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Lecture 1:
Understanding the INCOSE Certification Process

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

INCOSE
International Council on Systems Engineering

Webinar Agenda

- 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

  Education + Experience → Application

  Knowledge → Exam

Your Instructor

Paul Martin, *ESEP, CTT+*

- B.S. 1979 Widener University, General Engineering
- M.S. 1994 George Mason University, Systems Engineering
- Working as an Engineer for several decades
  - GE → NAVSEA → NIMA → Army → DoD
- UMBC Adjunct Professor since 2006
  - Teaching Graduate Level Systems Engineering Classes
- Involved INCOSE & local Chesapeake Chapter since 2000
  - Programs (1x) and Communications Director (2x)
- Certified as INCOSE **ESEP** & CompTIA **CTT+**

I've been teaching the INCOSE SEP Exam Prep Course since 2009

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What is INCOSE?

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.**
- INCOSE is designed to **connect SE professionals with educational, networking, and career-advancement opportunities** in the interest of developing the global community of systems engineers and systems approaches to problems.
- We are also focused on **producing state-of-the-art work products** that support and enhance this discipline's visibility in the world.
- **MISSION:** To address complex societal and technical challenges by enabling, promoting, and advancing systems engineering and systems approaches.
- **VISION:** A better world through a systems approach.

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 Certification Program

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.

INCOSE SEP Program Purpose and Benefits

The INCOSE SEP program offers independent assessment of system engineering professionals benefiting:

- **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.
  - Serves as a mechanism for continued professional development through recertification requirements.
- **Organizations/institutions:**
  - Offers 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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The INCOSE Certification Overview

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
  - It is Voluntary
    - And could be used as a qualifier in placement

Professional Societies and Certifications

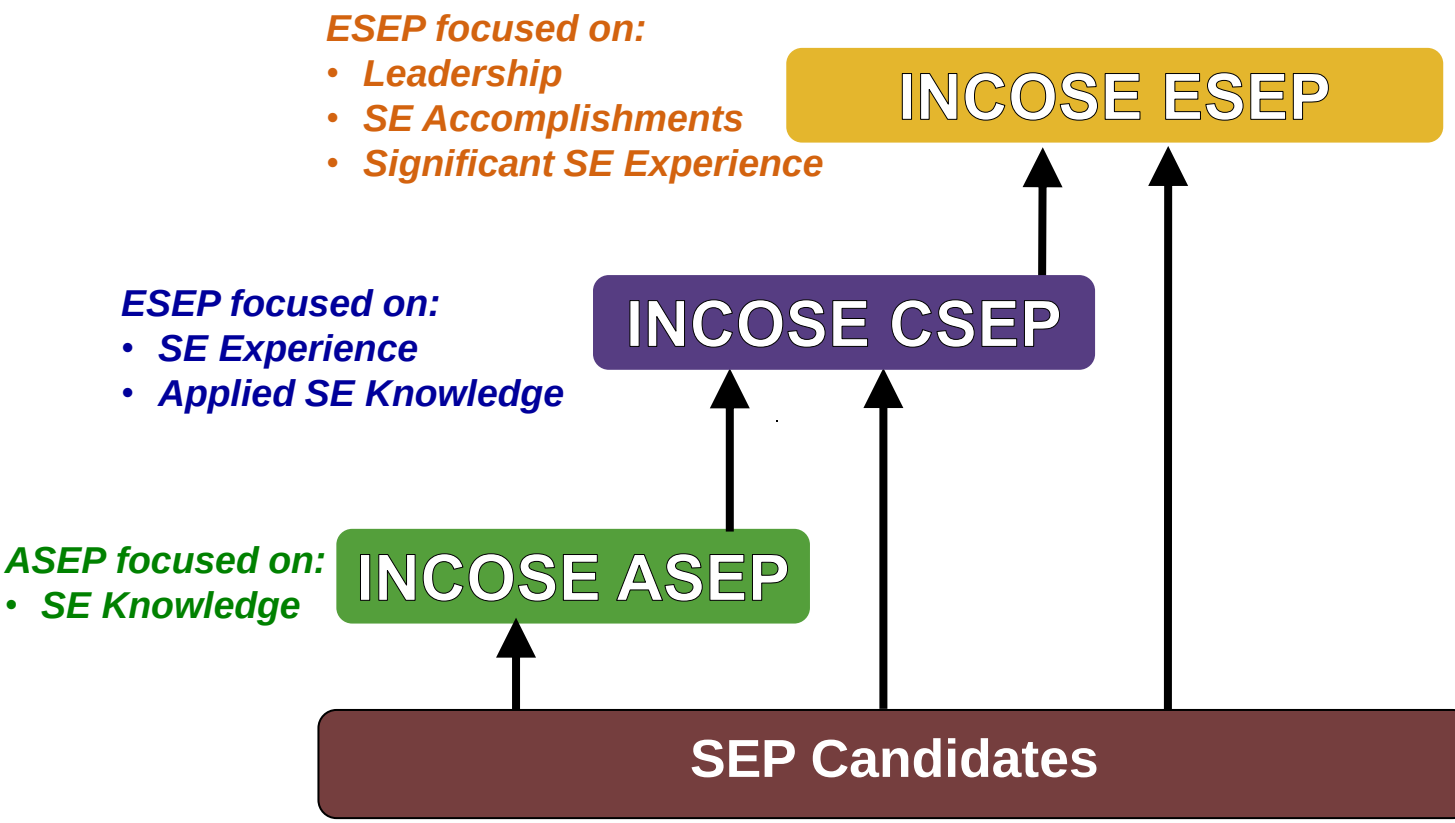
- Project Management Institute
  - **PMP** Project Management Professional
  - **PgMP** Program Management Professional
  - **CAPM** Certified Associate in Project Management
  - **ACP** Agile Certified Practitioner
- International Information Systems Security Certification Consortium
  - **CISSP** Certified Information Systems Security Professional
- IEEE Computer Society
  - **CSDP** Certified Software Development Professional

