ABET
Autumn 2022 CC Report

Bruce Darling -> Tai Chen, ABET Faculty Coordinator

ELECTRICAL & COMPUTER ENGINEERING

Outline of the 2022 ABET Report

- Assessment matrix for BSEE program
- Assessments assigned for 2021-2022
- Overall student outcome achievement and comparison to last year
- Overall Faculty compliance with reporting
- Review of student outcome achievement by concentrations
- Summary of student outcome achievement within concentrations
- Follow up items from 2018-2019 ABET program review
- Discussion, recommendations, actions

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ABET Student Outcome Assessment Matrix, p1 of 4

ABET Undergraduate Course Information															
					New Outcome Coverage (H/M/L)									prior	updated
Number	Name	Status	Credits	Coordinator	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Capstone	Lab	MCD	MCD
EE-200	Research Exploration Seminar	active	1												
EE-205	Introduction to Signal Conditioning	active	4	Mamishev	H		M	M	M	M	M			2009	2018
EE-215	Fundamentals of Electrical Engineering	active	4	Anantram	H					M			home	2010	2018
EE-233	Circuit Theory	active	5	Bushnell	H		L		M	M			Y	2012	2018
EE-235	Continuous Time Linear Systems	active	5	Ostendorf	H		M		M		M			2018	2018
EE-241	Programming for Signal Processing	active	2												
EE-242	Signal Processing I	active	5												
EE-271	Digital Circuits and Systems	active	5	Hauck	H	M				L	L		Y	2015	2018
EE-294	Innovation Readiness	active	5	Arabshahi		M	H		H		M				2018
EE-299	Introductory Topics in Electrical Engineering	active	1~5	Darling						X				2000	2018
EE-331	Devices and Circuits 1	active	5	Darling	H	M				M			Y	2012	2018
EE-332	Devices and Circuits 2	active	5	Rudell	H	M	M		M	M	M		Y	2007	2018
EE-341	Discrete Time Linear Systems	active	5	Chen	H	L			M	M	H			2012	2018
EE-351	Energy Systems	active	5	Zhang	H		M	M	M	H	M		Y	2018	2018
EE-361	Applied Electromagnetics	active	5	Sahr	H					M			Y	2012	2018
EE-371	Design of Digital Circuits and Systems	active	5	Peckol	H	H				H			Y	2012	2018
EE-393	Advanced Technical Writing in Electrical Engineer	active	4	Kirschen			H							2013	2018
EE-398	Introduction to Professional Issues	active	1	Sahr	L	M	L	H		L	L			2012	2018
EE-399	Special Topics in Electrical Engineering	active	1~5	Darling										2000	2018
EE-400-B	Engineering Innovation in Medicine	temporary	3	Darling								Y	Y		
EE-400-C	Individualized Capstone	temporary		Darling											
EE-400-I	Integrated Systems Capstone	temporary		Rudell											
EE-400-N	Applied Nanophotonics	temporary		Majumdar											

ABET Student Outcome Assessment Matrix, p2 of 4

ABET Undergraduate Course Information															
					New Outcome Coverage (H/M/L)									prior	updated
Number	Name	Status	Credits	Coordinator	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Capstone	Lab	MCD	MCD
EE-401	Engineering Design by Teams: Robotics I	retired	4	Mamishev										2007	
EE-402	Engineering Design by Teams: Robotics II	retired	5	Mamishev										2007	
EE-406	Engineering Design for K-12 Outreach	active	3	Wilson	M		H	M	H		M			2009	2018
EE-414	Engineering Innovation in Health	active	4	Kang		H	M	M	M	M	M				2018
EE-415	Computer-Aided System Analysis and Design	retired	3	Shi										2000	
EE-416	Random Signals for Communications and Signal I	active	4	Ritcey	H	M	M		M	H	L			2012	2018
EE-417	Modern Wireless Communications	active	4	Arabshahi	H	M	M	L	L	M	M			2012	2018
EE-418	Network Security and Cryptography	active	3	Poovendran	H	M	M	H	H		H			2012	2018
EE-419	Introduction to Computer Communication Netw	active	4	Roy	H		L	M		H	M				2018
EE-420	Design in Communications	active	4	Arabshahi	H	M	H	L	H	H	M	Y		2007	2018
EE-421	Quantum Mechanics for Engineers	active	3	Anantram	M						M			2016	2018
EE-423	Introduction to Synthetic Biology	active	3	Klavins	H	H		M						2009	2018
EE-424	Advanced Systems and Sythetic Biology	active	3	Klavins	H		M	M			H			2009	2018
EE-425	Laboratory Methods in Synthetic Biology	active	4	Klavins	M			H	H	H				2009	2018
EE-426	Capstone Project in Synthetic Biology	retired	4	Klavins								Y		2015	
EE-433	Analog Circuit Design	active	5	Darling	H	M	M		M	M	M		Y	2007	2018
EE-436	Medical Instrumentation	retired	4	Darling	H	H	M	H	L	M	M		Y	2012	2018
EE-437	Integrated Systems Capstone	active	5	Rudell	H	M	H		M	M	M	Y	Y		2018
EE-438	Instrumentation Design Project	retired	5	Darling	H	H	H	L	M	M	M	Y	Y	2018	2018
EE-440	Introduction to Digital Imaging Systems	active	4	Sun	M	M				M	H			2012	2018
EE-442	Digital Signals and Filtering	active	3	Hwang	H	M				L				2018	2018
EE-443	Design and Application of Digital Signal Processin	active	5	Hwang	H	H	H	L	M	H	M	Y		2018	2018
EE-447	Control System Analysis I	active	4	Burden	H	M								2018	2018

ABET Student Outcome Assessment Matrix, p3 of 4

ABET Undergraduate Course Information															
					New Outcome Coverage (H/M/L)									prior	updated
Number	Name	Status	Credits	Coordinator	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Capstone	Lab	MCD	MCD
EE-448	Systems, Controls, and Robotics Capstone 1,2	active	4	Chizeck	H	H	H	M	H	M	M	Y		2014	2018
EE-449	Systems, Controls, and Robotics Capstone 1,2	active	4	Chizeck	H	H	H	M	H	M	M	Y		2014	2018
EE-451	Wind Energy	active	4	Zhang	H		L	M			M			2018	2018
EE-452	Power Electronics Design	active	5	Johnson	M	M	H	M	M	M	H		Y	2012	2018
EE-453	Electric Drives	active	5	Johnson	H	H	H	M	H	H	M	Y	Y	2012	2018
EE-454	Power System Analysis	active	4	Kirschen	H	M	L	H						2018	2018
EE-455	Power System Dynamics and Protection	active	4	Christie	H	M	L	M						2013	2018
EE-456	Computer-Aided Design in Power Systems	active	4	Christie	H	H	H	H	H	M	H	Y		2014	2018
EE-457	Electric Energy Distribution Systems	active	4	Christie	H	M	M	M	M	L	L			2012	2018
EE-458	Power Electronics Controls	active	5	Johnson											
EE-460	Neural Engineering	active	3	Moritz											
EE-461	Neural Tech Studio	active	4	Yazdan		H	H	L	H		M	Y			2021
EE-462	Electromagnetics I: Microwave Engineering	active	4	Kuga	H					H			Y	2015	2018
EE-463	Microwave Electronic Design	active	4	Kuga		M	M						Y	2012	2018
EE-464	Antennas: Analysis and Design	active	4	Sahr	H	M	M	L	M	H	H		Y	2012	2018
EE-465	Fiber Optics, Devices, and Applications	retired	4	Afromowitz									Y	2012	
EE-466	Neural Computation and Engineering Laboratory	active	3	Yazdan, Orsborn									Y		
EE-469	Computer Architecture I	active	5	Hauck	H	M				M	L			2015	2018
EE-470	Computer Architecture II	active	4	Ceze	H	M				M	L			2015	2018
EE-471	Computer Information Systems Design	retired	5	Hauck										2007	
EE-472	Microcomputer Systems	retired	5	Peckol									Y	2012	

ABET Student Outcome Assessment Matrix, p4 of 4

ABET Undergraduate Course Information															
					New Outcome Coverage (H/M/L)									prior	updated
Number	Name	Status	Credits	Coordinator	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Capstone	Lab	MCD	MCD
EE-473	Linear Integrated Circuits	active	5	Rudell	H	L				L				2007	2018
EE-474	Introduction to Embedded Systems	active	4	Patel	H	M		M		M			Y	2015	2018
EE-475	Embedded Systems Capstone	active	5	Peckol	H	H	M	H	M	H	M	Y	Y	2015	2018
EE-476	Digital Integrated Circuit Design	active	5	Sathe	H	M	H	M	H	H	H			2013	2018
EE-477	VLSI II	active	5	Taylor	H	H	H	M	H	H	H			2018	2018
EE-478	Capstone Integrated Digital Design Projects	active	5	Sathe	H	M	H	M	H	H	H	Y			2018
EE-482	Semiconductor Devices	active	4	Anantram	H									2007	2018
EE-483	Nanotechnology Design	retired	4	Dunham								Y		2016	
EE-484	Sensors and Sensor Systems	active	4	Wilson	M	H	H	M	H	M	L			2013	2018
EE-485	Introduction to Photonics	active	4	Lin	H				L		M			2012	2018
EE-486	Fundamentals of Integrated Circuit Technology	active	3	Dunham	H	M								2012	2018
EE-488	Photonics Design Capstone	retired	4	Majumdar, Lin								Y	Y	2014	
EE-490	Reading and Research	active	1~5	Darling											2018
EE-491	Undergraduate Seminar	active	1	Reynolds				M			M				2018
EE-492	Electrical Engineering Leadership Seminar	active	1	Sahr				M			M			2016	2018
EE-496	Engineering Entrepreneurship & Design	active	2	Arabshahi	M	M	H	M	H	L	M			2017	2018
EE-497	Engineering Entrepreneural Capstone I	active	4	Arabshahi	H	H	H	M	H	H	M	Y		2015	2018
EE-498	Engineering Entrepreneural Capstone II	active	4	Arabshahi	H	H	H	M	H	H	M	Y		2015	2018
EE-499	Undergraduate Research and Special Projects	active	2~5	Darling										2000	2018

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Assessments over AY2122, p1 of 2

