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| مشخصات درس: |
| سيستمهاي عيب ياب وكنترل تحمل پذيرخطا |
| پيشنياز: |
|  **سيستمهاي كنترل مدرن**  |
| سرفصل مطالب: |
| **Introduction to Diagnosis and Fault-Tolerant Control** * *Technological Processes Subject to Faults*
* *Faults and Fault Tolerance*
* *Faults Requirements and Properties of Systems Subject to Faults*
* *Elements of Fault-Tolerant Control*
* *Structure of Fault-Tolerant Control Systems*
* *Main Ideas of Fault Diagnosis*
* *Main Ideas of Controller Redesign*
* *A Practical View on Fault-Tolerant Control*
* *Architecture of Fault-Tolerant Control*
* *Distributed Systems*
* *Remote Control and Diagnosis*

**Examples** * *Two-Tank System*
* *Three-Tank System*
* *Ship Steering and Track Control*

**Fault Diagnosis of Deterministic Systems*** *Introduction*
* *Analytical Redundancy in Nonlinear Deterministic Systems*
* *Analytical Redundancy Relations for Linear Deterministic*

*Systems - Time Domain* * *Analytical Redundancy Relations for Linear Deterministic*

*Systems - Frequency Domain* **Fault Diagnosis of Stochastic Systems*** *Introduction*
* *Change Detection Algorithms*
* *Kalman Filter Approach to Diagnosis*

**Reconfigurability Analysis.*** *The Fault-Tolerant Control Problem*
* *Fault-Tolerant Control Architecture*
* *Fault-Tolerant Linear Quadratic Design*

**Fault Accommodation and Reconfiguration Methods*** *Fault-Tolerant Model-Matching Design*
* *Control Reconfiguration for Actuator or Sensor Failures*
 |
| * *Fault Recovery by Nominal Trajectory Tracking*
* *Fault-Tolerant H-infifinity1 Design*
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| سیستم ارزیابی: |
| * **امتحان پایان ترم: 10 نمره**
* **پروژه­های درسی: 6 نمره**
* **پروژه نهایی درس: 4 نمره**
 |
| **مراجع درس:** |
| * ***“Diagnosis and Fault Tolerant Control”,***

 Mogens Blanke · Michel Kinnaert · Jan Lunze · Marcel Staroswiecki* **“*Fault detection and diagnosis in industrial systems”,***

 L. H. Chiang, E. L. Russell and R. D. Braatz* ***“Active Fault Tolerant Control Systems: Stochastic Analysis and Synthesis”***

 Mufeed M. Mahmoud, Jin Jiang,Youmin Zhang* ***Related Papers and Material from Web***
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