Lecture 1: Understanding the INCOSE Certification Process

Tutorial on the INCOSE SE Handbook V4.0 in Preparation for SEP Certification Exam
Webinar Agenda

• Why Systems Engineering?
• What is INCOSE?
• What is the INCOSE SEP Certification?
• Review the INCOSE SEP Certification Application Process
• Review the Key Requirements of Certification
  – Education
  – Experience
  – Knowledge
  – Application
  – Exam
Your Instructor

Paul Martin, 
**ESEP, CTT+**
- Working as an Engineer since late ‘70’s
- GE → NAVSEA → NIMA → Army → DoD
- UMBC Adjunct Professor
- Involved with local INCOSE Chapter (Chesapeake)
- I’ve been teaching the INCOSE SEP Exam Prep Course since 2009

- But enough about me, what about you?
- Using the Chat function. Tell us:
  - Where do you live
  - Are you going after the ASEP/CSEP or ESEP?
  - Are you new to INCOSE?
The INCOSE Certification Process
"Another factor contributing to program failure is the shortage of technically trained people, especially systems engineers. A systems engineer translates technical needs into an overall system architecture that creates the best operational capability at the most affordable cost. As a project proceeds and goals or needs shift, systems engineers have to determine the difficult but necessary cost, schedule, and performance trade-offs to keep everything on track. As programs get bigger and more complex, the need for rigorous systems engineering increases."

SEs are Problem-solvers

Across an organization’s products or services, systems engineers also provide critical leadership for integrating the technical activities. They have skills to influence multidisciplinary teams to reach consensus on how the system solution should come together. As problem-solvers, they focus on outcome, not process.

~ John Thomas, INCOSE President
 Why Systems Engineers are Essential to Your Organization
What is INCOSE?

- The International Council on Systems Engineering (INCOSE) is a not-for-profit membership organization founded in 1990 to develop and disseminate the interdisciplinary principles and practices that enable the realization of successful systems.
- **MISSION:** Share, promote and advance the best of systems engineering from across the globe for the benefit of humanity and the planet.
- **VISION:** The world's authority on Systems Engineering.
INCOSE Products

- Annual INCOSE International Symposium
- Journal of Systems Engineering
- INSIGHT Magazine
- Systems Engineering Body of Knowledge (SEBoK)
- OMG Systems Modeling Language (OMG SysML™)
- INCOSE Systems Engineering Handbook
INCOSE has established a multi-level Professional SEP Certification Program to provide a formal method for recognizing the knowledge and experience of systems engineers, regardless of where they may be in their career.
The INCOSE certification program has been developed as the highest quality, independent assessment of system engineering professionals.

**Purpose and Design (benefits)**

- **Systems engineering community:**
  - Creates the standard to identify and develop systems engineering professionals.
  - Establishes a formal, recognized body of knowledge for the systems engineering community.

- **System engineering professionals:**
  - Provides a portable standard of recognition for attainment of knowledge, education, and experience.
  - Its recertification requirements serve as a mechanism for continued professional development.

- **Organizations/institutions:**
  - A universal, industry-approved measure of a professional’s knowledge – achieved through the independent evaluation of relevant tasks, projects, and programs.

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Certifications have been offered by INCOSE since 2004
What Is Certification?

- **It’s NOT a Certificate:** a document attesting to the fact that a person has completed an educational course
- **It’s NOT a License:** formal permission by the State to carry on some business or profession.
- **Certification is:**
  - Confirmation of an individual's competency (demonstrated education, experience, and knowledge) in a specified profession or occupational specialty
  - A formal process Issued by an organization
  - Voluntary
    - It is neither a barrier nor a gate to entering a job
    - However, it may be used as a qualifier in placement
Professional Societies and Certifications

• Project Management Institute
  – PMP Project Management Professional
  – PgMP Program Management Professional
  – CAPM Certified Associate in Project Management
  – ACP Agile Certified Practitioner

• International Information Systems Security Certification Consortium
  – CISSP Certified Information Systems Security Professional

• IEEE Computer Society
  – CSDP Certified Software Development Professional
The base ASEP, CSEP, and ESEP credentials cover the breadth of systems engineering at increasing levels of leadership accomplishments and experience.
Why is Certification Important?