INCOSE Multi-Level Certification

The base ASEP, CSEP, and ESEP credentials cover the breadth of systems engineering at increasing levels of leadership accomplishments and experience.

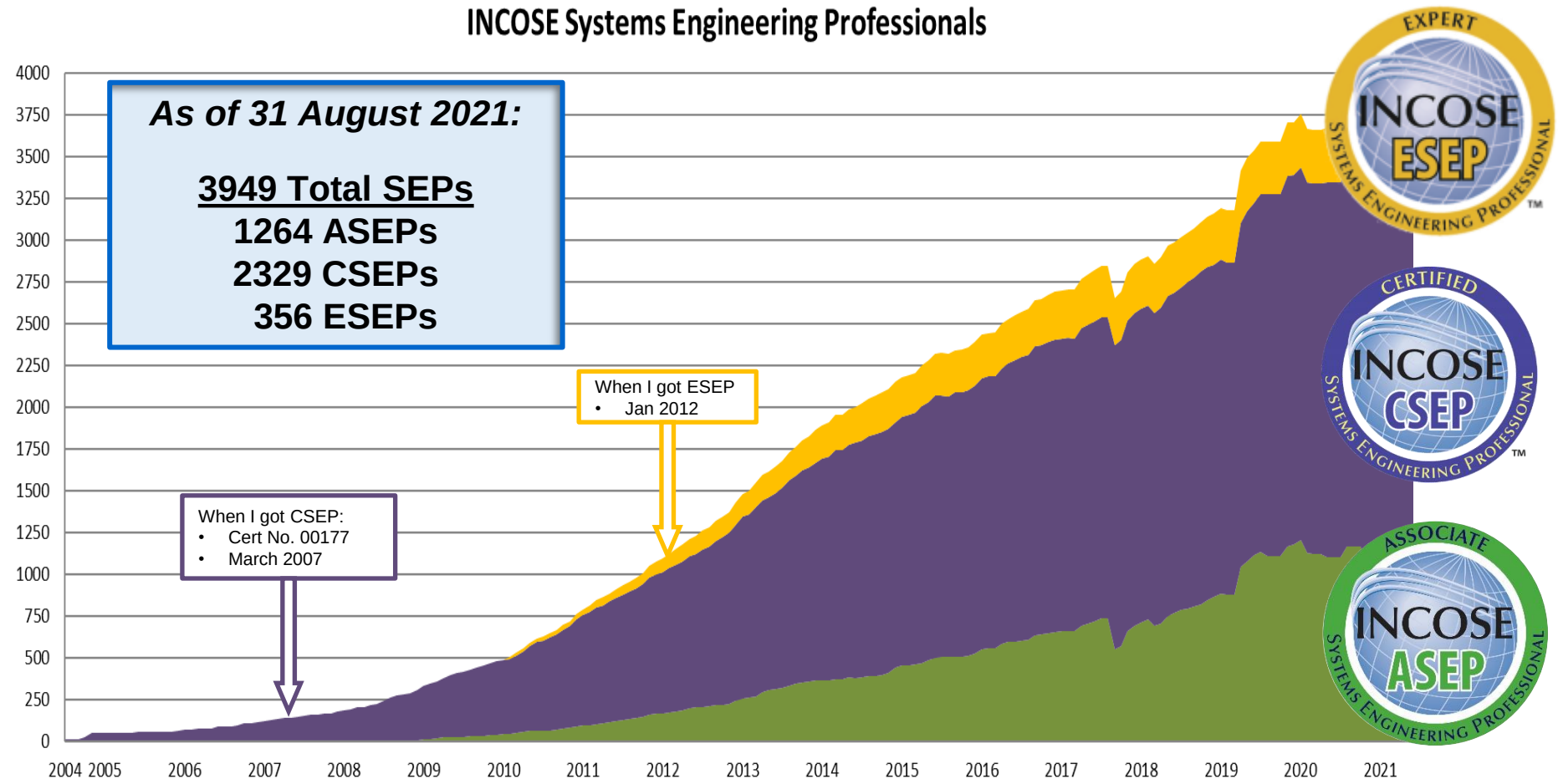
Multi-Level Base Credentials - For every stage of your career

