This Curriculum Guide will help you plan your learning journey through STEP Levels 2, 3 and 4. It provides a detailed listing of all the courses and activities that comprise the curriculum for the STEP discipline you've chosen.

For each STEP level there are three elements you must complete: Core and Discipline training courses, On-the-Job Training (OJT), and Qualification.

**CORE COMPETENCIES**

- **BUSINESS OF NASA**
  - Budgets, Contracting Principles, Governance Models, Legal, Risk Management, and Decision Analysis

- **FOUNDATIONS OF MISSION SUCCESS**
  - Engineering Principles, Requirements, Root Cause, Mishap Investigation, Corrective Actions, and Lessons Learned

- **PERSONAL EFFECTIVENESS**
  - Emotional Intelligence, Influence, Change Management, Leadership, Negotiations, Oral and Written Communications, Self-Awareness, Biases and Team Dynamics

**DISCIPLINE COMPETENCIES**

- **SAFETY MANAGEMENT**

- **MEASURING/EVALUATING/CONTROLLING HAZARDS**
  - Measurement and Monitoring, Hazards Analysis, Hierarchy of Controls

- **RISK MANAGEMENT**

- **HAZARD RECOGNITION/UNDERSTANDING**
  - Construction Hazards, Operational Hazards, Material Handling Hazards, Ergonomics, Launch and Re-Entry Hazards, NASA Specific Hazards, Environmental Hazards

- **MISHAP INVESTIGATION**
  - NPR 8621.1, Mishap Preparedness, Mishap Response, Mishap Report, Corrective Action, Human Factors in Mishap Investigation

**ENROLL AND FIND OUT MORE INFORMATION**

STEP website: nsc.nasa.gov/STEP

**TECHNICAL DISCIPLINE TEAM LEAD (TDTL)**

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**NASA SAFETY CENTER HELP DESK**

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216.433.9672 (9NSC)
LEVEL 2

OPERATIONAL SAFETY

LEARNING OUTCOMES

• Describe budget and contracting processes and NASA’s governance model.
• Explain the mishap investigation process, SMA products in the lifecycle, and lessons learned processes.
• Identify Operational Safety practices that recognize, control, and mitigate hazards.
• Describe basic safety hazard recognition concepts, methods, and applications using knowledge gained in hazardous energy, fall protection, industrial hygiene, and construction safety.
• Correlate connections between NASA, Occupational Safety and Health Administration (OSHA) general industry, and construction safety regulations while applying the most stringent requirements for eliminating or minimizing hazards.
• Prevent mishaps and promote workplace safety and health using reporting, recordkeeping, lessons learned, job hazard analysis, and cultural change.

CORE COURSES*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>002-08</td>
<td>Mishap Investigation Roles and Responsibilities</td>
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<tr>
<td>002-09</td>
<td>Completing the Investigation and Mishap Report</td>
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<tr>
<td>002-10</td>
<td>Introduction to Root Cause Analysis</td>
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<td>038-01</td>
<td>NASA Safety Reporting System</td>
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<td>CORE-CONT</td>
<td>Types of Contracts</td>
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<tr>
<td>CORE-DA</td>
<td>Decision Analysis for STEP</td>
</tr>
<tr>
<td>CORE-FAR</td>
<td>Federal Acquisition Regulation (FAR) Overview</td>
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<tr>
<td>CORE-IPM</td>
<td>Introduction to Project Management for SMA</td>
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<tr>
<td>CORE-NBO</td>
<td>NASA Budget Overview for SMA</td>
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<tr>
<td>CORE-NGO</td>
<td>NASA Governance Overview for SMA</td>
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<tr>
<td>CORE-NLO</td>
<td>NASA Legal Overview for SMA</td>
</tr>
<tr>
<td>CORE-RFS</td>
<td>Requirements Development and Tailoring</td>
</tr>
<tr>
<td>CORE-RM</td>
<td>Risk Management for STEP</td>
</tr>
<tr>
<td>CORE-SPL</td>
<td>SMA Products in the Program/Project Lifecycle</td>
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<tr>
<td>QE-215</td>
<td>Overview of NASA Lessons Learned Information Systems</td>
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<tr>
<td>QE-261</td>
<td>Corrective Action and Problem Reporting Systems Overview</td>
</tr>
<tr>
<td>SSFT</td>
<td>Building Personal Power through Influence</td>
</tr>
<tr>
<td>SSFT</td>
<td>Confronting Workplace Conflict</td>
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<tr>
<td>SSFT</td>
<td>Navigating Other People’s Emotions</td>
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<tr>
<td>SSFT</td>
<td>Navigating Your Own Emotions</td>
</tr>
<tr>
<td>SSFT</td>
<td>Organizations Change So Get Ready</td>
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<tr>
<td>SSFT</td>
<td>Take a Deep Breath and Manage Your Stress</td>
</tr>
</tbody>
</table>

