen Vesper assigned to HS relations. Automotive has a concurrent advisor as part of an SWI - Jen Vesper - increased recruiting efforts in 2nd year of this effort.	Continue

xtra-me-Teaching	Yearly class taught in Honors. Now teaching two to four classes in ETC 2001 Engineering Culture per year with class I co-developed with Luke Fernandez.	Continue ETC 2001 instruction.
xtra-me-Service	Wrote a monthly column in Standard Examiner (~70). Member of NUAMES and DaVinci school boards. DaVinci ended. Ended column.	Continue NUAMES representation
xtra-me-Scholarship	Co-wrote history of computing book, 2022 publication. Built Digital History Archive at CAE building. Co-PI of NSF EPIIC with James Taylor and Ben Garcia in 2024. For more see www.davidferro.org	Currently writing a review of “Wasted Education” by Skrentny for Contemporary Sociology, a book focused on the loss of engineers in corporate settings. Potentially another book project?

Some Recognition:



Student Success:



WSU international student now among Utah’s top tech women

OGDEN, Utah — Davina Kamikazi developed her passion for technology growing up in Kigali, Rwanda, often solving problems with computers and televisions. Now, she is turning her passion into a career, and recently won an award putting her in company with Utah’s tech industry leaders.

While studying computer engineering at Weber State University, Kamikazi won the Student Pathway Award last fall at the 2023 Women Tech Awards, recognizing her dedication to STEM studies

College SWAT/PEST Analysis:

swat/pest	Strength	Weakness	Opportunity	Threat
Politics	.Gov relationships .Demand	.Need for resources to build programs	.Rethinking programs .New programs	. Impact from lessening state support.
Environment	.New Buildings .Budget	.Still have space constraints due to NUAMES, ET construction	.More concurrent .Improve support courses (math, at Davis...)	.Too many modalities makes scheduling difficult. .Less use of new space creates conflict with FM . Threat of state budget sweeps .FM and space utilization formulas
Social	.Industry Relationships and Demand .Internal Relationships .Outreach and Centers .Faculty/Staff	.Pot. 50% of likely students unaware of product. .Low (but growing) level of underrepresented students = smaller market. .Slow Throughput .Slowed growth .Salary pressure .Overworked faculty/staff	.National Lower enrollments .Marketing/Scholarships .Recession(?) drives students to re-up	.Strong economy continues to lessen enrollment
Technology	.Money for technology (R&R)	.Still don't have final costs for all building construction (saving R&R)	.MARS	.Technology is always changing and needing upkeep (cost)