For organizations…

- Formally recognizes the Systems Engineering capabilities of an organization’s professional staff
- Can be a discriminator for an organization’s proposals
- Can be used as part of the hiring and promotion process
- Provides an independent internal and external assessment
- Encourages employee participation in continuing education

INCOSE Certification sets an organization apart!
Successful Systems Engineering

INCOSE Certification focuses on the company's people. It complements an organizational initiatives.

INCOSE SEP Certifies SE Experience, Knowledge and Education

ISO & CMMI Certify SE Processes

Organizational Systems Engineering Processes

Experienced, Knowledgeable Systems Engineers
Certification Change in Focus

Certification focuses on the company’s people. It complements an organizational initiatives.

From Organization to People

Organization ABC…
- ISO 9000
- ISO 15504
- CMMI
- etc.

Individual First_Last …
- ASEP, CSEP, ESEP
- CSDP
- CAPM, PMP, PgMP
- CSSIP
- etc.

Understanding the INCOSE Certification Process
Why is Certification Important?

For individuals...

• Formally recognizes your Systems Engineering capabilities
• Provides a discriminator for job applicants
• Provides a competitive advantage in your career
• Provides a portable Systems Engineering designation that is recognized across industry domains.
• Participation in continuing education indicates your commitment to personal development

INCOSE Certification sets you apart!
Why is Certification Important?

For your teams...

- Allows the team to level-set on Systems Engineering concepts and activities
- Helps establish a common Systems Engineering language for your team
- This can help break down ...
  - geographic boundaries
  - organizational boundaries
  - cultural boundaries

INCOSE Certification is particularly useful for multi-organization, geographically distributed teams.
Ways to Leverage Certification

• Individuals
  – Recognition
    • Designation on business card, resume, signature, etc
  – Performance objective

• Organizations
  – Performance expectation
  – Career ladder alignment
  – Job advertisement
  – Proposal discriminator
  – Supplier qualification
Certification by the numbers

The INCOSE certification program has experienced impressive growth and increased recognition since its introduction in 2004.
Organizations with streamlined Certification processes

- Airbus Group
- Drexel University
- SAIC
- Roche Diagnostics
- ASTER TE
- AVIC IT
- Booz Allen Hamilton
- École Polytechnique
- Engility
- ISAE
- Jacobs
- LinQuest
- Lockheed Martin
- ManTech
- MITRE
- OPS Consulting
- Raytheon
- Stevens
- Thales
- University of New South Wales
- UTEP
- Perspecta
- WPI
The SEP Aligns with the Typical Levels of a Systems Engineering Career

InCOSE ESEP

- **ESEP focused on:**
  - Leadership
  - SE Accomplishments
  - Significant SE Experience

InCOSE CSEP

- **ESEP focused on:**
  - SE Experience
  - Applied SE Knowledge

InCOSE ASEP

- **ASEP focused on:**
  - SE Knowledge

SEP Candidates

You can enter at whatever SEP level is appropriate and can seamlessly transition between levels when ready.
Entry Level

Associate Systems Engineering Professional

- Targeted towards junior/maturing Systems Engineers and recent college graduates with limited Systems Engineering work experience
- ASEPs are certified against knowledge requirements through an exam based on the INCOSE SE Handbook
- ASEPs must be, and remain, INCOSE members ($145/year)
- Renewal every 5 years through on-going professional development, maximum duration of 15 years
- Available since 2008
ASEP Certification Process

Study

INCOSE SE Handbook

Application Development

1. Applicant Information

Submit Application And Fee
$150

Notify Applicant
Two weeks

Pay test fee
Schedule & Take Exam
(Prometric Test Center)

Pass

Notify Applicant
Two weeks

5 year Certification

Timeline

Timeline

Applicant has **up to one year** to pass the test. **Test is scheduled directly** with Prometric.