CORE ON-THE-JOB TRAINING*

• Discuss the challenges, responsibilities, and lessons learned with the following roles: ex-officio, investigator, chair, mishap POC.
• Identify and review the Federal Acquisition Register clauses relating to Occupational Health and Public Safety.
• Identify systems your SMA office or procurement office uses to track the types of contracts at the center.
• Identify your center’s governance model and how it interacts with the Agency’s governance model and NASA Strategic Plan.
• Observe a project or Institutional Risk Board.
• Observe interactions between team members in meetings or on a project.
• Review a recent mishap investigation report.
• Become familiar with the NASA Lessons Learned Information System, select a topic of your choice, and analyze lessons learned.
• Review the report of the Columbia Accident Investigation Board.
• Review the requirements definition and requirements traceability documentation for a project.
• Review, support, or observe a developed project management plan.
• Review, support, or observe the process and products for a program cost estimate (Mission Directorate SMA Support or SMA organization).
• Trace a mishap corrective action plan.

* You only need to take Core once per level if pursuing multiple disciplines at same level.
DISCIPLINE COURSES

- OS-201 OSHA Competent Person
- OS-202 Managing Safety and Health in Construction
- OS-203 Safety and Health During Disaster Recovery
- OS-204 Conducting Tailgate Meetings for Supervisors and Managers for Construction
- OS-210 Introduction to the Occupational Safety and Health Administration
- OS-211 Struck-By and Caught-In/Between Hazards in Construction
- OS-212 Scaffold Safety
- OS-213 Welding and Cutting Hazards in Construction
- OS-214 Human-Robot Collaboration: Robot Safety Requirements
- OS-215 Confined Space
- OS-218 Hand and Power Tools in Construction
- OS-219 Excavation Safety
- OS-220 Energy Control Program - Lockout/Tagout
- OS-221 Personal Protective Equipment
- OS-225 Mastering Light: Introduction to Laser Safety and Hazards
- OS-230 Fire Prevention and Protection in Construction
- OS-232 Work Zone Traffic Safety
- OS-235 Facility Life Safety Concepts
- OS-236 Hazard Communication Program
- OS-239 Job Hazard Analysis
- OS-240 Hazard Identification and Control
- OS-241 Electrical Safety Basics
- OS-245 Powered Industrial Truck Safety Concepts
- OS-250 Overview of NASA Occupational Health Program
- OS-265 Stairways and Ladders in Construction
- OS-270 OSHA Recordkeeping Basics
- OS-271 Fall Protection in Construction
- OS-272 Mobile Crane Safety
- OS-275 Ground-Based Pressure Vessels Safety
- OSX-241 BioSafety
- OSX-255 Radiation Safety Concepts
- OSX-260 Slips, Trips and Falls
- OSX-265 Crane Safety Concepts
- OSX-350 Introduction to Ergonomics
- SS-200 Hazard Analysis Basics
- HQ-207 Cryogenics Safety
- HQ-222 Introduction to Federal Safety Program for Supervisors
- HQ-SMA-SCS Safety Culture for Supervisors

DISCIPLINE ON-THE-JOB TRAINING

- Demonstrate understanding, interpret, apply, and modify OS policy, methodology, and practices.
- Investigate a Type C or D incident at your Center, in accordance with established Center procedures for mishap investigation.
- Observe a team creating a fault tree, hazard analysis or FMEA or mishap investigation in support of a project or program.
- Observe/support at least two different types of design reviews in support of a project or program.
- Perform an inspection of an employee work area or perform a facility safety inspection.
- Read a mishap investigation report of a Type A or B incident.
- Read a program or a project Operational Safety and Mission Assurance Plan.
- Review the latest Audit Data Analysis on the NSC website for the Institutional, Facility, Operational Safety Audit (IFOSA) program.