ABET Undergraduate Course Information		**Academic Year 2021-2022 Summary**								
		Au21	Au21	Au21	Wi22	Wi22	Wi22	Sp22	Sp22	Sp22
Number	Name	Enroll	Assign	Assess	Enroll	Assign	Assess	Enroll	Assign	Assess
EE-393	Advanced Technical Writing in Electrical Engineer	Hinke-32(A)	3-12,		Hinke-30(A)	3-12,		Hinke-27(A)	3-12,	
EE-398	Introduction to Professional Issues	Riskin-77	4-12,	4:0/2/2/8	Riskin-85	4-12,	4:0/2/6/4	Riskin-91	4-12,	4:0/1/7/4
EE-414	Engineering Innovation in Medicine	Kang-5								
EE-416	Random Signals for Communications and Signal P	Ritcey-37	1-6, 6-6	1:0/0/4/2, 6:0/0/4/2						
EE-417	Modern Wireless Communications				Ritcey-8	1-3,	1:0/2/0/2			
EE-418	Network Security and Cryptography	Poovendran-39	1-6, 4-6, 7-6							
EE-419	Introduction to Computer Communication Networks							Singh-21	1-6, 6-6	
EE-420	Design in Communications									
EE-421	Quantum Mechanics for Engineers				Anantram-20	1-3, 7-3	1:5/8/3/0, 7:4/4/8/0			
EE-423	Introduction to Synthetic Biology	Carothers-1								
EE-437	Integrated Systems Capstone							Moazeni-0		
EE-440	Introduction to Digital Imaging Systems	Sun-34	1-6, 6-6	1:0/1/3/2, 6:0/1/3/2						
EE-442	Digital Signals and Filtering				Hwang-36	1-6, 2-6				
EE-443	Design and Application of Digital Signal Processing							Hwang-26	3-6, 5-6, 7-6	3:0/0/3/3, 5:0/
EE-447	Control System Analysis I	Burden-28	1-6, 2-6	1:1/1/2/2, 2:NATA				Makhsous-39	1-9, 2-9	1:1/2/4/2, 2:0/
EE-451	Wind Energy				Zhang-14	1-6, 7-6				
EE-452	Power Electronics Design	Johnson-24	1-6, 2-6, 6-6	1:0/1/3/2, 2:0/1/3/2, 6:0/1/2/3						
EE-453	Electric Drives							V, Nimesh-14	2-6, 3-6, 5-6, 7-	2:2/2/1/1, 3:2/
EE-454	Power System Analysis	Kirschen-27	1-6, 4-6	1:0/0/4/2, 4:NATA						
EE-455	Power System Dynamics and Protection				Christie-16					
EE-456	CAD in Power Systems							Christie-8	2-3, 3-3, 4-3, 5-	2:0/0/0/4, 3:0/

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Assessments over AY2122, p2 of 2

ABET Undergraduate Course Information		**Academic Year 2021-2022 Summary**								
		Au21	Au21	Au21	Wi22	Wi22	Wi22	Sp22	Sp22	Sp22
Number	Name	Enroll	Assign	Assess	Enroll	Assign	Assess	Enroll	Assign	Assess
EE-457	Electric Energy Distribution Systems									
EE-458	Power Electronics Controls				Mallik-14	1-6, 2-6, 6-6				
EE-460	Neural Engineering	Rao-19								
EE-461	Neural Tech Studio							Yazdan-Shahm	2-3, 3-3, 5-3	
EE-466	Neural Computation and Engineering Laboratory				Orsborn-12	1-6, 4-6	1:0/1/3/2, 4:could not assess			
EE-469	Computer Architecture I	Hauck-81	1-12, 2-12, 6-12	1:0/2/7/3, 2:0/	Hauck-79			Hussein-59	1-9, 2-9, 6-9	
EE-470	Computer Architecture II							Ceze-36		
EE-473	Linear IC Design				Rudell-5					
EE-474	Introduction to Embedded Systems	Hussein-48	1-9, 2-9, 6-9	1:0/0/0/9, 2:0/	Hannaford-54	1-9, 2-9, 6-9		Iyer-51	1-9, 2-9, 6-9	
EE-475	Embedded Systems Capstone	Patel-24	4-6, 5-6, 7-6	4:2/0/4/0, 5:0/	Hussein-28	4-6, 5-6, 7-6	4:0/0/0/6, 5:0/	Hussein-35	4-6, 5-6, 7-6	
EE-476	Digital Integrated Circuit Design	Sathe-39	1-9, 2-9, 6-9							
EE-477	VLSI II				Shi-19	1-6, 2-6, 7-6				
EE-478	Capstone Integrated Digital Design Projects							Sathe-9	1-3, 3-3, 5-3, 6-3, 7-3	
EE-482	Semiconductor Devices	Anantram-10	1-3,	1:4/4/2/0,						
EE-484	Sensors and Sensor Systems							Li-13	2-6, 3-6, 5-6	
EE-485	Introduction to Photonics	Lin-23	1-6, 7-6	1:0/1/1/4, 7:0/1/0/5						
EE-491	Undergraduate Seminar	Fazel-22			Rudell-35			Orsborn-40		
EE-492	Electrical Engineering Leadership Seminar				Klavins-66					
EE-496	Engineering Entrepreneurship & Design	Arabshahi-102								
EE-497	Entrepreneurial Capstone I				Arabshahi-115	4-12, 5-12, 7-12				
EE-498	Entrepreneurial Capstone II							Arabshahi-115	2-12, 3-12, 6-12	

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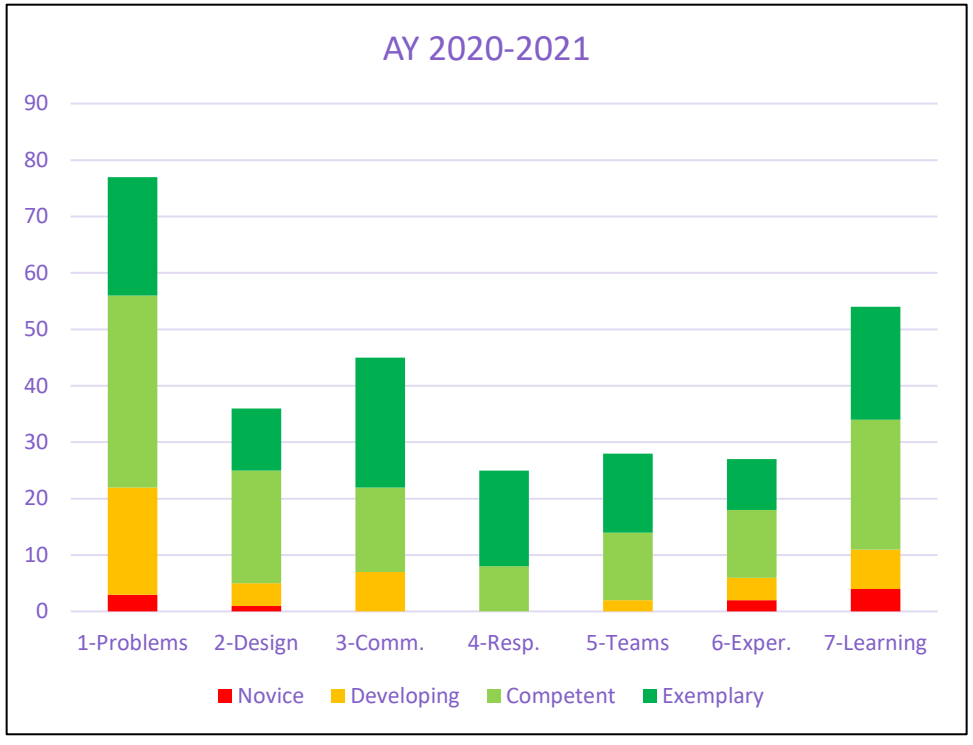
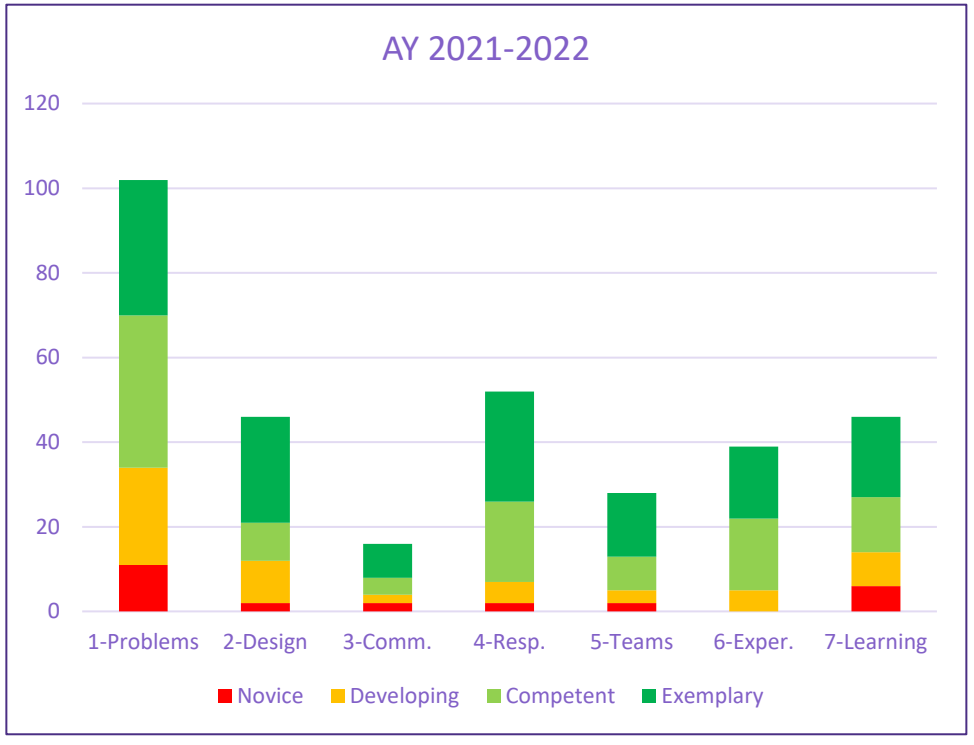
Overall Assessed Outcomes, All Concentrations Combined

- Overall performance is slightly worse than in the prior academic year
- Outcomes 1 (Problems), 2 (Design), and 7 (Learning) are below satisfactory





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AY1920 Overall Data

- Slight increase in number of assigned assessments: 534 -> 597
- Nearly the same rate of instructor compliance: 85% -> 82%
- 6/7 outcomes now achieving satisfactory (>75% competent or satisfactory)

							Achievement				Compliance		
		Novice	Developing	Competent	Exemplary		Assessed	Achieved	Percent		Assigned	Assessed	Percent
1-Problems	AY1920	7	21	34	40		102	74	73%		114	102	89%
2-Design	AY1920	1	4	22	50		77	72	94%		102	77	75%
3-Comm.	AY1920	1	2	21	29		53	50	94%		75	53	71%
4-Resp.	AY1920	2	3	21	39		65	60	92%		87	65	75%
5-Teams	AY1920	1	6	14	29		50	43	86%		60	50	83%
6-Exper.	AY1920	1	7	25	40		73	65	89%		90	73	81%
7-Learning	AY1920	3	12	22	30		67	52	78%		69	67	97%
											597	487	82%

