Course Description Form

1. Course Name:
Process control
2. Course Code:
PRSY1446
3. Semester / Year:
2nd Semester
4. Description Preparation Date:
6/2/2024
5. Available Attendance Forms:
Personal
6. Number of Credit Hours (Total) / Number of Units (Total)
36/2
7. Course administrator's name (mention all, if more than one name)
Name: Kareem Albadri Email: 60186@uotechnology.edu.iq
8. Course Objectives

Course Objectives	• **Sensor Integration and Equipment Understanding:**
	  ○ Integrate sensors into control systems.
	  ○ Understand key aspects of process equipment.
	• **Mass and Energy Balance Modeling:**
	  ○ Apply balance equations to model dynamic processes.
	  ○ Solve practical engineering problems through balance analysis.
	• **PID Control Application:**
	  ○ Build dynamic models using balances.
	  ○ Implement and optimize PID controllers for real-world applications.

9. Teaching and Learning Strategies

Strategy

1. **Interactive Lectures:**
   - **Approach:** Engage students with multimedia presentations and real-world examples.
2. **Hands-on Lab Sessions:**
   - **Approach:** Conduct practical sessions for students to work with sensors and control equipment.
3. **Modeling Workshops:**
   - **Approach:** Organize workshops for hands-on experience in building dynamic models using mass and energy balance equations.
4. **Simulation Software:**
   - **Approach:** Introduce simulation tools for modeling and implementing PID controllers in a virtual environment.
5. **Real-world Applications:**
   - **Approach:** Present case studies and assign projects for practical application of control concepts to engineering problems.
6. **Group Projects:**
   - **Approach:** Assign collaborative projects to reinforce teamwork and problem-solving skills.
7. **Guest Speakers:**
   - **Approach:** Invite industry professionals to share insights into real-world applications of process control.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	6		Introduction to process control+ sensors	**Live presentation and homewo**	**Written exam**

3-4	6		Mass balance + Energy balance	**Live presentation and reports**	**Discussing evaluating reports**
5-6	6		Blending systems other examples	**Live presentation and homewo**	**Written exam**
7-8	6		Interacting and non-interacting tanks	**Live presentation and reports**	**Discussing evaluating reports**
9-12	12		Close loop control system	**Live presentation and homewo**	**Written exam**
13-15	6		Tutorial	**Live presentation and reports**	**Discussing evaluating reports**

11. Course Evaluation

20% documented exam
5% Quizzes
5% projects

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Process Dynamics and Control, by Dale E. Seborg, Thomas F. Edgar, Dunc Mellichamp, Francis J. Doyle III, John Wiley & Sons, Inc.2017, 4th Ed.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	