



NESC Academy Training Participant Manual

Lesson 1: Logistics

Course Goal

The goal of this course is to present detailed case studies from the career experiences of human factors expert Dr. Cynthia Null and her colleagues: Susan Baggerman, Dr. Immanuel Barshi, Dr. Tina Beard, Dr. Alan Hobbs, Jessica Mock, Dr. John O'Hara, and Dr. Lance Sherry.

Lessons learned will be discussed within a variety of contexts, including space missions, aviation, nuclear power plant operations, and medicine. An overarching theme throughout the course is identifying and recasting common misconceptions about human factors while providing useful solutions to NASA human factors issues.

Objectives

At the conclusion of this lesson, you will be able to:

- Understand the objectives of the course.
- Identify the schedule and course requirements.
- Identify the faculty and other participants.
- Use the layout and symbols to navigate through the Participant Manual.
- Provide appropriate feedback using the participant polling devices.

Lesson 1: Logistics

Class Schedule

	TUESDAY December 5	WEDNESDAY December 6	THURSDAY December 7
Morning 8:00 a.m.– 11:30 a.m.	Welcome/Orientation Lesson 1—Logistics Lesson 2—NDE Introduction Break Lesson 3—Human Factors Overview	Lesson 5— Developing In-Space Systems Lesson 6— Engineering a New System Break Lesson 7—Procedure Development	Lesson 10—Control Center Design (8:00–9:30) Break Lesson 10—Control Center Design (10:00–12:00)
Lunch: 11:30 – 12:30 p.m.		Working Lunch 12:00–1:00	
Afternoon	Lesson 4—Human Characteristics/ Capabilities Break Lesson 4—Human Characteristics/ Capabilities Lesson 11—Ground Operations	Lesson 7—Procedure Development Break Lesson 8— Maintenance/ Manufacturing Break Lesson 9—Mishap Investigation Lessons Learned	Lesson 13— Design & Analysis of Human- Computer Interaction Process (HCIP) Lesson 12—Human Factors Approach Exercise Break Lesson 14—Wrap-Up
5:30 p.m.	Reception/Poster Session		

Course Goal and Requirements

The goal of this course is to present detailed case studies from the career experiences of Dr. Cynthia Null and problem-solving

activities involving human factors to a new generation of NASA engineers and scientists, designated contractors, university professors, and graduate students in engineering programs.

This course will present elements of the following topics:

- Human Factors Introduction.
- Human Factors Overview.
- Human Characteristics/Capabilities.
- Developing In-Space Systems.
- Engineering a New System.
- Procedure Development.
- Maintenance/Manufacturing.
- Mishap Investigation Lessons Learned.
- Control Center Design.
- Ground Operations.
- Human Factors Approach.
- Design & Analysis of Human-Computer Interaction Process (HCIP).
- Wrap-Up.

Teaching Methodology

The 24 hours of class time break down as follows:

Lecture and Discussion	18 hours 30 minutes
Problem-Solving Activities	4 hours
Participant Evaluation and Discussion	1 hour
Course Evaluation	30 minutes

Dr. Null, the lead instructor for this course, intends to maintain a very high level of technical discourse that focuses on the lessons learned from a series of case studies.

Dr. Null will provide you with an opportunity to ask questions and get feedback. You are expected to participate in all classroom activities and problem-solving exercises.

How to Use This Manual

After you complete the course, you can use this manual to help recall topics covered in the course. During course delivery, you are not expected to follow along using the narrative in this manual. You will, however, be expected to review the directions for the activities it describes.

The manual has five main components:

- *Lesson 1* contains the course schedule, evaluation scheme, mission, and topics. It also explains the layout and organization of your Participant Manual.
- *Lesson 2* will introduce all participants.
- *Lessons 3–13* are content lessons.
- *Lesson 14* includes the course exam and an open Q&A session with the instructors.
- *Slide note pages* contain copies of the PowerPoint slides used in the course and space for taking notes.

Lesson Titles

The lessons that Dr. Null and her colleagues will present are:

- Lesson 2: NDE Introduction.
- Lesson 3: Human Factors Overview.
- Lesson 4: Human Characteristics/Capabilities
- Lesson 5: Developing In-Space Systems.
- Lesson 6: Engineering a New System.
- Lesson 7: Procedure Development.
- Lesson 8: Maintenance/Manufacturing.
- Lesson 9: Mishap Investigation Lessons Learned.

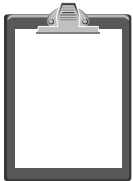
- Lesson 10: Control Center Design.
- Lesson 11: Ground Operations.
- Lesson 12: Human Factors Approach Exercise.
- Lesson 13: Design & Analysis of Human-Computer Interaction Process (HCIP).
- Lesson 14: Wrap-Up.

Symbols

Throughout this manual, two symbols appear in the left margin of the pages.



The key shown at left indicates a key concept in the text.



The clipboard shown at left precedes a list of important items presented in the text.

Course Prerequisites

This course has been designed for NASA scientists and engineers with 2–5 years of experience. You are also expected to have completed the precourse online comprehension check with a minimum score of 80 percent.

Evaluations

This course has two types of evaluation: course and participant. The course evaluation has three parts: precourse, classroom conclusion, and post-course. The participant evaluation also has three parts: precourse comprehension check, classroom informal assessments, and final check.

Course Evaluation

The precourse evaluation uses Zoomerang, a Web-based tool that presents a series of questions. It takes only a few minutes to complete and provides valuable information to the course designers.

The classroom conclusion evaluation consists of your daily comments on each lesson.

Your comments will be recorded electronically on the last day of the class using the participant polling devices (PPDs) that you will learn more about later.

Several weeks after you complete this course, you will receive a post-course evaluation e-mail asking for your reflections on the course. Like the precourse evaluation, the post-course evaluation will use the Zoomerang Web-based tool. It will take only a few minutes to complete. Your feedback is appreciated.

Participant Evaluation

The comprehension check built into the precourse is a short, automatically scored multiple-choice quiz. When you earn a passing score on the quiz, you can print a precourse completion certificate. You can take the quiz as many times as you choose.

During the course there will be a number of classroom informal assessments to provide you with feedback on your participation in activities and discussion. Your responses to questions will be evaluated by Dr. Null and her colleagues.

The final check at the end of the course will be a multiple-choice test. Your responses will be gathered with participant polling devices. Your course certificate of completion will be awarded on the basis of those results.

Photographs and Other Media

All photographs, drawings, illustrations, schematics, animations, and videos used in this course are courtesy of NASA, unless otherwise noted.

Summary

This lesson has identified the objectives of this course, acquainted you with the course requirements and schedule, introduced you to the faculty, explained how to use this manual, and described the course feedback mechanisms. The next lesson will introduce the course instructors and contributors to the course material.

General Human Factors References

Wickens, C.D., Lee, J.D., Liu, Y., & Becker, S.E. G (2004). *An Introduction to Human Factors Engineering*, 2nd edition, Prentice Hall.

Abbreviated introductions to human factors engineering:

Gabriel, R.F.(2003), *What Engineers and Managers Need to Know about Human Factors*. SAE International.

Noyes, Jan. (2001). *Designing for Humans*. Psychology Press.