AY2021 Overall Data

- Slight reduction in overall number of assigned assessments: 597 -> 528
- **PROBLEM**: Greatly reduced instructor compliance: 82% -> 55% !!!
- 6/7 outcomes again achieving satisfactory (>75% competent or satisfactory)

							Achievement				Compliance		
		Novice	Developing	Competent	Exemplary		Assessed	Achieved	Percent		Assigned	Assessed	Percent
1-Problems	AY2021	3	19	34	21		77	55	71%		114	77	68%
2-Design	AY2021	1	4	20	11		36	31	86%		90	36	40%
3-Comm.	AY2021	0	7	15	23		45	38	84%		69	45	65%
4-Resp.	AY2021	0	0	8	17		25	25	100%		72	25	35%
5-Teams	AY2021	0	2	12	14		28	26	93%		48	28	58%
6-Exper.	AY2021	2	4	12	9		27	21	78%		78	27	35%
7-Learning	AY2021	4	7	23	20		54	43	80%		57	54	95%
											528	292	55%

- Problem area remains outcomes (1 – Problems)

AY2122 Overall Data

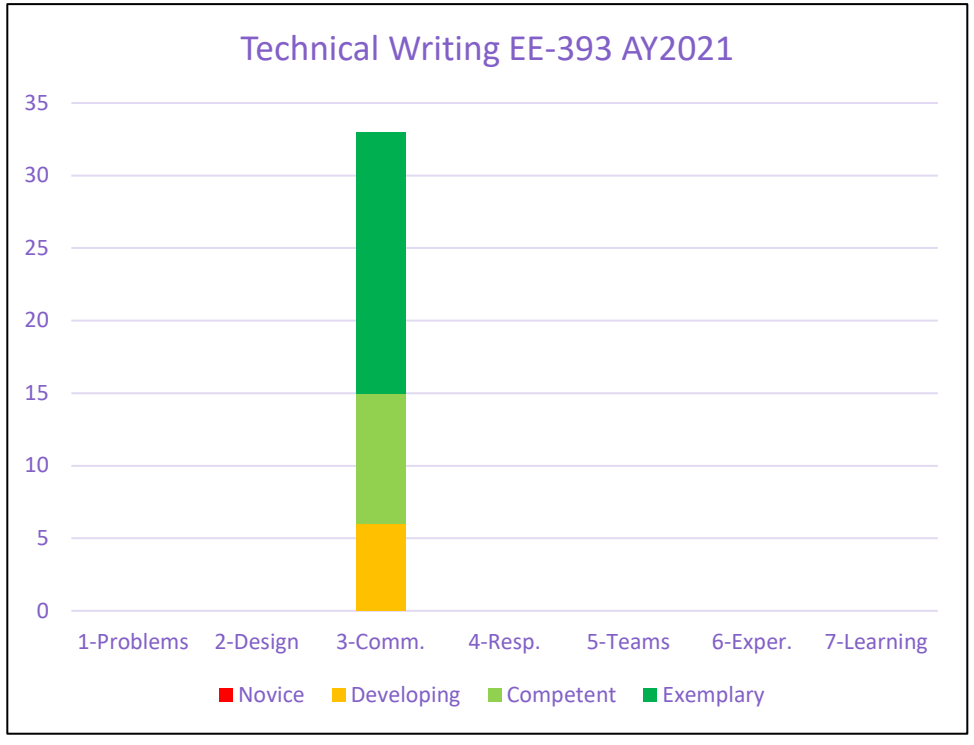
- Increased overall number of assigned assessments: 528 -> 645
- **PROBLEM**: Even further reduced instructor compliance: 82% -> 55% -> 51% !!!
- **PROBLEM**: Only 4/7 outcomes achieving satisfactory (>75% competent or satisfactory)

							Achievement				Compliance		
		Novice	Developing	Competent	Exemplary		Assessed	Achieved	Percent		Assigned	Assessed	Percent
1-Problems	AY2122	11	23	36	32		102	68	67%		147	102	69%
2-Design	AY2122	2	10	9	25		46	34	74%		117	46	39%
3-Comm.	AY2122	2	2	4	8		16	12	75%		75	16	21%
4-Resp.	AY2122	2	5	19	26		52	45	87%		87	52	60%
5-Teams	AY2122	2	3	8	15		28	23	82%		54	28	52%
6-Exper.	AY2122	0	5	17	17		39	34	87%		93	39	42%
7-Learning	AY2122	6	8	13	19		46	32	70%		72	46	64%
											645	329	51%

- The problem area is again outcome 1 (Problems), but now outcome 2 (Design) and 7 (Learning) have dropped to barely below satisfactory

EE-393: Advanced Technical Writing for Electrical Engineers

- Student Outcome 3: Communication



No assessments were returned in AY2122

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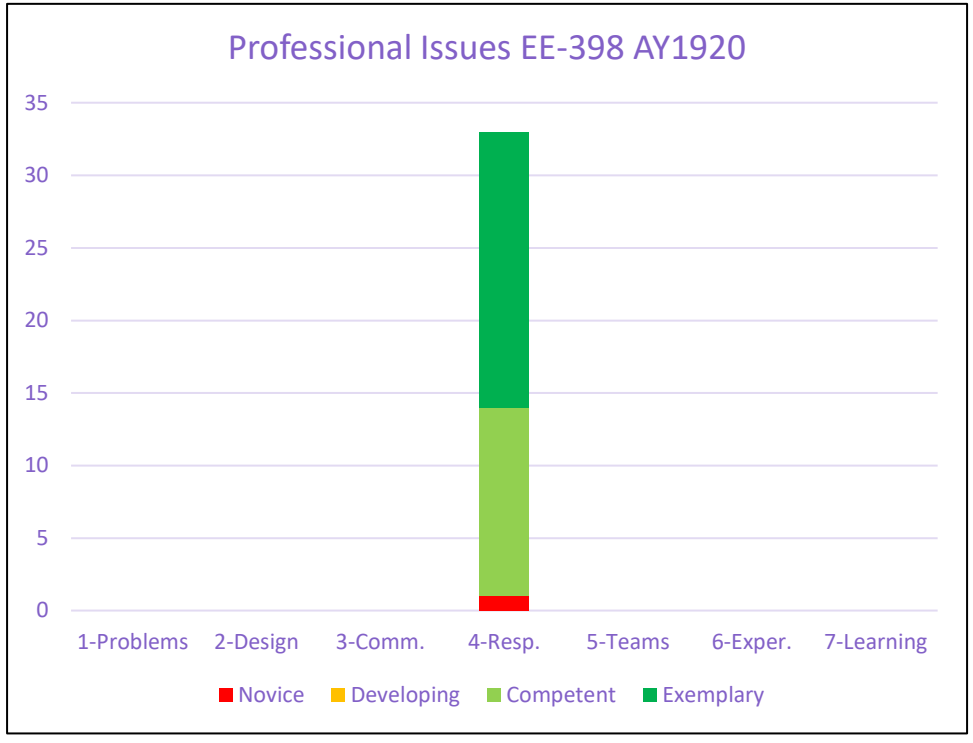
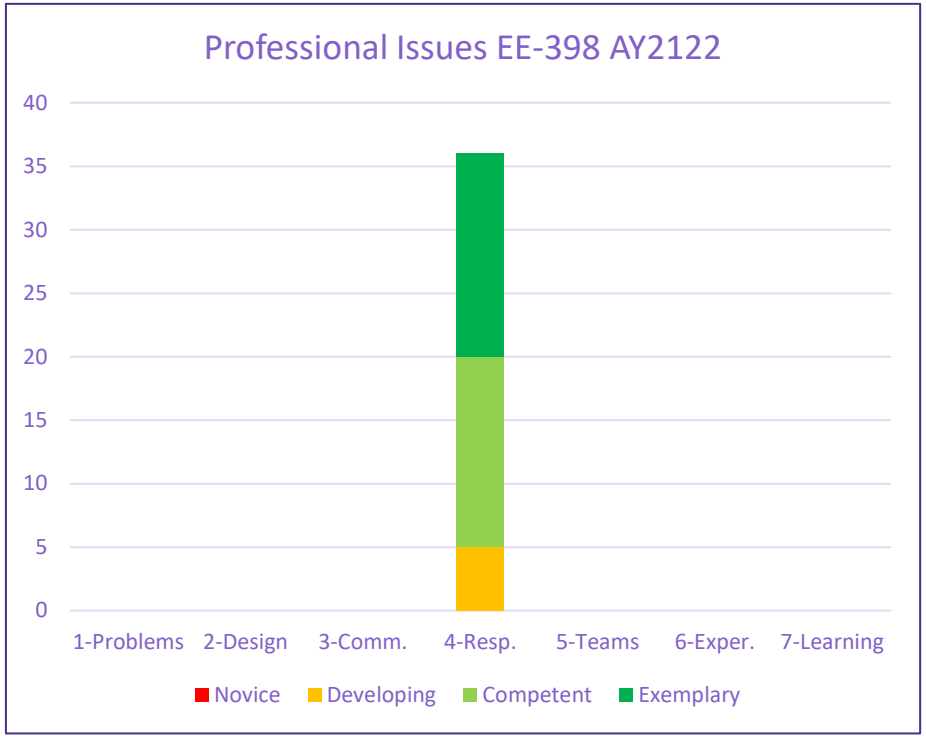
EE-398: Introduction to Professional Issues

- Student Outcome 4: Responsibility
- No assessments were returned last AY, but this AY things look good. (Thanks Eve!)





