

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
GE411	INTRODUCTION TO KALMAN FILTER	3.00	0.00	0.00	4.00	4.00
Course Detail						
Course Language	: English					
Qualification Degree	: Bachelor					
Course Type	: Optional					
Preconditions	: Not					
Objectives of the Course	: The course aims to present the Kalman filtering used for state estimation in dynamic systems to the student.					
Course Contents	: Linear system theory, basic concepts of probability, parameter estimation, error propagation law, discrete-time Kalman filtering, geodetic applications					
Recommended or Required Reading	: N/A					
Planned Learning Activities and Teaching Methods	: Lectures with discussions					
Recommended Optional Programme Components	: Advanced level mathematics, probability and statistics knowledge					
Instructors	: Dr. Öğr. Üyesi Mehmet Güven Koçak					
Instructor's Assistants	: N/A					
Presentation Of Course	: Lecture with theoretical background and basic programming applications					
En Son Güncelleme Tarihi:	: 4/16/2024 2:48:05 PM					

Course Outcomes

Upon the completion of this course a student :

- 1 Identify the terminology used for univariate and multivariate normal distribution terminology.
- 2 Explain the concept of recursive parameter estimation.
- 3 Define Kalman filtering steps and interpret the relevant equations
- 4 Build process and measurement noise matrices
- 5 Apply Kalman filtering to a basic navigation problem.

Preconditions

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Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
1.Week	*Introduction					
2.Week	*Probability and statistical concepts					
3.Week	*Probability and statistical concepts					
4.Week	*Parameter estimation					
5.Week	*Parameter estimation					
6.Week	*Error propogation					
7.Week	*Sequential Estimation					
8.Week	*Exam week					
9.Week	*Deriving Kalman filtering equations					
10.Week	*Deriving Kalman filtering equations					
11.Week	*KF applications					
12.Week	*KF applications					
13.Week	*KF applications					
14.Week	*KF applications					

Assesment Methods %

1 Mterms : 30.000

2 Assignment : 30.000

3 Final : 40.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Derse Katılım / Attending lectures	14	3.00	42.00
Ders Öncesi Biresysel Çalışma / Individual study before lecture	14	1.00	14.00
Ders Sonrası Biresysel Çalışma / Individual study after lecture	14	1.00	14.00
Ara Sınav Hazırlık / Preparation for midterm	1	8.00	8.00
Final Sınavı Hazırlık / Preparation for final	1	8.00	8.00
Ödev / Assignment	2	16.00	32.00
Vize / Midterms	1	1.00	1.00
Final / Final	1	1.00	1.00
			Total : 120.00
			Sum of Workload / 30 (Hour) : 4
			ECTS : 4.00

Program And OutcomeRelation											
	P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11
L.O. 1	5	0	0	5	0	0	0	0	0	0	0
L.O. 2	5	0	0	5	0	0	0	0	0	0	0
L.O. 3	5	0	0	0	0	0	0	0	0	0	0
L.O. 4	5	0	0	5	0	0	0	0	0	0	0
L.O. 5	5	0	0	5	0	0	0	0	0	0	0