

APEC Cross Mentoring Research Activity 2020-2021 Syllabus

I. Mentor

1. Personal Information

Name	Sat byul Seo
Mobile Number	82-10-7149-1631
School or Institute	Kyungnam University
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Major	Mathematics

2. Education

	Year	Name of University	Major	Degree	Nation
Bachelor's degree	2009	Kyungnam University	Mathematics Education	Bachelor of Science	Republic of Korea
Master's degree	2015	University of Texas at Arlington	Mathematics	Master of Science	USA
Doctorate	2017	University of Texas at Arlington	Mathematics	Doctor of Philosophy	USA
Dissertation	Evoked and spontaneous neurotransmitter releases for independent synaptic currents: Mathematical modeling and analysis				

3. Experiences

Duration	Position	Institute or University
2018-Present	Assistant Professor	Kyungnam University, Republic of Korea

2017-2018	Postdoctoral Research Associate	Institute of Biosciences & Technology (IBT), Texas A&M University, USA
2012-2017	Instructor/Teaching Assistant	University of Texas at Arlington, USA

4. Honors and Awards

Year	Title	Remarks
2017	Outstanding Graduate Research, University of Texas at Arlington	
2015	Mathematics Academic Excellence Scholarship, University of Texas at Arlington	

II. Syllabus

1. Course Title & Criteria

Course Title	Medical data analysis using machine learning and mathematical theory
Criteria	<input type="checkbox"/> Biology & Applied Biology
	<input type="checkbox"/> Chemistry
	<input type="checkbox"/> Energy & Environmental Science
	<input checked="" type="checkbox"/> Integrated Science
	<input checked="" type="checkbox"/> Medicinal Science
	<input type="checkbox"/> Nano Science
	<input type="checkbox"/> Physics
	<input type="checkbox"/> Others

2. Course Objectives & Description

This course is to study machine learning methods based on mathematical theories and computational concepts, then analyze medical data using machine learning models.

3. Required Textbook or papers:

Practical Statistics for Data Scientists, Peter Bruce, Andrew Bruce, O'REILLY.

4. Final Outcome

Quiz	[v] Due date:
Research plan	[v] Due date:
Final Report	[v] Due date:
Research Article for APEC Youth Scientist Journal	[x] Due date:

5. Schedule

Week	Topics and Activities	Assignments & Other Instructions
Week 1	Introduction to course	
Week 2	Basic concept to Machine learning and AI	
Week 3	Mathematical concept 1: statistics	
Week 4	Mathematical concept 2: Matrix and eigenvector	
Week 5	Mathematical concept 3: Optimization	
Week 6	Python practice 1	Python installation needed.
Week 7	Python practice 2	
Week 8	Machine Learning Models 1 and Application	
Week 9	Machine Learning Model 2 and Application	
Week 10	Machine Learning Model 3 and Application	
Week 11	Research Article Writing for APEC Youth Scientist Journal	
Week 12	Research Article Writing for APEC Youth Scientist Journal	
Mentee should submit their research article to AMGS admin team and mentor.		