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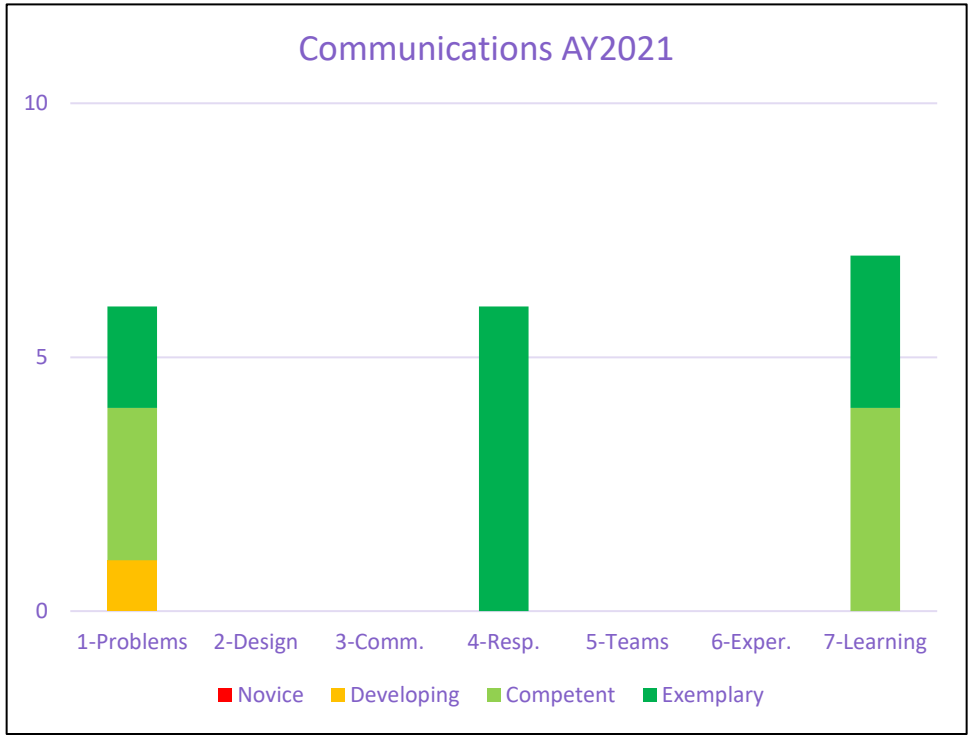
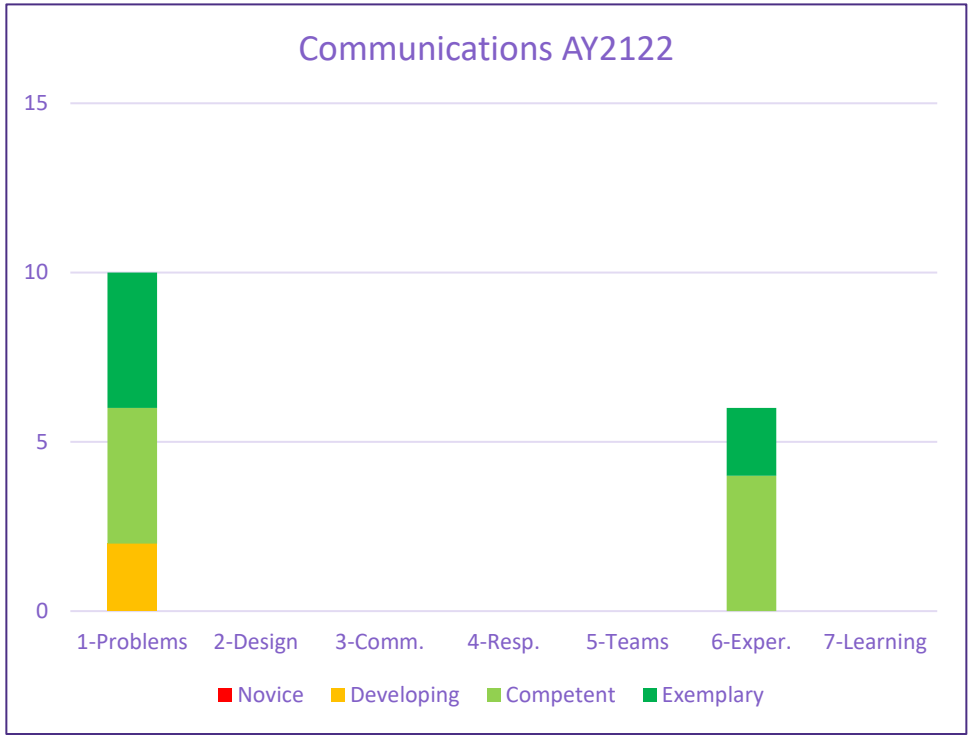
Communications Concentration

- Capstone: EE-420: Design in Communications
- Assessed feeders: EE-416, EE-417, EE-418, EE-419





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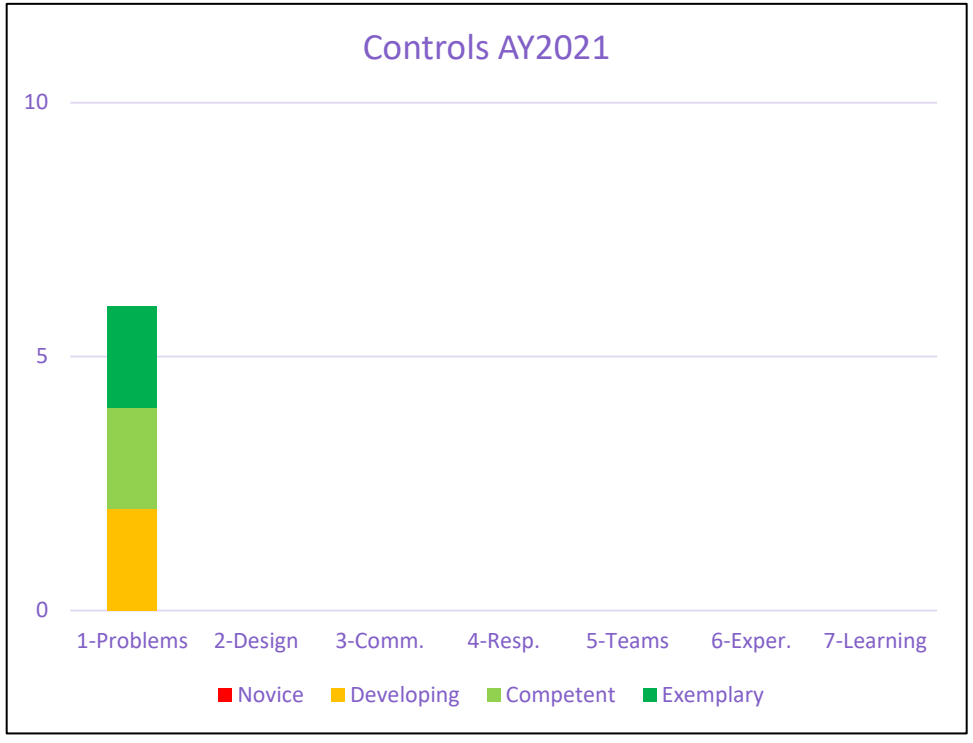
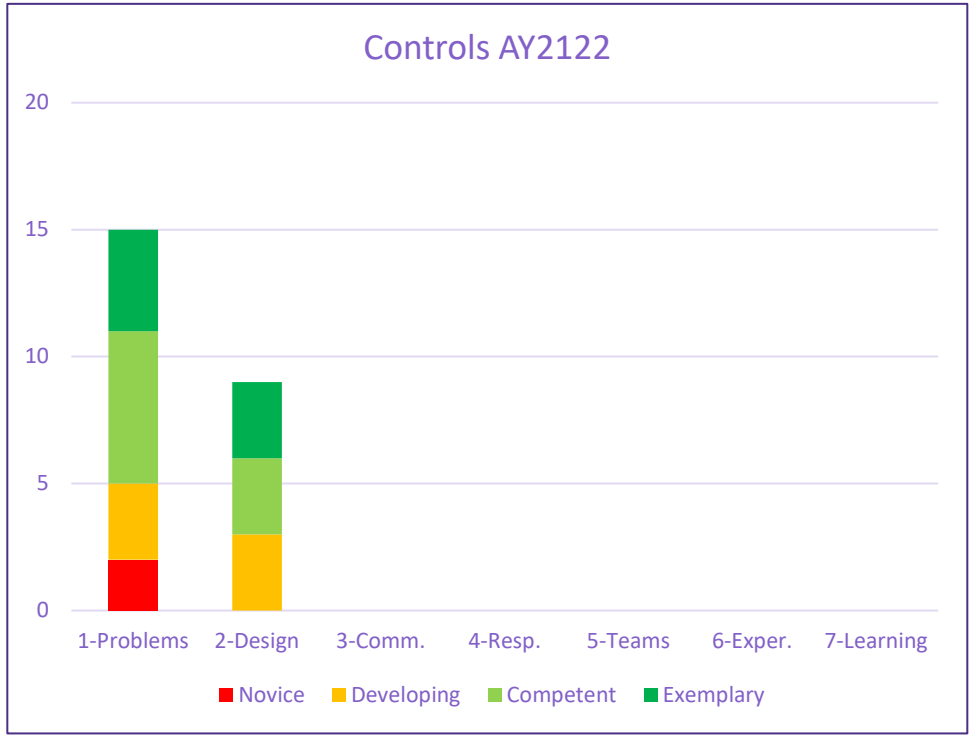
Controls Concentration

- Capstone: EE-448 & EE-449: Deprecated and not offered. Students take Engine.
- Assessed feeders: EE-447