QUALIFICATION

For more information regarding qualification go to the STEP Qualification Guidelines located on the STEP website.

To qualify at Level 2:
1. Complete STEP Level 1 and all Level 2 core and discipline training outlined by each curriculum.
2. Your supervisor and SMA Technical Discipline Team Lead (TDTL) must approve the qualification package.
LEVEL 3

OPERATIONAL SAFETY

LEARNING OUTCOMES

• Use contracting and cost estimating for programs and projects.
• Apply appropriate negotiations and oral and written communication skills.
• Apply facts, rules, procedures, principles, and theories pertinent to a given scenario, system or design using probability, statistics, human factors, hazard analysis, auditing, and investigation techniques for potential recommendations or corrective actions.
• Assess complex situations and their associated hazard impact utilizing fault tree and System Safety principles.
• Evaluate hazards with effective safety management principles and practices.
• Identify roles and responsibilities concerning NASA mishap reporting, root cause methodology, and the investigation process.

CORE COURSES*

CORE-ACE       Advocating for and Cost Estimating for SMA Support
CORE-ILT-CC    Crucial Conversations
CORE-NFS       Negotiations for SMA
CORE-NSE       NASA Systems Engineering Overview
SS-0023        Safety & Mission Assurance in the Acquisition Process
SSFT           Building Your Presentation
SSFT           Ensuring Successful Presentation Delivery
SSFT           Improving Your Technical Writing Skills
SSFT           Planning an Effective Presentation

CORE ON-THE-JOB TRAINING*

• Develop a Safety and Mission Assurance Plan (SMAP) for a program/project.
• Develop and lead a case study or lessons learned discussion with your organization, program or project using the Lessons Learned Information System, NASA Mishap Information System or audit data.
• Develop qualification board presentation and conduct a dry run with your TDTL.
• Participate in an activity that requires using the negotiation skills discussed in your coursework.
• Support the development of a cost estimate for a program (Mission Directorate SMA Support or SMA organization).

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DISCIPLINE COURSES

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>001-07</td>
<td>Introduction to Human Factors in Mishap and Close Call Investigation</td>
<td>OS-371</td>
<td>Introduction to Safety Management</td>
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<tr>
<td>002-11</td>
<td>NASA Interim Response Team Training</td>
<td>OS-373</td>
<td>Safety Supervision and Leadership</td>
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<td>002-14</td>
<td>NASA Root Cause Analysis</td>
<td>OS-EXTW-290</td>
<td>FEMA National Incident Management System</td>
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<td>OS-260</td>
<td>Industrial Hygiene for the Safety Professional</td>
<td>SS-0005</td>
<td>Probability and Statistics I</td>
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<td>OS-301</td>
<td>Safer By Design</td>
<td>SS-0009</td>
<td>Basic Fault Tree Analysis I</td>
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<td>OS-340</td>
<td>Facility System Safety</td>
<td>SS-0013</td>
<td>Risk Informed Decision Making (RIDM)</td>
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<tr>
<td>OS-370</td>
<td>Safety Management System Evaluation</td>
<td>SS-210</td>
<td>System Safety I</td>
</tr>
</tbody>
</table>

DISCIPLINE ON-THE-JOB TRAINING

- Assist in the definition, collection, and assessment of Operational Safety metrics data for a project, area or program.
- Assist in the planning, serve as an auditor, and assist in the closure of an Operational Safety audit (i.e. IFOSA, VPP, local audit or other).
- Audit the maintenance and recordkeeping of a facility’s maintenance organization, which performs inspection, testing and maintenance of critical safety systems (i.e. gas detection, fire alarm, sprinkler, laboratory exhaust, standby and emergency power systems).
- Conduct mishap investigation(s) as an individual investigator or as part of a board or team.
- Identify the locations of two laboratory exhaust hoods, welding booths or local ventilation devices.
- Review a Facility System Safety Program Plan or assist in reviewing or writing a Facility Safety Management Plan.
- Review and/or write lessons learned related to a functional area that you routinely deal with in your work assignment. Use the NASA Engineering Network to locate and or process lessons learned.
- Review two confined space entry permits or hot work permits.
- Write or assist a group in writing a corrective action plan/abatement plan.

QUALIFICATION

For more information regarding qualification go to the STEP Qualification Guidelines located on the STEP website.