Understanding the INCOSE Certification Process
Foundation Level

Certified Systems Engineering Professional

- Targeted towards Systems Engineers with five or more years of Systems Engineering work experience
- CSEPs are certified against substantiated experience, education, and knowledge requirements
- Experience must be substantiated by 3-5 work-related references
- Knowledge certified through an exam based on the INCOSE SE Handbook
- INCOSE membership is required ($145/Year)
- Renewal every 3 years through ongoing professional development
- Available since 2004
CSEP Certification Process

Application Development

1. Verifiable Education
2. Verifiable Experience

Submit Application And Fee $300

Notify Applicant

1. Verifiable Education
2. Verifiable Experience

Reference Submittal
3. Applicant’s Advocates (three references knowledgeable about SE)

Notify Applicant

Four to six weeks

INCOSE SE Handbook

Pay test fee Schedule & Take Exam (Prometric Test Center)

APPLICATION

Applicant's own pace

INCOSE Application Center

INCOSE Evaluation

Pass

Or wait until Review is done.

Test is scheduled directly with Prometric.

3 year Certification

INCOSE CSEP

Applicant has up to one year to pass the test.

Reference Submittal

Two weeks

INCOSE Evaluation

Notify Applicant

Two weeks

Timeline

Understanding the INCOSE Certification Process

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Many Students apply for ASEP and Pass the Exam FIRST.

Then they take their time filling out the CSEP Application correctly and finding three references.
Senior Level

Expert Systems Engineering Professional

- Targeted towards senior Systems Engineering leaders with recognized systems accomplishments, who have many years of Systems Engineering work experience
- ESEPs are certified against substantiated professional leadership, systems engineering accomplishments, experience, and education requirements
- At least 10 years of experience must be substantiated by 3-5 work-related references
- Interviews used to validate leadership and significant systems accomplishments
- ESEPs must be, and remain, INCOSE members
- No renewal requirements other than INCOSE membership
- Available since 2010
ESEP Certification Process

1. Verifiable Education
2. Verifiable Experience
3. Applicant’s Advocates (three references knowledgeable about SE)
4. Verifiable Professional Development

Submit Application And Fee $550

INCOSE Application Center

INCOSE Evaluation

Notify Applicant

Notify Applicant

Mutual Agreement

Conduct Oral Review with Applicant and Up to Two References (Via telephone conference)

Pass Certification

Applicant has up to one year to complete the entire process.

Timeline

Applicant’s own pace

Four to six weeks

Two weeks

Understanding the INCOSE Certification Process
Key Requirements of Certification

These elements of the INCOSE certifications are measurable tangible parameters consistent with ISO guidelines for a certification program.
Certification Education Requirements

These elements of the INCOSE certifications are measurable tangible parameters consistent with ISO guidelines for a certification program.
Certification Education Requirements

• Technical Bachelor’s Degree (or international equivalent)
  – Acceptable engineering fields of study include: aeronautics, biomedical, chemical, civil, computer, electrical, environmental, mechanical, nuclear, software, systems
  – Acceptable other fields of study include: chemistry, computer science, mathematics, physics
  – If the Bachelor’s degree does not come from the above fields, then a Masters or Doctorate degree (or international equivalent) in those fields is acceptable
  – INCOSE is the final authority on degree applicability
Additional Experience Can be Substituted

- Minimum of 5 additional years of general engineering experience for non-technical Bachelor’s degree
  - Minimum of 10 years (with at least 5 in SE) for CSEP
  - Minimum of 25 years (with at least 20 in SE) for ESEP w/ CSEP
  - Minimum of 30 years (with at least 25 in SE) for ESEP w/o CSEP

- Minimum of 10 additional years of general engineering experience if no Bachelor’s degree
  - Minimum of 15 years (with at least 5 in SE) for CSEP
  - Minimum of 30 years (with at least 20 in SE) for ESEP w/ CSEP
  - Minimum of 35 years (with at least 25 in SE) for ESEP w/o CSEP
Certification Experience Requirements

These elements of the INCOSE certifications are measurable tangible parameters consistent with ISO guidelines for a certification program.
14 Functional Areas Recognized for Systems Engineering Experience

- **SE Technical Competencies**
  - Requirements Engineering
  - System and Decision Analysis
  - Architecture/Design Development
  - Systems Integration
  - Verification and Validation
  - System Operation and Maintenance