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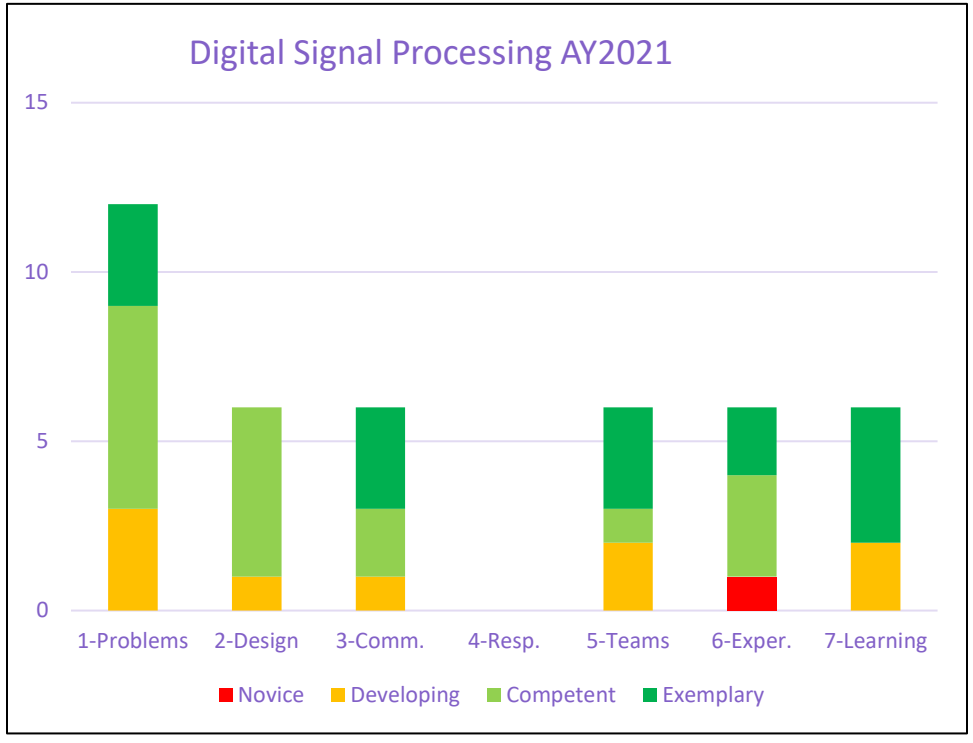
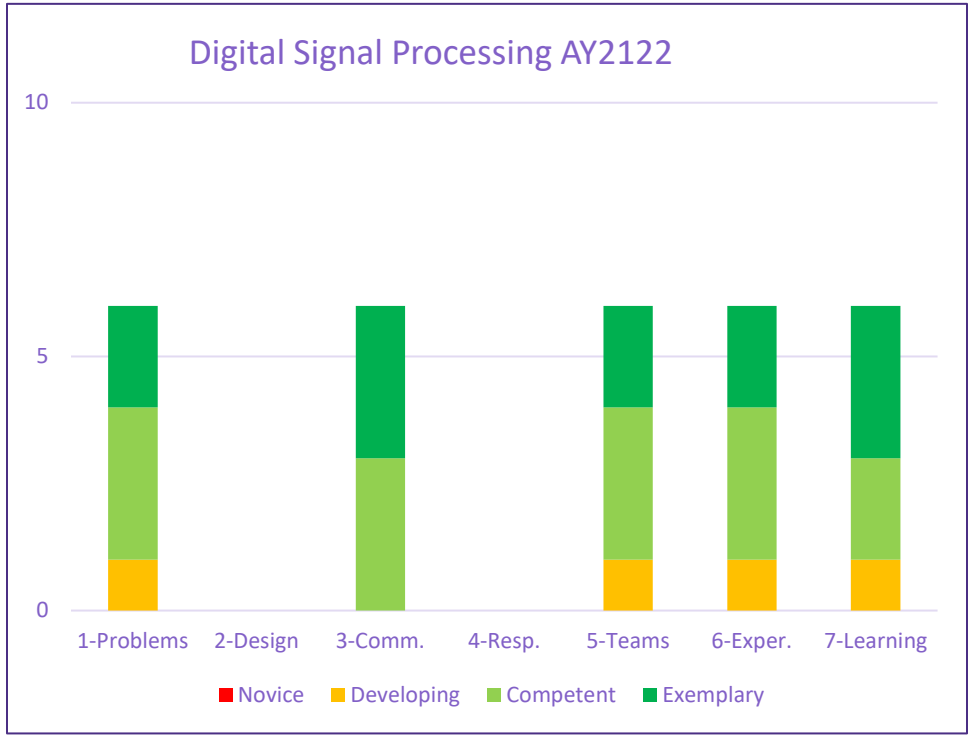
Digital Signal and Image Processing Concentration

- Capstone: EE-443: Design and Application of Digital Signal Processors
- Assessed feeders: EE-440, EE-442





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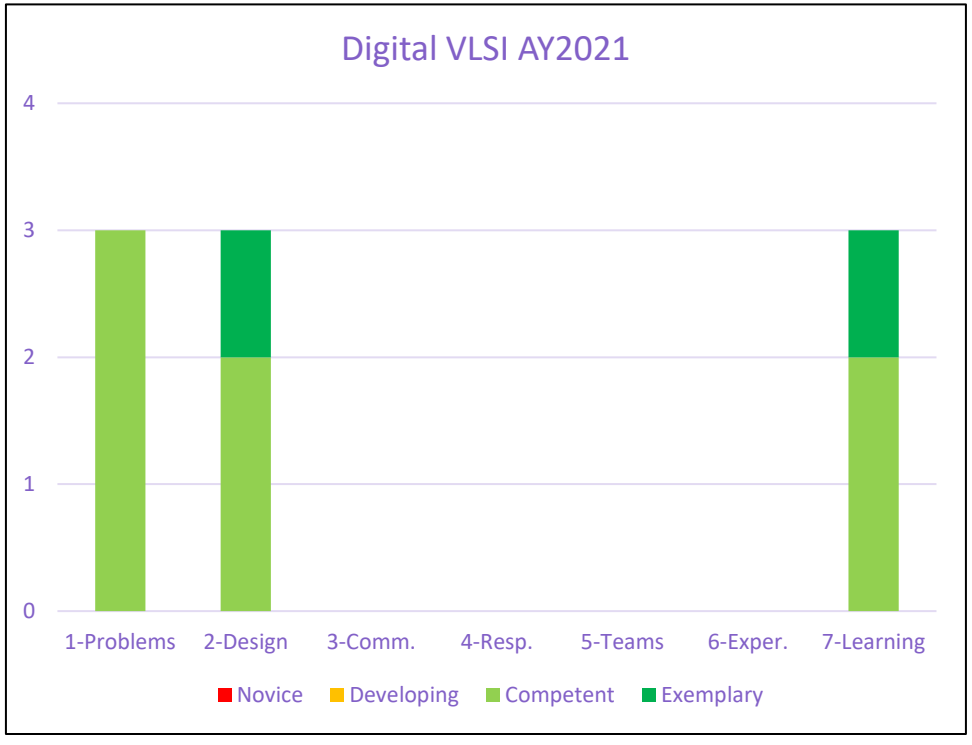
Digital VLSI Circuits Concentration

- Capstone: EE-478: Capstone Integrated Digital Design Projects
- Assessed feeders: EE-476, EE-477



No assessments were returned in AY2122

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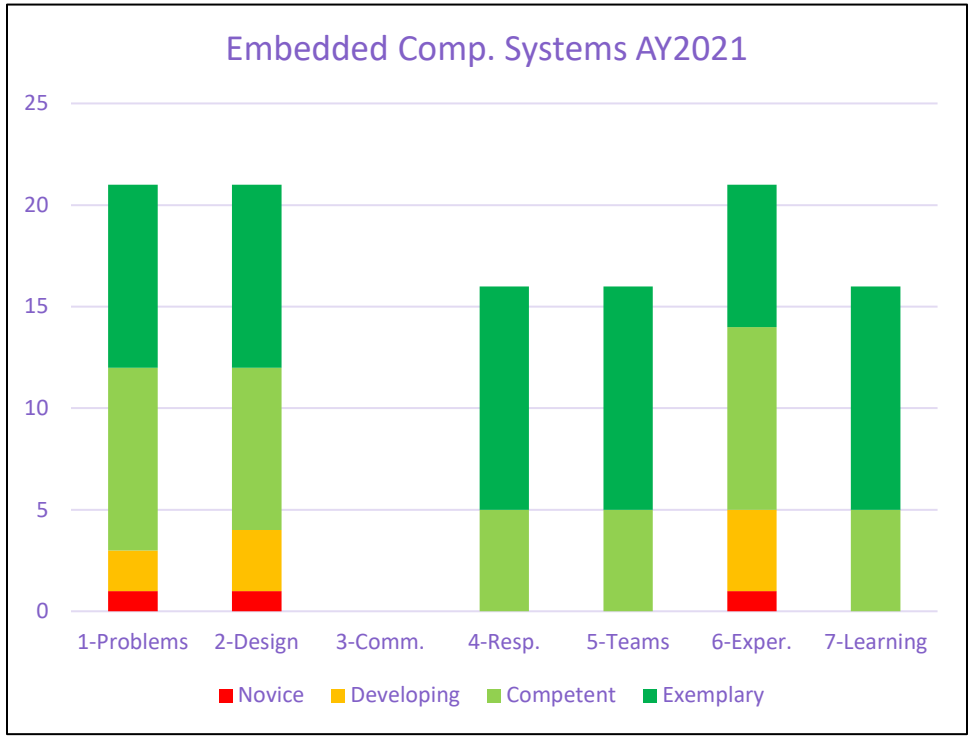
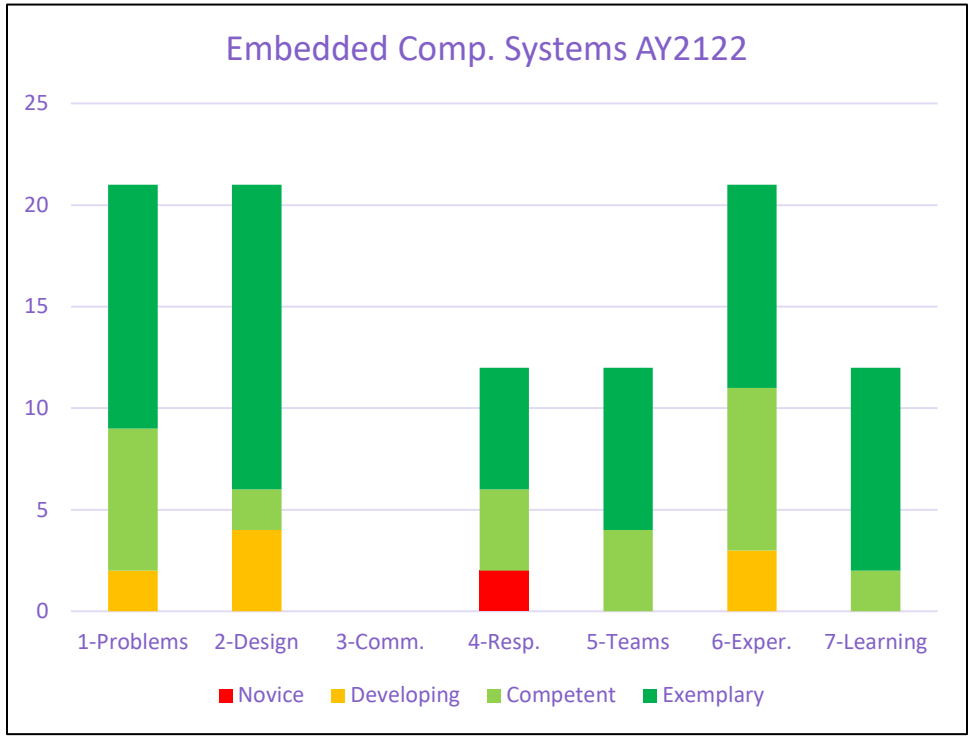
Embedded Computing Systems Concentration