To qualify at Level 3:
1. Complete STEP Level 2 in declared discipline and Level 3 core and discipline training outlined by each curriculum.
2. Pass a 60 question Level 3 Comprehensive Exam with a score of at least 70%.
3. Your supervisor and SMA Technical Discipline Team Lead (TDTL) must approve the qualification package.
4. Present to the Level 3 Qualification Board using the NASA Safety Center (NSC) Level 3 Qualification Board Template.
LEVEL 4
OPERATIONAL SAFETY

LEARNING OUTCOMES

- Evaluate team dynamics and biases.
- Create a leadership development and mentoring plan.
- Influence safety and health risk management and decision making related to safety organizational culture.
- Formulate conclusions for effective safety management programs.
- Control safety hazard compliance and effectiveness based on specific standards, criteria, requirements, audits, analysis, acquisition, and inspections.
- Assess hazard identification and prevention adequacy via existing hierarchy process controls through planning, training, benchmarking, monitoring, and analysis methods.

CORE COURSES*

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
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<tbody>
<tr>
<td>CORE-LMTD</td>
<td>NASA Leaders Making Tough Decisions</td>
</tr>
<tr>
<td>CORE-TDS</td>
<td>Team Dynamics for SMA</td>
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<tr>
<td>Books 24x7</td>
<td>9 Powerful Practices of Really Great Mentors: How to Inspire and Motivate Anyone By: Stephen E. Kohn, Vincent D. O’Connell</td>
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<tr>
<td>SS-212</td>
<td>The Space Shuttle: Thirty Years of Flight, Thirty Years of Lessons Learned</td>
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<td>SSFT</td>
<td>Building a Leadership Development Plan</td>
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<td>SSFT</td>
<td>Building the Foundation for an Effective Team</td>
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<td>SSFT</td>
<td>Developing a Successful Team</td>
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<td>SSFT</td>
<td>Encouraging Team Communication and Collaboration</td>
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<td>SSFT</td>
<td>Gauging Your Leadership Performance</td>
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<td>SSFT</td>
<td>Handling Team Conflict</td>
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<td>SSFT</td>
<td>Leading a Cross-functional Team</td>
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<td>SSFT</td>
<td>Leading Your Team Through Change</td>
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<tr>
<td>SSFT</td>
<td>Overcoming Unconscious Bias in the Workplace</td>
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<tr>
<td>SSFT</td>
<td>Overcoming Your Own Unconscious Biases</td>
</tr>
<tr>
<td>SSFT</td>
<td>Understanding Unconscious Bias</td>
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</tbody>
</table>

CORE ON-THE-JOB TRAINING*

- Analyze your team's trust level. Identify ways that you can improve trust in your team.
- Create a personal leadership vision and development plan.
- Develop and deliver a technical presentation, course, webinar, or guest lecture relative to your discipline.
- Identify your personal and team's unconscious biases.
- Serve as a mentor in your technical discipline for an individual or serve as a group mentor.
- Serve on a Source Evaluation Board as an evaluator or serve as a team member developing the technical requirements for a request for proposals.

* You only need to take Core once per level if pursuing multiple disciplines at same level.
LEVEL 4

DISCIPLINE COURSES

OSX-409    Principles of Occupational Safety and Health
OSX-411    Safety Management Techniques
OSX-412    Certified Safety Professional Preparatory Course

DISCIPLINE ON-THE-JOB TRAINING

• Actively participate in Operational Safety Working Group meetings, including presenting topics of interest.
• Become a mentor for others in Operational Safety. Guide other team members, including design team members, to understand the importance and benefits of upfront Operational Safety efforts, to influence the design and to provide high value contribution to the program.
• Conduct, lead or contribute significantly to benchmarking studies within NASA, DOD and other industries to achieve superior SMA System Safety processes.
• Lead a team in the study of a safety concern at your NASA Center.
• Prepare and deliver a lecture on a topic of your choosing to a group of peers.

QUALIFICATION

For more information regarding qualification go to the STEP Qualification Guidelines located on the STEP website.

To qualify at Level 4:
1. Complete STEP Level 3 in declared discipline and Level 4 core and discipline training outlined by each curriculum.
2. Your supervisor and SMA Technical Discipline Team Lead (TDTL) must approve the qualification package.
3. Pass a Peer Review Panel (PRP) before scheduling the Level 4 Qualification Board.
4. Present to the Level 4 Qualification Board using the NSC Level 4 Qualification Board Template.