- **SE Management Competencies**
  - Technical Planning
  - Technical Monitoring and Control
  - Acquisition and Supply
  - Information and CM
  - Risk and Opportunity Management

- **SE Support Competencies**
  - Lifecycle Process Definition and Management
  - Specialty Engineering
  - Organizational Project Enabling Activities

- **Plus “Other”**
  - To allow for the variety of SE across domains
  - Applicants should describe what they are claiming as other experience

**Successful candidates must have balanced experience across multiple areas**
SE Disciplines/Functional Areas
Qualifying for SE Experience (1 of 2)
Attachment A - Experience Applicable for Certification

• **Requirements Engineering**: Preparing for or managing a Business or Mission analysis; Defining a Problem or opportunity space; Characterizing a solution space; Evaluating alternative solution classes; Preparing for Stakeholder Needs & Requirements Definition; Defining stakeholder needs; Developing Operational Concept and other Life Cycle concepts; Transforming needs into stakeholder requirements; Analyzing Stakeholder Requirements; Managing Stakeholder needs and requirements definition; Preparing for System Requirements Definition; Defining System Requirements; Analyzing System Requirements; Managing System Requirements.

• **System and Decision Analysis**: Preparing, performing and managing a system analysis; Decision Management, including Preparing for System Engineering Decisions; Analyzing decision information; Making and managing SE decisions.

• **Architecture/ Design Development**: Preparing for architecture definition; Developing architecture viewpoints; Developing models and views of candidate architectures; Relating architecture to design; Assessing candidate architectures; Managing the selected architecture; Preparing for design definition; Assessing alternatives for obtaining system elements; Establishing design characteristics and design enablers; Managing a system design;

• **Systems Integration**: Preparing, performing and managing system element implementation; Identifying, agreeing and managing system-level interfaces; Preparing and performing Integration; Managing integration results.

• **Verification and Validation**: Preparing and performing Verification; Managing verification results; Preparing and performing Validation; Managing Validation results; Preparing for, and performing System Transition; Managing results of System Transition; Obtaining Qualification, Certification and Acceptance.

• **System Operation and Maintenance**: Preparing for Operation; Managing results of Operation; Performing and supporting System/ Product Operation; Preparing for and performing Maintenance; Performing Logistics Support; Managing results of maintenance and logistics; Preparing for, performing and finalizing system disposal.
SE Disciplines/Functional Areas
Qualifying for SE Experience (2 of 2)
Attachment A - Experience Applicable for Certification

• **Technical Planning:** Defining an SE project; Planning an SE project and its technical management; Activating an SE project; Identifying and recording tailoring influences and mandated structures; Obtaining input from parties affected by the tailoring strategy; Making Tailoring decisions and selecting life cycle processes.

• **Technical Monitoring and Control:** Planning for SE project assessment and control; Assessing SE projects; Controlling projects from an SE perspective; Preparing for and performing System Measurement; Preparing for system Quality Assurance; Performing system product or service evaluations;

• **Acquisition and Supply:** Acquisition, including: Preparing for system/element acquisition; Advertising the acquisition and selecting the supplier; Establishing, maintaining and monitoring an acquisition agreement; Accepting a product or service from a supplier; Supply, including: Preparing for supply; Responding to a tender; Establishing, maintaining and executing a supply agreement; Delivering and supporting a product or service.

• **Planning Information and CM:** CM; Performing Configuration Identification; Performing Configuration Change Management; Performing Configuration Status Accounting; Performing Configuration Evaluation; Performing Release Control; Information Management, including Preparing for and performing information management

• **Risk and Opportunity Management:** Planning technical risk and opportunity management; Managing the technical risk profile; Analyzing, Treating and Monitoring technical risks and opportunities

• **Lifecyle Process Definition and Management:** Establishing Lifecycle Processes including defining and implementing Lifecycle Models; Assessing Lifecycle Processes and Models; Improving Lifecycle Processes and Models.

• **Specialty Engineering:** Performing professional-level systems engineering activities associated with one or more Specialty Engineering area(s).

• **Organizational Project Enabling Activities:** Infrastructure Management, including establishing and maintaining the Infrastructure; HR Management; Quality Management; Knowledge Management; Project Portfolio Management at Organizational level.