The SEP Aligns with the Typical Levels of a Systems Engineering Career



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

Certification by the numbers



The INCOSE certification program has experienced impressive growth and increased recognition since its introduction in 2004

Compare PMP to SEP

SEPs are a Rare Breed

Project Management Institute

900,000 **active** **PMP** credential holders globally

INCOSE SEP SYSTEMS ENGINEERING PROFESSIONAL ™

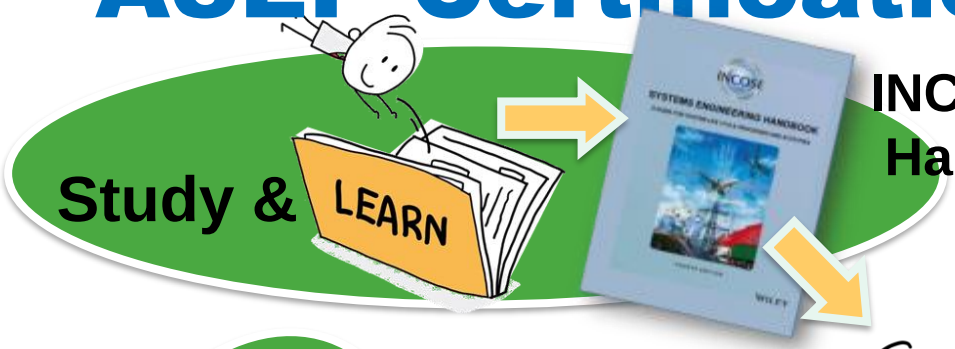
3,949 **active** **SEP** credential holders globally

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** ($160/year)
- Renewal every 5 years through on-going professional development, maximum duration of 15 years
- Available since 2008

ASEP Certification Process



INCOSE SE Handbook

Application Development

1. Applicant Information

- **Join INCOSE [$160]**
- **Submit Application And Fee [$180]**

Pay test fee [$80] Schedule & Take Computer Exam

INCOSE Application Center

Notify Applicant

Two weeks

5 year Certification

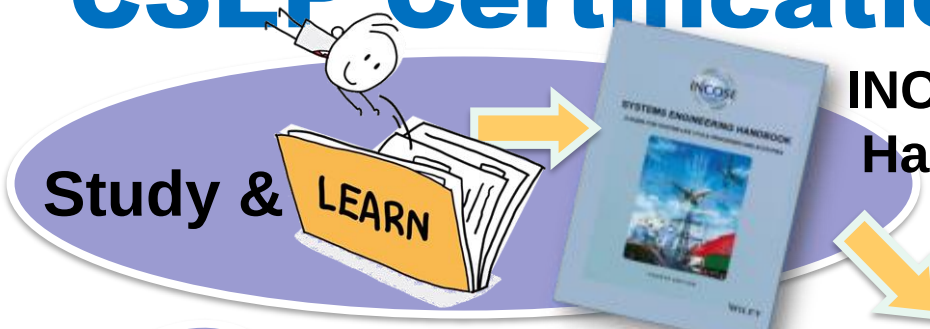
Applicant has **up to one year** to complete the process once started.