- Capstone: EE-475: Embedded Systems Capstone
- Assessed feeders: EE-469, EE-474

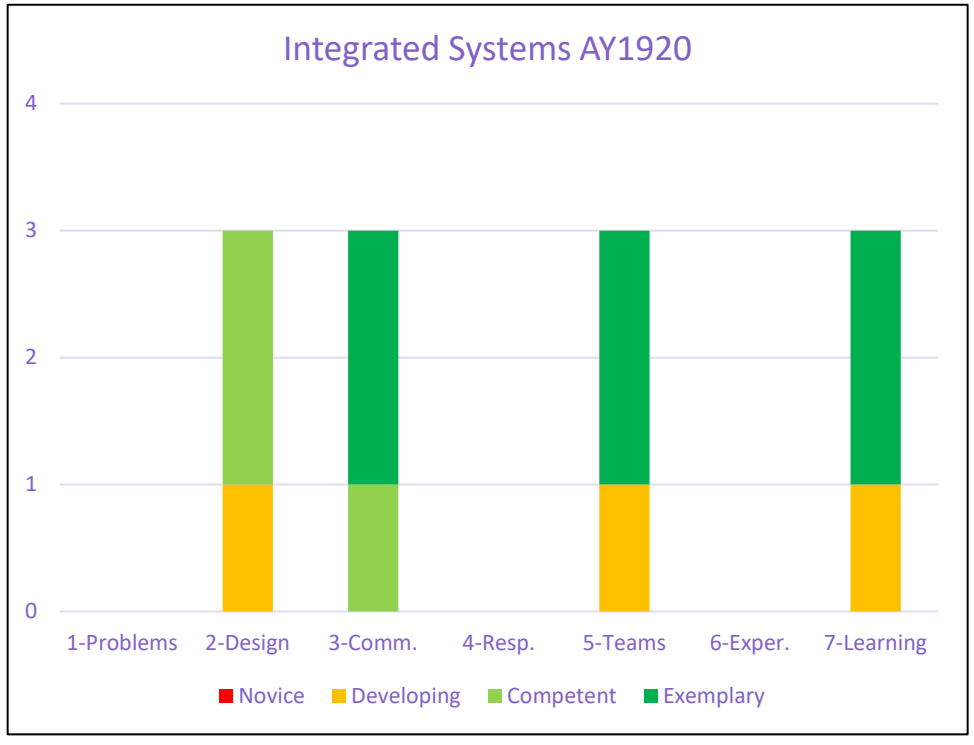




ELECTRICAL & COMPUTER ENGINEERING

Integrated Systems Concentration

- Capstone: EE-437: Integrated Systems Capstone
- Assessed feeders: EE-473



Integrated Systems Concentration courses were not offered in AY2122

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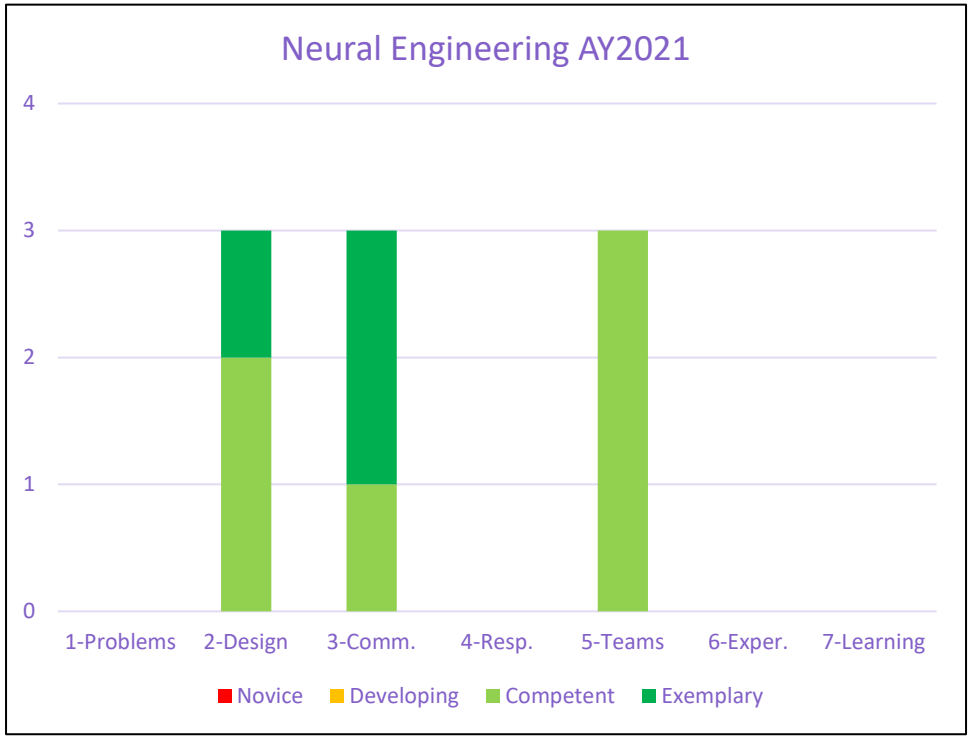
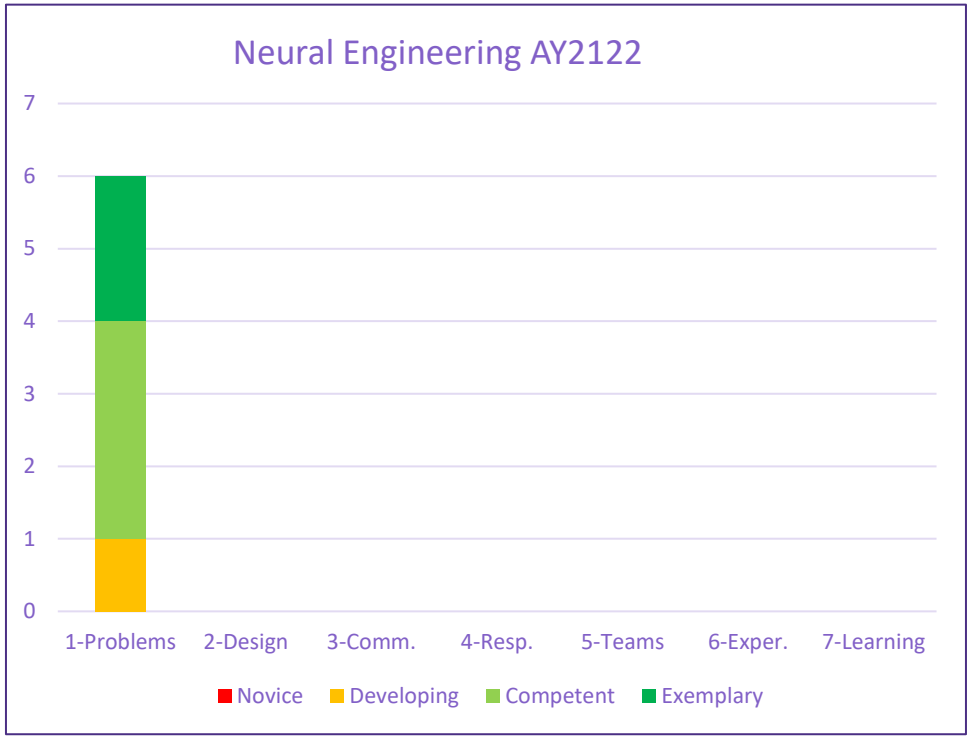
Neural Engineering Concentration