• **Other:** Other functions and activities performed that you can justify as Systems Engineering activities.
CSEP Certification Experience Requirements

• Systems Engineering Experience
  – Minimum 5 years of professional level experience in multiple SE functional areas (and any additional general years of experience necessary due to education status)
  – Minimum of at least 1 year of professional level SE experience in each of 3 or more of the 14 SE functional areas
  – Must be documented on the INCOSE application form

• Experience Confirmation
  – Recommendations from at least 3 colleagues / peers / managers
  – References must cover at least 5 years and 3 areas of SE experience claimed by the applicant (including any additional years)
  – References must be knowledgeable in Systems Engineering (or general engineering for any additional years)
  – Must be documented on the INCOSE reference form

CSEPs should have experience in performing some, but not necessarily all, of the SE functional areas
### Distribution of Systems Engineering Experience for CSEP

The CSEP candidate must have at least 1 year of SE experience in each of 3 or more of the 15 systems engineering functional areas.

<table>
<thead>
<tr>
<th>Option</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A4</th>
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<td>A1</td>
<td>A2</td>
<td>A3</td>
<td>Applicant’s Choice</td>
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</table>

CSEPs should have experience in performing some, but not all, SE areas.

Some Options for Distributing Five Years of SE Experience in Various SE Functional Areas (A1, A2, etc.)
The Application
All of the Application Material is Available On-line

Download the forms from INCOSE website
Understanding the INCOSE Certification Process

- Application for CSEP Certification (separate form for ASEP)
- Instructions for Filling out CSEP Application
- Instruction Letter to References
- Certification Reference Endorsement Form
Suggestions

• E-Mail prospective references – At least 5
  – All your references be SEs or at least someone able to “describe their knowledge of Systems Engineering that qualifies them to serve as references.”
  – Confirm their interest
  – Explain that they will need to describe their number of years and types of systems engineering experience they have had.
  • Not just their Job Titles but they need to explain what work they performed within the 15 Systems Engineering Experience Areas.
Dear so and so,

I’m applying for certification as a Systems Engineering Professional with the International Council on Systems Engineering (INCOSE). Part of the certification process requires three references who can attest to my systems engineering acumen. So I thought of you and how you can explain my work in [place here Systems engineering function(s) i.e. Requirements Engineering] for [place here the activity you did i.e. the SpaceAge contract where I analyzed the customer comments against the system spec and went through the CM process in order to incorporate the changes.]

They need a two week turn around so before I submit my application and start the clock I wanted to make sure my references were agreeable and available to help me out. So let me know if you can. No pressure if you’re uncomfortable with the request or, more likely, too busy. Just let me know so I can keep looking around. Attached are the instructions and form so you’ll know what you’ll be asked to do.

Thanks for the consideration. Just let me know if you can or can’t. If you can, I need the “reference’s information” (mailing address, title, etc) so I can fill out the application. Don’t fill out the forms until I send them to you again.

Let me know,
Experience to Matrix

• Read and understand the 15 SE Work Areas or Functions or Roles outlined in *Attachment A - Experience Applicable for Certification* in the INCOSE Application Instructions.
  – Even if you feel you were not doing Systems Engineering at the time, it may still count if it falls into one of these 15 SE Work Areas.

• Take each of your Work Experiences and break them up into these SE Functions.
  – Use the language provided in the descriptions of the SE Functions in Attachment A when describing your experience.

• Estimate the amount of time, in months, you spend doing each SE Function.
  – If you find that during your assignments or positions you were doing more than one SE Function, then figure out a percentage of time you spent on each function.
## Experience to Matrix

Notice the form will calculate the Total Numbers of Months. The bottom cell of P1 in matrix cannot exceed this.