Foundation Level

Certified Systems Engineering Professional

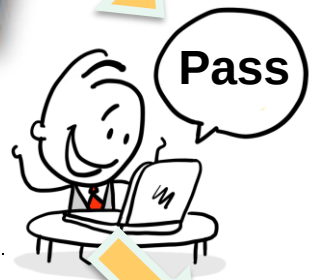
- Targeted towards **Systems Engineers with five or more years of Systems Engineering work experience**
- CSEPs are certified against substantiated **experience, education, and knowledge requirements**
- Experience must be **substantiated by 3-5 work-related references**
- **Knowledge certified through an exam** based on the INCOSE SE Handbook
- **INCOSE membership is required** ($160/Year)
- Renewal every 3 years through ongoing professional development
- Available since 2004

CSEP Certification Process



INCOSE SE Handbook

Pay test fee [$80]
Schedule & Take Computer Exam



Application Development

1. Verifiable Education
2. Verifiable Experience

- Join INCOSE [$160]
- Submit Application And Fee [$350]

Reference Submittal

3. Applicant's Advocates (three references knowledgeable about SE)

INCOSE Application Center

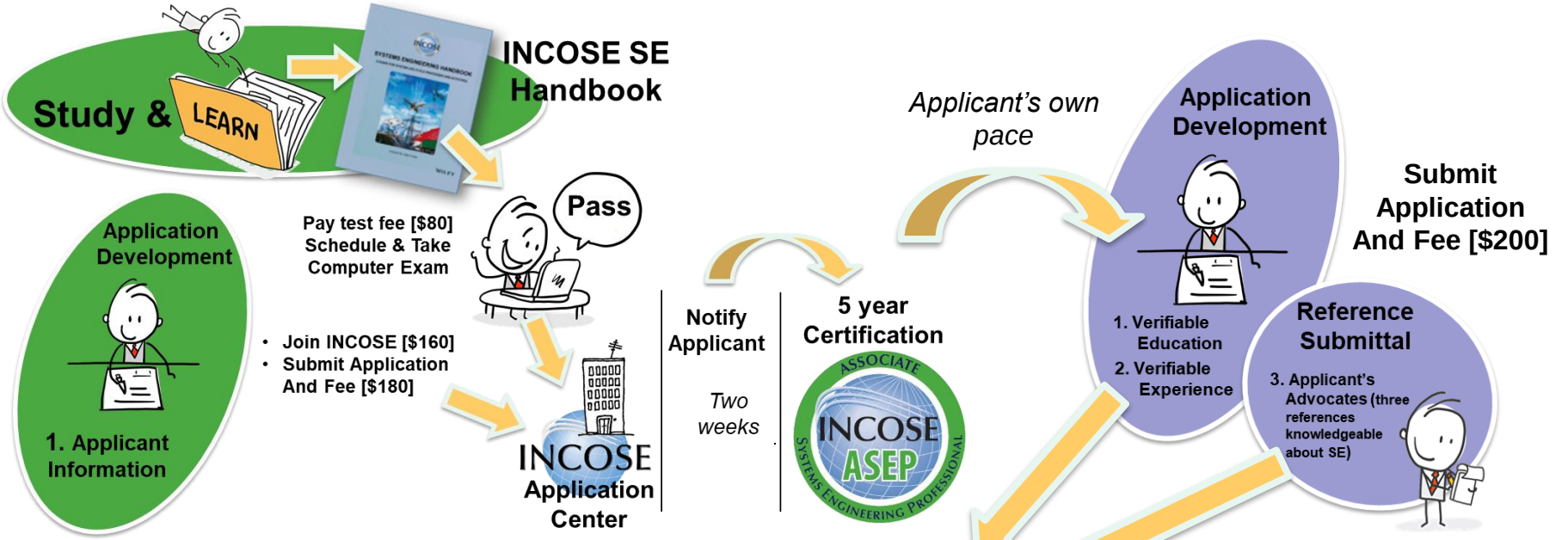
Notify Applicant

Four to six weeks

3 year Certification

Applicant has **up to one year** to complete the process once started.

