

## **HFS303 Safety, Risk and Resilience Engineering**

**Level:** 3

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY JULY

### **Synopsis:**

System safety has progressed from its roots in accident investigation, through the creation of various prevention and mitigation strategies to a full partnership in the system design process along with quality and productivity. This 18-hour course provides students with a set of analysis and design tools to assure the ease of use, effectiveness (quality and reliability), efficiency, safety, security and satisfaction in the operation of small and large systems throughout its life cycle given various technological, human, operational and environmental “hazards.”

### **Topics:**

- The Purpose(s) of System Design; Process and system design fundamentals; Hazard identification and analysis
- Qualitative Process and System Analysis
- Human Reliability Assessment
- Risk - Benefit Analysis
- Risk Control and Management; Resilience engineering
- Hazard Identification and Risk Assessment in Industry

### **Textbooks:**

Jeffrey, W., Vincoli: Basic Guide to System Safety 3rd Edition John Wiley & Sons, Inc.  
ISBN-13: 9781119027782

**Learning Outcome:**

- Discuss the fundamentals of system safety, reliability and resilience engineering as well as the system safety methods and tools.
- Illustrate the concepts and tools of system safety to small and large scale operations.
- Examine how system safety approaches and tools can be applied to the design of a variety of small and large systems.
- Apply appropriate concepts, methods and tools to analyse system failures and system safety.
- Evaluate and re-design of existing systems through analysis of system failures
- Propose a system safety plan and programme.

**Assessment Strategies (Evening Class):**

<b>Components</b>	<b>Description</b>	<b>Weightage Allocation (%)</b>
Overall Continuous Assessment	QUIZ 1	10
	GROUP BASED ASSIGNMENT 1	20
Overall Examinable Components	Written Exam	70
<b>Total</b>		<b>100</b>