This is put into Experience Matrix

This is put into Experience Matrix
## Experience to Matrix

<table>
<thead>
<tr>
<th>Work in Months by Position and SE Area</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
<th>P6</th>
<th>P7</th>
<th>Total Months of Effort in Each SE Area</th>
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Under P1 in Matrix: The form transferred the months I worked in Section 5: Experience.
# Experience to Matrix

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<th>SE Functional Areas</th>
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Total Months of Effort in Matrix
- The key is to ensure you have 12 months or more of SE experience in each of 3 or more of the 15 systems engineering functional areas
- (I could have stopped after P4)
Certification Knowledge Requirements

These elements of the INCOSE certifications are measurable tangible parameters consistent with ISO guidelines for a certification program.
Certification Knowledge Requirements

• CSEP/ASEP Exam Basis
  – “We recommend study of the current version of the INCOSE Systems Engineering Handbook which is the reference document for the certification examination.” Taken from INCOSE Certification Program FAQs

• Exam is
  – 2 hours in length
  – 120 questions
  – Administered electronically at world-wide Prometric locations
  – Pass/Fail results provided immediately upon exam completion

• Candidates are eligible for two re-tests within one year of application submittal

The INCOSE Systems Engineering Handbook is the basis for the CSEP & ASEP exams.
Representative Exam Questions

“The certification examination questions are currently multiple-choice questions. All correct answers must be selected from the possible answers given to receive credit for answering a question. A typical question may have five possible answers listed of which three are correct. Partial credit is not given for a question.”  

Taken from INCOSE Certification Program FAQs

- Which three of the following are methods to express functional behavior? (Choose three)
  - A. Network Tree (NT)
  - B. Behavior Diagram (BD)
  - C. Allocated Requirement Diagram (ARD)
  - E. Functional Flow Block Diagram (FFBD)
  - F. Integrated Definition for Functional Modeling (IDEF) Diagram

- Which are three justifications for CM? (Choose three)
  - A. facilitates communication
  - B. forces change evaluations
  - C. prevents requirements changes
  - D. controls requirements changes
  - E. encourages requirements changes

Note: These questions ARE NOT from the INCOSE Certification Exam. The format and content are similar (based on SEH v2A). They were created by CSM and Prometric to show question structure.
Representative Exam Questions

- Sample Questions from INCOSE
  - [https://www.incose.org/docs/default-source/certification/sample-questions.pdf](https://www.incose.org/docs/default-source/certification/sample-questions.pdf)
- Performed poorly in the 2014 beta exams.
- Representative of the format and content on the actual exam
- Assist in understanding how the INCOSE exam is structured.

Sample Exam Questions 2015

The INCOSE Certification Program Office has committed to release sample test questions to help guide applicants and training providers in understanding the format of the INCOSE knowledge exam. The following questions and answers are not planned to be used by the INCOSE Certification Program because of how they performed when tested on candidates in the 2014 beta exams. They are representative of the format and content on the actual exam and can be used by knowledge exam candidates to assist in understanding how the INCOSE exam is structured.

1. How may a system operator use a system to sustain engineering?
   A. by reviewing verification analysis
   B. by reviewing operator procedures
   C. through monitoring system performance data
   D. through monitoring the number of trained operators

2. Which two are commonly evaluated as part of the Project Assessment Process? (Choose two.)
   A. the network security policy
   B. the standards applied to the project
   C. the availability of necessary resources
   D. the availability of management to the project
   E. the compliance with project performance measures

3. What is an example of the wasteful practice of over-processing?
   A. Members of a team are split between three physical facilities.
   B. The vendor ships four rocket motors to a launch site two years before they are needed.
   C. An engineer takes a released interface document and reforms it to make it work better.
   D. A valve is selected by an engineer to meet a deadline and is requiring a subsystem redesign.

4. What are two practices an organization may use to determine the specific project? (Choose two)
   A. members of a team are split between three physical facilities
   B. the vendor ships four rocket motors to a launch site two years before they are needed
Getting the Handbook

- The INCOSE SE Handbook Fourth Edition digital copy is available for download from the INCOSE Store
  - INCOSE member
  - employees of CAB organizations,
  - students of Academic Council members.
- Member Log In at the INCOSE website.
- Proceed to the INCOSE Store
  - You will be required to "purchase" the item.
  - File will then be located in your Profile Home in your Digital Library
- The hard copy is only available at the Wiley Store.
  - The Individual Member Discount Code is available in the INCOSE Store as a digital download purchase.
  - 55% off
Go to your Profile Home for your Digital Library

To access what you purchased
Getting the Handbook

- Here’s a suggestion, take the pdf version of the Handbook and get a spiral bound double sided copy made at Office Depot or Staples (~ $45).
Preparing for the Exam

- Study the INCOSE SE Handbook
- Sign-up for my On-Line Class
  - Learn the framework of the 31 Processes within the INCOSE SE Handbook vs 4.0.
  - Have access to dozens of practice Quizzes.
  - Start to appreciate the context of Systems Engineering
The on-line class takes place in a open, easy-to-use, cloud-native Learning Management System.