- Capstone: EE-461: Neural Technology Studio
- Assessed feeders: EE-460

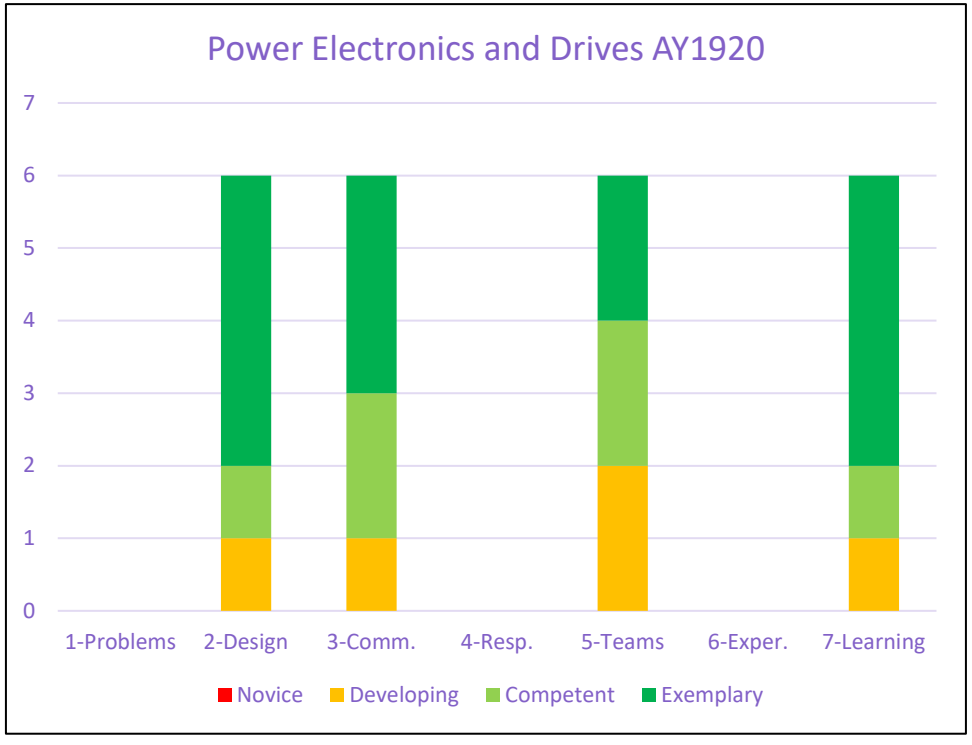


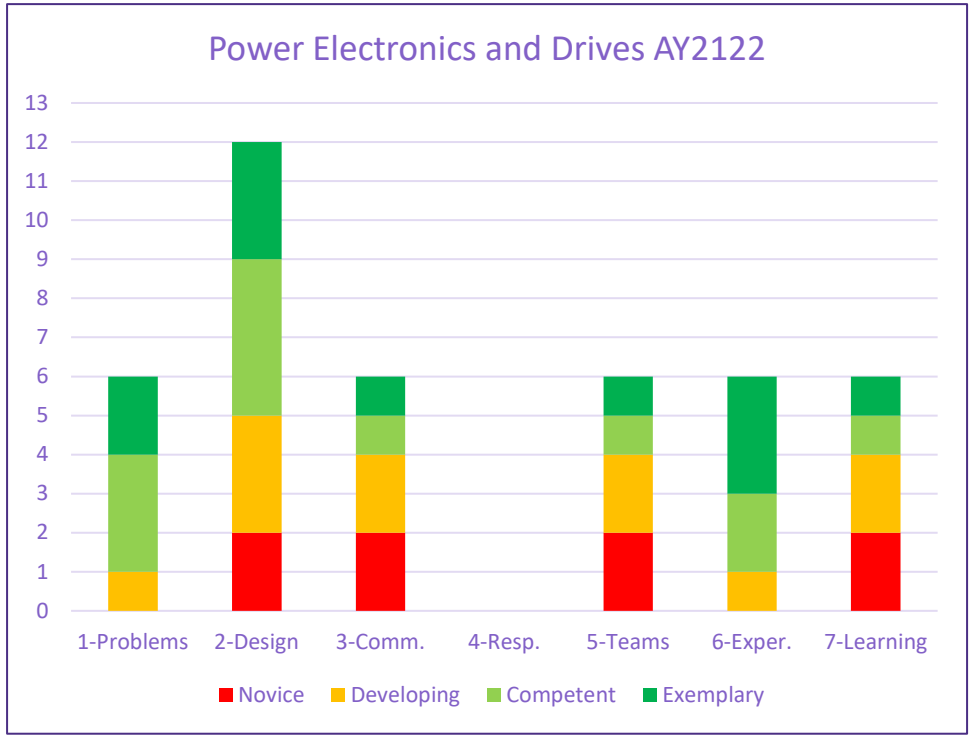


ELECTRICAL & COMPUTER ENGINEERING

Power Electronics and Electric Drives Concentration

- Capstone: EE-453: Electric Drives
- Assessed feeders: EE-452

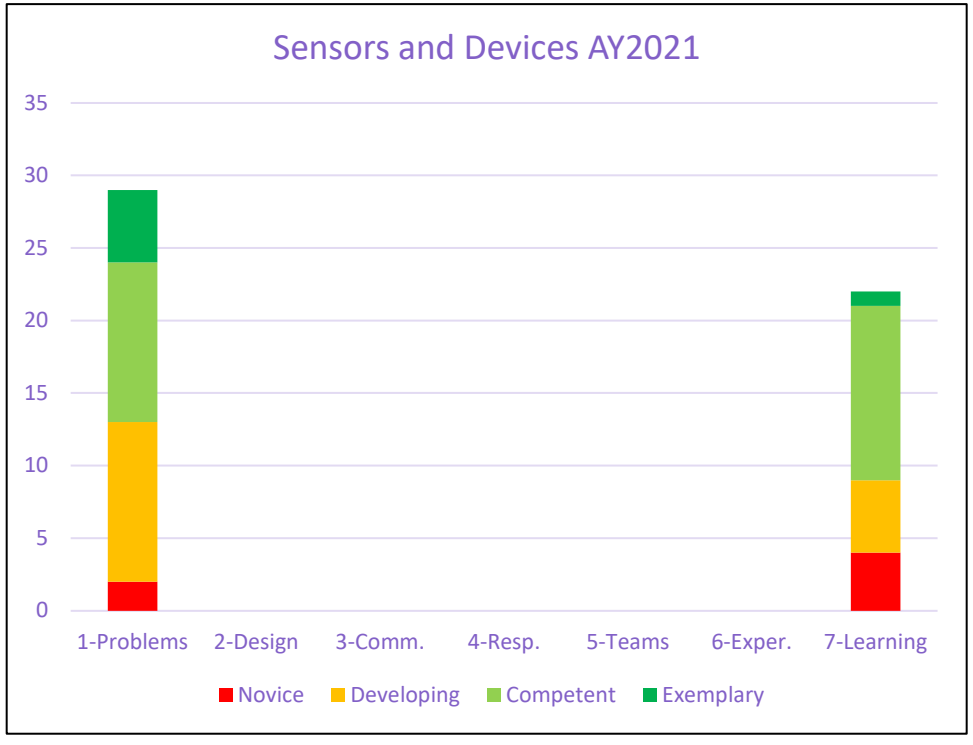


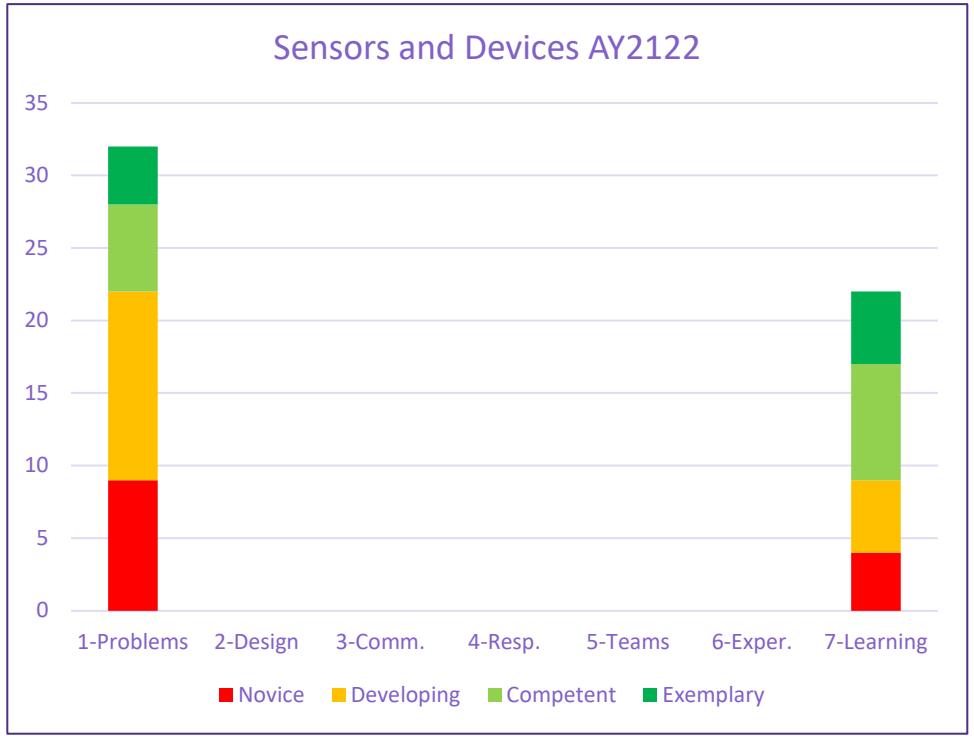


ELECTRICAL & COMPUTER ENGINEERING

Sensors and Devices Concentration

- Capstone: EE-484: Sensors and Sensor Systems
- Assessed feeders: EE-421, EE-482, EE-485

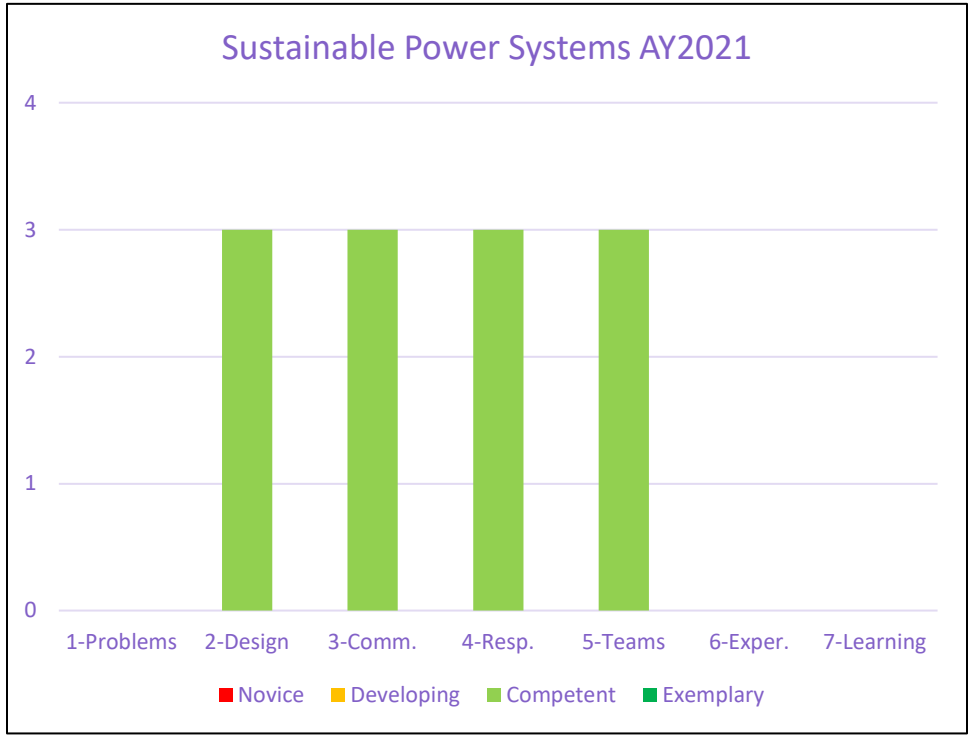


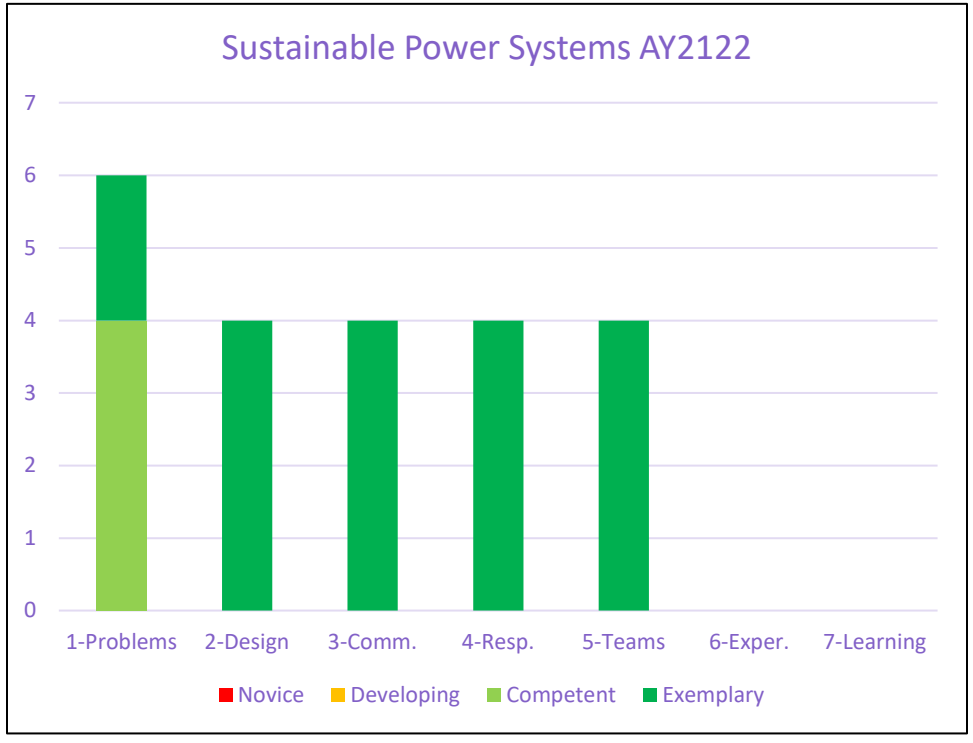


ELECTRICAL & COMPUTER ENGINEERING

Sustainable Energy Systems Concentration

- Capstone: EE-456: Computer-Aided Design in Power Systems
- Assessed feeders: EE-454, EE-455