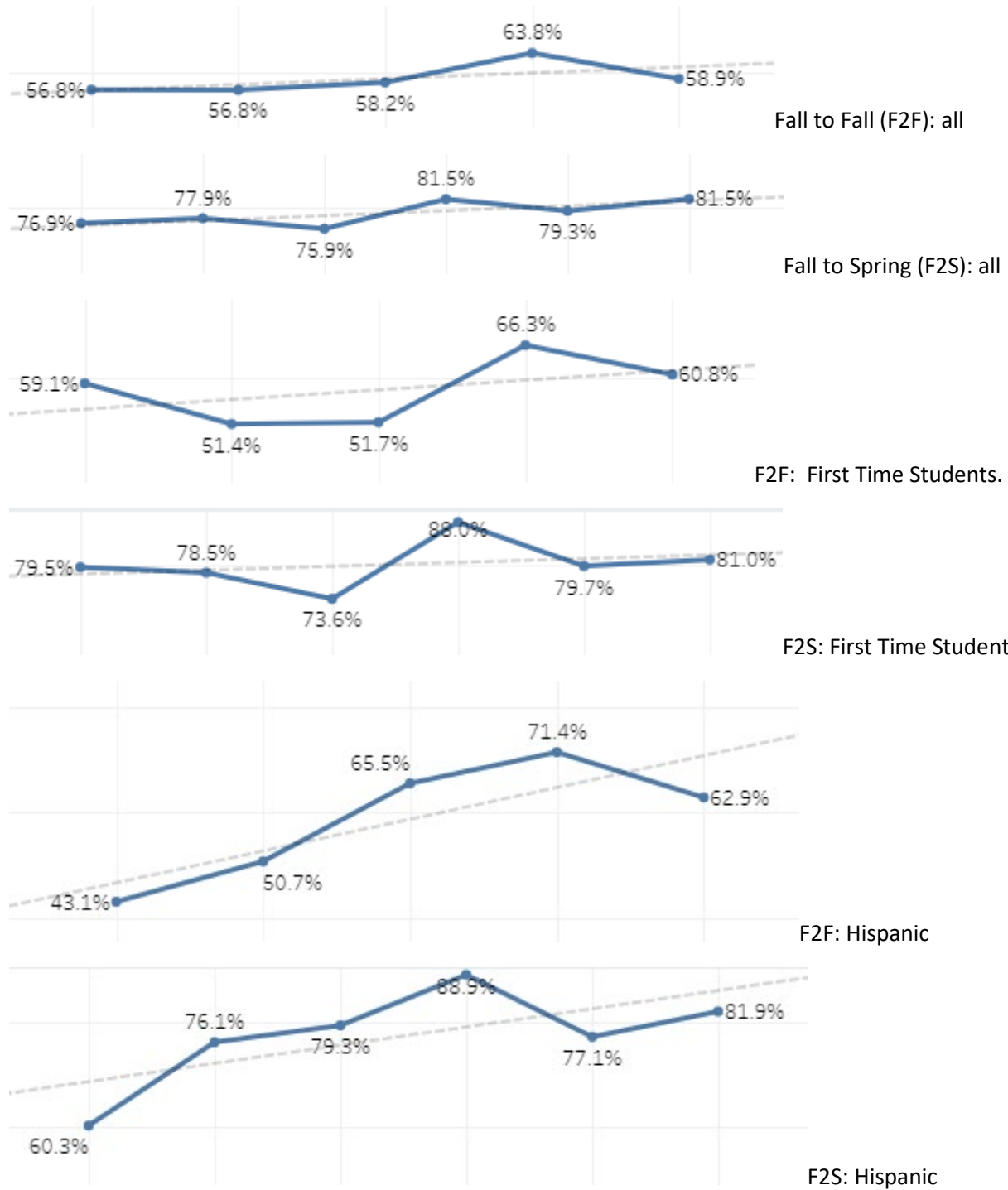
College Enrollment Demographics by Year

Majors in College Per Demographic By Year	Female	Diverse (Hispanic and other)	Total	% Female	% Diverse (Hispanic and other)	% Hispanic
2012 (Spring)	379	316	2692	14%	11.7%	N/A
2020 (Fall)	546	615	2987	18.3%	20.6%	10.0%
2021 (Fall)	552	660	3000	18.4%	22.0%	11.0%
2022 (Fall)	618	719	3052	20.2%	23.6%	11.7%
2023 (Fall)	645 (70% increase since 2012)	767 (143% increase since 2012)	3044 (13% increase since 2012)	21.2%	25.2%	12.4%

College Faculty Demographics by Year

Faculty in College / Year	Female	Diverse Male	Total	% Female	% Diverse Male
2012	13	1	60	21.7%	1.7%
2020	22	5	80	27.5%	6.3%
2021	24	8	87	27.6%	9.2%
2022	23	10	88	26.1%	11.4%
2023	23	12	89	25.6%	12.2%
Difference (2012-2023)	+10	+11	+29	34% of the increase	38% of the increase

Retention of Students 2018 to 2022 according to KPI:



FTEs and year to year growth rates last ten years:

	Spring 2015	Spring 2016	Spring 2017	Spring 2018	Spring 2019	Spring 2020	Spring 2021	Spring 2022	Spring 2023	Spring 2024		
Automotive	72	63	54	62	47	55	49	47	51	61	Automotive	2.6%
Construction and Building ..	63	57	63	81	97	169	210	204	203	246	Construction and ..	9.9%
Electrical & Computer Engi..	73	76	81	68	86	72	60	83	64	87	Electrical & Comp..	4.6%
Manufacturing and System..	276	243	238	239	220	126	107	104	99	109	Manufacturing an..	-3.6%
Mechanical Engineering						74	72	100	122	123	Mechanical Engin..	13.4%
Noorda Interdisciplinary Ctr									16	9	Noorda Interdisci..	-1.6%
Professional Sales	401	377	378	358	374	306	318	280	285	286	Professional Sales	3.0%
School of Computing	793	849	836	735	612	633	669	657	638	711	School of Comput..	3.3%
Grand Total	1,680	1,665	1,650	1,543	1,436	1,435	1,485	1,474	1,477	1,632	Grand Total	

Graduation Rates and year to year growth rates for the last ten years:

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		
Automotive	40	75	58	59	46	45	44	64	41	59	Automotive	7.0%
Construction and Building Sci	17	14	34	39	45	49	30	71	36	77	Construction an..	12.0%
Electrical & Computer Engineer	29	52	52	61	45	40	50	40	37	28	Electrical & Com..	-8.5%
Manufacturing and Systems Engi	108	161	133	121	132	176	119	85	86	76	Manufacturing a..	-18.9%
Mechanical Engineering							14	29	73	117	Mechanical Engi..	-38.5%
MSCE				2	3	7	2	3		1	MSCE	-3.8%
Professional Sales	105	127	163	173	245	217	179	251	263	186	Professional Sal..	5.4%
School of Computing	155	215	265	264	285	330	324	520	528	586	School of Comp..	7.0%
Grand Total	454	644	705	719	801	866	764	1064	1071	1134	Grand Total	

While these statistics indicate a mostly good direction, reorganization does change things and so these should be looked at somewhat critically. MET moved to ME which impacts Manufacturing. Electrical has lost EET. and The elimination of TBE1700 eliminated over 1800 annual SCHs in the middle years. This information could also be told more dramatically. Moving from 454 to 1134 total graduations over ten years is a great increase. And, while not immediately obvious, the spring '23 to spring '24 growth was 10.5%.

Utah Colleges of Engineering Engineering and Computing (CIP 11,14,15 only) graduation trends:

	2000	2021	2022	2023	Grand Total	Change 21 to 23
SALT LAKE COMMUNITY COLLEGE	171	248	223	189	4734	-59
SNOW COLLEGE	48	75	85	82	1112	7
SOUTHERN UTAH UNIVERSITY	59	109	107	117	1509	8
UNIVERSITY OF UTAH	363	1474	1583	1648	21333	174
UTAH STATE UNIVERSITY	532	727	698	693	13411	-34
UTAH STATE UNIVERSITY EASTERN	17				198	
UTAH TECH UNIVERSITY	47	44	73	73	1131	29
UTAH VALLEY UNIVERSITY	110	733	636	589	7923	-144
WEBER STATE UNIVERSITY	290	533	558	598	8658	65
Grand Total	1637	3943	3963	3989	60009	46

Construction Projects:

Computer and Automotive Engineering (CAE) at Davis Campus (completed fall 2020):



Noorda Building at Ogden Campus (completed August, 2022) {on Weber's front page}:



Reconstruction of Engineering Technology Building (phase 1: complete spring 2023, phase 2: delayed)