CONTENT ACCESS 24/7
Over 14 Hours of recordings of previous on-line classes are available for you to watch at your convenience. Learn the material at your pace and in your time frame.
We use a Comprehensive Process Flow diagram of all 31 Processes from Handbook
To get a sense of what the Exam is like, we provide numerous Quizzes as well as a 120 Question practice Exam.

Check out the Sample Quiz from my Course
The 7 Classes cover the entire Handbook

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
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<td><strong>Class 4</strong></td>
<td><strong>Class 6</strong></td>
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<tr>
<td>SE Overview &amp; LC Stages</td>
<td>Project Planning</td>
<td>Requirements</td>
<td>Tech Processes</td>
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<td>After Class Quiz</td>
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<td>After Class</td>
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<td><strong>Class 7</strong></td>
<td>120 Question Practice Exam</td>
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Understanding the INCOSE Certification Process

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INCOSE SE Scholar Website

INCOSE SEP Exam Preparation Course [Self Paced Video version]

$650.00

An on-line course consisting of 7 modules with over 20 hours of instructional videos, covering the INCOSE Handbook vs 4.0. Includes study guides, Process Flow diagram, practice quizzes and tests. Study the material at your pace and in your time.

Use the Discount Code: ENCHANTED19 for a $150 off regular price

Good until March 31st

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Key Requirements of Certification

These elements of the INCOSE certifications are measurable tangible parameters consistent with ISO guidelines for a certification program.
So What Level of Certification is Right for You?

- If you have just started (or plan to start) practicing systems engineering or have recently graduated and are interested in systems engineering

- If you are a practicing Systems Engineer with more than five years of systems engineering professional work experience

- If you are a systems engineering leader with recognized systems accomplishments and have many years of systems engineering professional work experience
The Key Elements of INCOSE Certification (What is Certified?)

<table>
<thead>
<tr>
<th>SE Knowledge</th>
<th>Education</th>
<th>SE Experience</th>
<th>SE Leadership &amp; Accomplishments</th>
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<tr>
<td>Via an exam based on the INCOSE SE Handbook</td>
<td>Via confirmation of technical degree (or additional experience, if required)</td>
<td>Via confirmation of applicant’s and references written experience claims</td>
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<tr>
<td>Via an exam based on the INCOSE SE Handbook</td>
<td>Via confirmation of technical degree (or additional experience, if required)</td>
<td>Via confirmation of applicant’s and references written experience claims</td>
<td>Via oral review of applicant (and references, if required)</td>
</tr>
</tbody>
</table>

These four elements (education, knowledge, experience, and leadership & accomplishments) allow for a variety of SE certifications to be earned.
How Long Will It Take to Get Certified?
There is no one answer. Much depends on the applicant.

**A. ???????**
- INCOSE
  - Receives application & fee
  - Checks completeness of submittal
  - Notifies applicant by e-mail that application was received and is complete or has missing material

**B. < 2 weeks**
- Applicant
  - Downloads information from INCOSE web page
  - Collects information
  - Fills out and submits forms via e-mail
  - Pays fee on-line

**C. Averaging 50 days**
- INCOSE
  - Sends CSEP certificate via postal mail to applicant

**D. Averaging 21 days**
- References submit recommendations via e-mail to INCOSE.
- Applicant submits missing material.

**E. Averaging 62 days**
- INCOSE
  - Receives recommendations from references and missing information
  - Evaluates education and experience
  - Notifies applicant of evaluation results.
  - If minimum requirements are met, authorizes exam