ELECTRICAL & COMPUTER ENGINEERING

Concentration Summary: percent satisfactory (competent or exemplary)

	AY1819 Summary	problems	design	commun.	respons.	teams	exper.	learning
	Concentration	1	2	3	4	5	6	7
1	Biomedical Instrumentation	100%	100%	100%	100%	80%	63%	100%
2	Communications	71%		100%		100%	81%	
3	Controls	56%					67%	
4	Digital Signal and Image Processing	50%	33%	100%		100%	67%	100%
5	Digital VLSI	100%		67%		83%	33%	100%
6	Electromagnetics	67%	50%	100%			67%	
7	Embedded Computing Systems	50%			44%	67%	50%	22%
8	Integrated Systems							
9	Power Electronics and Drives	50%	100%	100%		100%	50%	43%
10	Sensors and Devices	100%	100%	100%		50%	67%	
11	Sustainable Energy Systems	100%	100%	100%	100%	100%		
	Entrepreneurial Capstone		100%	100%	100%	100%	100%	100%
	Technical Writing			89%				
	Professional Issues				85%			

Concentration Summary: percent satisfactory (competent or exemplary)

	AY1920 Summary	problems	design	commun.	respons.	teams	exper.	learning
	Concentration	1	2	3	4	5	6	7
1	Biomedical Instrumentation	92%	100%	100%	57%	100%	85%	100%
2	Communications	67%		67%			67%	
3	Controls	56%	78%					
4	Digital Signal and Image Processing	83%		100%		100%	75%	100%
5	Digital VLSI	67%		100%		100%	100%	100%
6	Electromagnetics							
7	Embedded Computing Systems	93%	96%		100%	100%	93%	100%
8	Integrated Systems		67%	100%		67%		67%
9	Power Electronics and Drives		83%	83%		67%		83%
10	Sensors and Devices	83%						67%
11	Sustainable Energy Systems	67%	100%	100%	100%	67%		
	Entrepreneurial Capstone		100%	100%	89%	67%	100%	89%
	Technical Writing			92%				
	Professional Issues				97%			

Concentration Summary: percent satisfactory (competent or exemplary)

	AY2021 Summary	problems	design	commun.	respons.	teams	exper.	learning
	Concentration	1	2	3	4	5	6	7
1	Biomedical Instrumentation							
2	Communications	83%			100%			100%
3	Controls	67%						
4	Digital Signal and Image Processing	75%	83%	83%		67%	83%	67%
5	Digital VLSI	100%	100%					100%
6	Electromagnetics							
7	Embedded Computing Systems	86%	81%		100%	100%	76%	100%
8	Integrated Systems							
9	Neural Engineering		100%	100%		100%		
10	Power Electronics and Drives							
11	Sensors and Devices	55%						59%
12	Sustainable Energy Systems		100%	100%	100%	100%		
	Entrepreneurial Capstone							
	Technical Writing			82%				
	Professional Issues							

Concentration Summary: percent satisfactory (competent or exemplary)

	AY2122 Summary	problems	design	commun.	respons.	teams	exper.	learning
	Concentration	1	2	3	4	5	6	7
1	~~Biomedical Instrumentation~~							
2	Communications	80%					100%	
3	Controls	67%	67%					
4	Digital Signal and Image Processing	83%		100%		83%	83%	83%
5	Digital VLSI							
6	~~Electromagnetics~~							
7	Embedded Computing Systems	90%	81%		83%	100%	86%	100%
8	Integrated Systems							
9	Neural Engineering	83%						
10	Power Electronics and Drives	83%	58%	33%		33%	83%	33%
11	Sensors and Devices	31%						59%
12	Sustainable Energy Systems	100%	100%	100%	100%	100%		
	Entrepreneurial Capstone							
	Technical Writing							
	Professional Issues				86%			

Follow up items from the 2018-2019 ABET program review

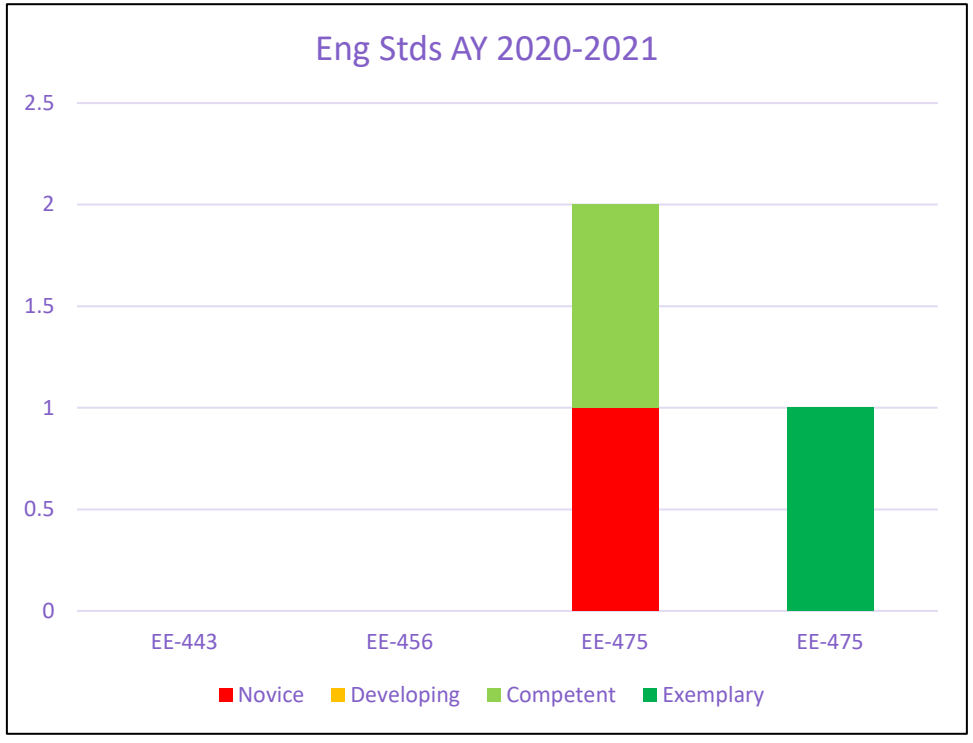
2018-2019 Program Review Cited Weakness:

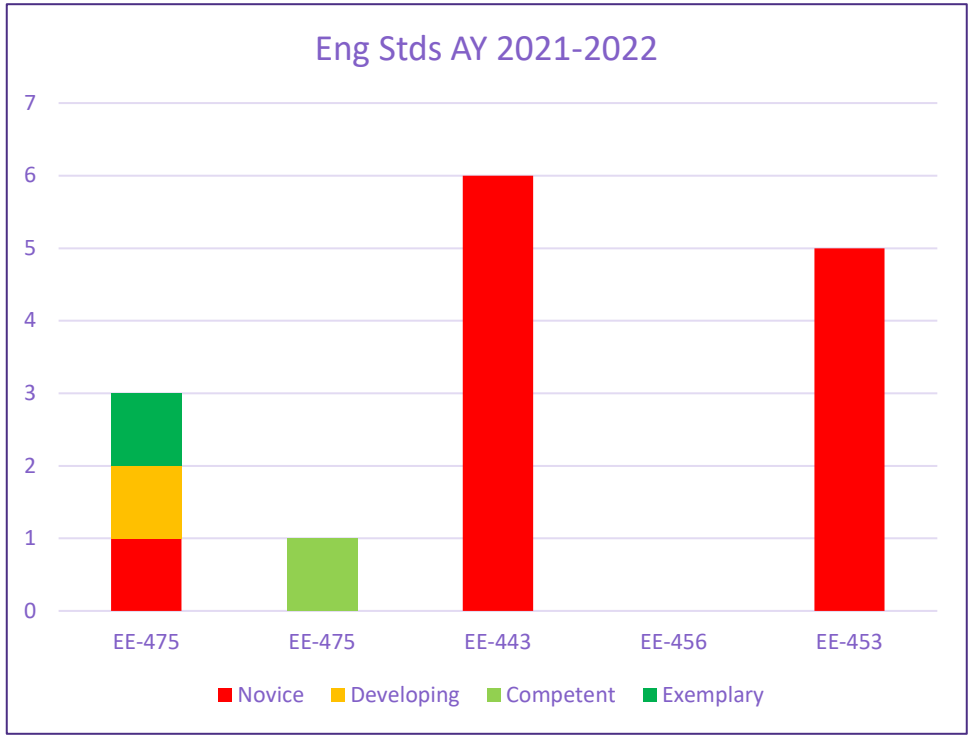
Criterion 5 Curriculum:

The culminating major engineering design experience did not consistently demonstrate the incorporation of engineering standards and multiple realistic constraints. A sampling of the capstone design courses final project reports were lacking in this regard.

Use of Engineering Standards and Multiple Realistic Constraints

- Review of final reports submitted in capstone courses: limited data; poor compliance
- Many capstone courses continue to fail to understand or implement this requirement





ELECTRICAL & COMPUTER ENGINEERING

Evaluation of Results, Conclusions, and Recommended Actions

- Conclusions:
  - Concentration summary shows consistency, but data is spotty
    - Most concentrations show satisfactory outcomes (>75% competent or exemplary)
    - Student outcomes have decreased slightly: outcome 1 (Problems) fell further, and outcomes 2 (Design) and 7 (Learning) are now barely below satisfactory
    - Poor return rate on assessments gives low confidence in results
  - Instructor compliance has dropped even further: only 51% of assigned assessments were completed
    - Lack of assessment data from the Entrepreneurial Capstone (two years in a row) is a problem because more than half of the students take this option
  - The inclusion of engineering standards and multiple realistic constraints still needs to be improved in several capstone courses
    - More capstone final project reports are needed to properly track this

CIP Triage of Student Outcome Issues

1. Instructor Level
   - Independent courses taught by effectively one instructor
2. Syllabus Level
   - Independent courses taught by multiple instructors
3. Curriculum Level
   - Dependent courses taught by multiple instructors
   - Involves prerequisite chains; forward and backward course linkages

Curriculum Committee Recommendations

- To be completed after CC meeting discussion.