Course Description Form

1. Course Name:
System identification II
2. Course Code:
SYSI1350
3. Semester / Year:
1st Semester
4. Description Preparation Date:
8/2/2024
5. Available Attendance Forms:
Personal
6. Number of Credit Hours (Total) / Number of Units (Total)
4 / 30
7. Course administrator's name (mention all, if more than one name)
Name: Lecturer Abeer Fadhil Shimal Email: abeer.f.shimal@uotechnology.edu.iq

8. Course Objectives	
Course Objectives	• **Introducing the student to the basics of predicting unknown systems .** • **Enable the student to find solutions to anticipate the unknown system.**

9. Teaching and Learning Strategies	
Strategy	**1-Empowering the student to know and understand the theoretical principles to predict the unknown systems.** **2- Enable the student to know and understand the practical applications to discover the unknown systems.** **3- Discussing solutions and resulting problems** **4- The above points are accomplished through a presentation, homework, and documented reports**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	**4**		identification, classification of identification methods, Types of modeling (state space representation). black box, gray box, Stochastic system, mean, variance, autocorrelation	**Live presentation and homework**	**Written exam**
3-4	**4**		Cross correlation, statically concepts in frequency domain (power density spectrum)	**Live presentation and homework**	**Written exam**
5	**2**		classical methods (step response for 1st and 2nd order system,	**Live presentation and homework**	**Written exam**
6-7	**4**		classical methods (impulse response for 1st and 2nd order system. Pseudo Random Binary Sequence.	**Live presentation and homework**	**Written exam**
8-9	**4**		Frequency response (bode plot method),	**Live presentation and homework**	**Written exam**
10-11	**4**		Introduction to off line methods, Least square method, Checking the residuals	**Live presentation and homework**	**Written exam**
12-13	**4**		Dc value estimation, GLS method, process models	**Live presentation and homework**	**Written exam**
14-15	**4**		On – line methods, RLS method	**Live presentation and homework**	**Written exam**

11. Course Evaluation

20% documented exam
5% Quizzes
5% reports and homework

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	-------
Main references (sources)	***1-*** *"System Identification: Theory for the User", L. Ljung, Prentice Hall PTR, New Jersey, USA, 1999.* ***2-*** *"Process Dynamics and Control 2nd Edition", D.E. Seborg, T. F. Edgar and D. A. Mellichamp, J. Wiley & sons,USA, 2003.*
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	