ABET Review: Neural Engineering Spring 2022

And Synthetic Biology

Course Offerings & Enrollments

Total students (EE Undergrad/EE Grads/Other)

Class	Title	Au'19	Wi'20	Spr'20	Au'20	Wi'21	Sp'21	Au'21	Wi'22	Sp'22
460/560	Intro to Neural Engineering	75 7/13/55			92 8/12/72			92 15/14/53		
466/546	Neural Computation & Engineering Lab		32 6/4/22			27 4/3/20			37 12/5/20	
461/561	Neural Engineering Tech Studio (Capstone)			21 2/0/19			28 3/1/23			32 6/5/21
546A	Advanced Neurotechnology (& Ethics)					16 6/10/0				10 4/6/0
423	Intro to Synbio				65 6/5/54			35 1/0/34		
424	Advanced Synbio		13						19 0/0/19	
425	Syn Bio Lab (not offered recently)									

Course Offerings & Evaluations (items 1-4)

Class	Title	Au'19	Wi'20	Spr'20	Su'20	Au'20	Wi'21	Sp'21	Au'21	Wi'22	Sp'22
460/ 560	Intro to Neural Engineering	4.3-4.5				4.5-4.7			4.5-4.7		
466/ 566	Neural Computation & Engineering Lab		4.6-4.7				4.5-4.7			4.6-4.8	
461/ 561	Neural Engineering Tech Studio (Capstone) - ABET			4.3-4.5				4.6-4.8			Pending
546A	Advanced Neurotechnology (& Ethics)						4.7				Pending
423	Intro to Synbio					4.4-4.9			3.5-3.7		
424	Advanced Synbio									4.3-4.5	
425	Syn Bio Lab No recent offerings										

End of Course Report compliance –

Completed:

Autumn 2020

• EE 460/560 – Introduction to Neural Engineering (Moritz & Yazdan)

Autumn 2021

 EE 460/560 – Introduction to Neural Engineering (Moritz & Rao)

Winter 2021

- EE 466/566 Neural Computation and Engineering Laboratory (Orsborn)
- EE 546A Advanced Neurotechnology (Moritz)

Winter 2022

 EE 466/566 – Neural Computation and Engineering Laboratory (Orsborn)

Completed (con't):

Spring 2020

• EE 461/561 - Neural Engineering tech studio Capstone (Moritz & Yazdan)

Spring 2021

• EE 461/561 - Neural Engineering tech studio Capstone (Moritz & Yazdan)

To do:

 Syn Bio courses may need course reports (2013-present) – Seelig and Carothers

ABET outcomes

Only 461 has been asked to complete ABET reports

Course	Offering	Faculty	Q1	Q2	Q3	Q4	Q5	Q6	Q7
460	Au'20	Chet/Azadeh	+		+	+	+	+	+
	Au'21	Chet/Raj	+		+	+	+	+	+
466	Win'21	Amy	++					+++	
	Win'22	Amy	0/1/3/2						
461	Spr'20	Chet/Azadeh		+++	+++	+	+++		++
	Spr'21	Chet/Azadeh		0/0/2/1	0/0/0/3		0/0/3/0		
	Sp'22	Azadeh/Chet		TBA (3 of 6)	TBA (3 of 6)		TBA (3 of 6)		
423	Au each yr	Jim Carothers (Chem E)							
424	Win' yr	Georg							
425	Not offered								
Legend:	+ Low	++ Medium	+++ High	Novice/	Developing	Competent/	Exemplary		

Solve Problems. 2: Apply Design Considering Constraints. 3: Communication.
Ethics. 5: Teams. 6: Experiment & Analyze Data. 7: Learning

Switch to remote learning (and back)

Intro to Neural Engineering (EE 460)

- Online Au'20 allowed inviting renowned & diverse national guest speakers.
- Enrollment increased by 18% relative to two prior in-person years
- Maintained a hybrid format in Au'21 to allow national guest lectures which worked well

Neural Engineering Lab (EE 466)

- Hybrid Win'21 and '22 workable with small groups in lab but required revamp
- Now have in-person and hybrid version so ready for future scenarios

Tech Studio Capstone (EE 461)

- Offered Remotely Sp'20 and Sp'21, in person Sp'22
- Enrollment dropped by 25% in 2020, recovered in 2021 and 2022
- Zoom lectures/working groups are adequate, but in person allows more interaction
- Ship/deliver equipment to students at home when remote
- Students are managing surprisingly well remotely
- Will be better when student can at least meet with their team in person and use lab resources (soldering, laser cutter, etc.)

Problems areas?

- The Neural Engineering sequence no problems
 - Offered regularly with stable enrollment
 - Well-integrated across courses
 - Largely satisfies Neural Computation and Engineering Minor and Graduate Certificate programs.
- The Synthetic Biology sequence
 - May have low enrollment in some courses
 - Offerings are less regular/predictable
 - Likely not a problem if concentrations are going away