**F. < 2 weeks**
- Applicant
  - Schedules exam with test organization
  - Takes exam at test site
  - Receives results immediately
  - Schedules another exam if needed

*While the times vary, the average time for CSEP is ~200 days.*
Certification Renewal Requirements

- Certification is Valid for
  - 3 Years for CSEP and must maintain INCOSE membership
  - 5 Years for ASEP and must maintain INCOSE membership
  - Indefinite for ESEP, but must maintain INCOSE membership

- Certification renewal requires
  - Minimum of 120 Professional Development Units (PDUs)
  - Renewal application
  - Continuing education log submittal
  - Must be submitted before current certification period ends
  - Up to 30 “excess” PDUs can be “carried forward”

INCOSE Certified professionals have an ongoing growth and learning obligation
## PDUs for Certification Renewal (1 of 2)

<table>
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<tr>
<th>Professional Development Activities</th>
<th>Credit</th>
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<tr>
<td>Technical Society Participation Category</td>
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<tr>
<td>Be an INCOSE individual, senior, or student member</td>
<td>5 PDU/year</td>
<td>15 PDU</td>
</tr>
<tr>
<td>Attend Professional Technical Society local event/chapter presentation/exhibit</td>
<td>1 PDU/hour attendance</td>
<td>30 PDU</td>
</tr>
<tr>
<td>Attend Professional Technical Society Conference/Symposium</td>
<td>1 PDU/hour attendance</td>
<td>72 PDU</td>
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<tr>
<td>Participate on Professional Technical Society working groups, committees, etc.</td>
<td>1 PDU/hour of effort</td>
<td>No limit</td>
</tr>
<tr>
<td>Perform Leadership Role in Professional Technical Society at local, national or international level</td>
<td>1 PDU/hour of effort</td>
<td>No limit</td>
</tr>
<tr>
<td>Volunteer activities with youth in schools or community related to science, technology, engineering, and math(STEM)</td>
<td>1 PDU/hour of effort</td>
<td>72 PDU</td>
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<tr>
<td>Volunteer activities with community, school, or non-profit organizations that help them accomplish their technical needs</td>
<td>1 PDU/hour of effort</td>
<td>30 PDU</td>
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<tr>
<td>Earn an SE-relevant, exam-based, professional certification other than INCOSE SEP</td>
<td>5 PDU/certification</td>
<td>10 PDU</td>
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*(all must be relevant to the practice of systems engineering)  (Proof of all activities required if audited)*
# PDUs for Certification Renewal (2 of 2)

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<tr>
<td>Complete a technical graduate level course</td>
<td>2 PDU/class hour</td>
<td>No limit</td>
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<tr>
<td>Attend educational course, tutorial, or seminar</td>
<td>1 PDU/hour</td>
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<tr>
<td>Teach professional development coursework, including presentations not part of job function.</td>
<td>2 PDU/hour (prep) 1 PDU/hour (teach)</td>
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<td>Write &amp; publish SE article</td>
<td>5 PDU/article</td>
<td>No limit</td>
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<tr>
<td>Write &amp; publish SE book</td>
<td>30 PDU (primary author)/book 10 PDU (contributing author)/book</td>
<td>No limit</td>
</tr>
<tr>
<td>Attend vendor presentation with educational value</td>
<td>1 PDU/hour attendance 5 PDU/year limit</td>
<td>15 PDU</td>
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</tbody>
</table>

| **SE Job Function Participation Category** |        |               |
| Receive Patent Award | 10 PDU/award | No limit |
| Serve as designated lead systems engineer for a system, product or service | 15 PDU/year | 45 PDU |
| Lead organization to increase INCOSE systems engineering certifications | 5 PDU/year | 15 PDU |
| Volunteer (i.e., non-compensated) activities within your organization related to engineering and science | 1 PDU/hour of effort (10 PDU/year limit) | 30 PDU |

*(all must be relevant to the practice of systems engineering) (Proof of all activities required if audited)*
All of the **Renewal Material** is Available On-line

Download the **forms** from INCOSE website
By the Way

- A lot of information in this brief came from an INCOSE Overview Brief

- Can find the original at the INCOSE SEP website:

  INCOSE Certification Resources
Any Questions?