APT A192: HUMAN FACTORS AND CREW RESOURCE MANAGEMENT

Item	Value
Curriculum Committee Approval Date	12/09/2020
Top Code	302020 - Piloting
Units	3 Total Units
Hours	54 Total Hours (Lecture Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)

Course Description

Course encompasses a wide range of knowledge, skills and attitudes including communications, situational awareness, problem solving, decision making, and teamwork; together with the entire attendant sub-disciplines which each of these areas entails. CRM can be defined as a management system which makes optimum use of all available resources - equipment, procedures and people - to promote flight safety and enhance the efficiency of flight operations. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Explain how effective utilization of Cockpit Resource Management can mitigate risk during flight.
2. Define their own set of personal parameters to include building a risk management matrix to help mitigate risk in their own flight operations.

Course Objectives

- 1. List the origins of CRM and recent human factors research.
- 2. Use industry research to determine where “pilot error” can be reduced.
- 3. Develop their own personal minimums for VFR and IFR flights based on human factors.
- 4. Make risk assessments and be able to adequately minimize those risks for each flight.
- 5. Apply CRM concepts to air traffic control, passengers and ground personnel.
- 6. Describe the Command/Leadership resource management process
- 7. Identify high risk situations
- 8. Construct a risk management matrix

Lecture Content

Why Crew Resource Management/Human Factors origins of CRM accident record one-person versus crew training FAAs Advanced Qualification Program (AQP) cockpit automation and accidents Command/Leadership-Resource Management process. Human Factors research from FAA and NASA Command PIC in charge of overall safety, whole picture crew climate - open communications, stress management line oriented flight training - dangerous scenarios in simulator Leadership Communication - candid, forthright reluctance to speak to crew, controllers, FSS problem definition - diagnose, define, troubleshoot, fly airplane first decision-making - timely action, time risk, pride, accident report reviews Resource Management workload - ahead of airplane, even out high demand events situational awareness use of resources - relevant infor - a/c, FAA, WX, dispatch, emerg, passengers example of United 232 - Sioux City Al Haines tape Goals of the Flight safety - operational relevancy “comfort zone” - need more info, speak up operational expectations - common language eliminate fatigue induced errors The Decision-making process Factors Affecting decision - fatigue, stress, medication, health, alcohol, personality Phase of Flight for CRM takeoff - startup, taxi, takeoff, cockpit setup climb and cruise - altitude critical checklist, using checklists, transition to cruise, altitude deviations, autopilot, engine monitoring, weather monitoring descent, approach, and landing Risk factors evaluating risk human factors research p ersonal minimums High risk situations takeoff with known problems near misses and midair collision risk controlled flight into terrain unstabilized approach deviation from SOP runway incursions and landing on wrong runway or airport weather complacency Safety pilot aircraft passengers outside sources Situational awareness and judgement judgement chain

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)

Instructional Techniques

Online lecture and application of ideas, slide and multimedia presentations, and online training modules within the scope of human factors and crew resource management. Critiques of aviation accident case studies to highlight the accident/error chain during each event.

Reading Assignments

Students will spend approximately 2 hours per week on text and assigned materials.

Writing Assignments

Students will spend approximately 2 hours per week on weekly written assignments and completion of online training modules and quizzes. Midterm will be a critique of aviation case studies pertaining to crew resource management. Final exam will involve an essay on current events in Human Factors. Weekly interaction and participation in class discussion forums regarding different topics will be assessed.

Out-of-class Assignments

Weekly interaction and participation in class discussion forums regarding different topics will be assessed. Students will spend approximately 2 hours per week on out-of-class assignments.

Demonstration of Critical Thinking

Online quizzes and training modules Case study critiques Participation in class discussion forums

Required Writing, Problem Solving, Skills Demonstration

Online quizzes and training modules Case study critiques Participation in class discussion forums Midterm and Final exam essay reports

Eligible Disciplines

Aviation (flight, navigation, ground school, air traffic control): Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience.

Textbooks Resources

1. Required Turner, Thomas P.. Cockpit Resource Management, ed. TAB Books, 0 Rationale: - 2. Required -. Human Factors, ed. Jeppesen-Sanderson, 1995 Rationale: -