ASEP to CSEP Certification Process



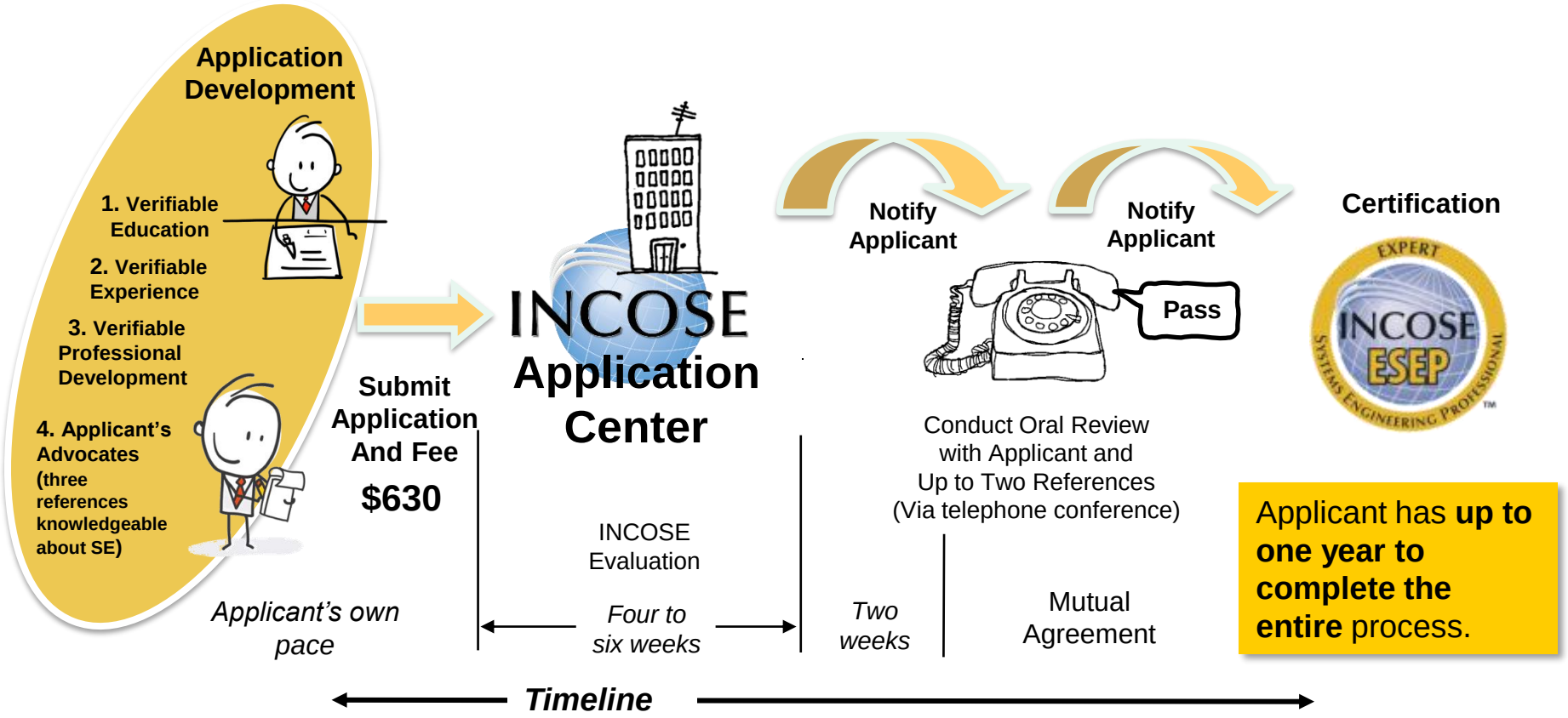
- Many Students apply for ASEP and Pass the Exam FIRST.
- Then they take their time filling out the CSEP Application correctly and finding three references.

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



Organizations with streamlined Certification processes

- Airbus Group
- ASTER Technology & Engineering
- AVICIT
- BAE Systems
- Booz Allen Hamilton
- Cummins
- Jacobs Technology
- L-3 Communications
- KBR Wyle
- LinQuest
- Lockheed Martin
- ManTech
- MITRE
- OPS Consulting
- Perspecta
- Raytheon
- Roche Diagnostics
- SAIC
- Thales

What streamlined Certification processes means

- Based on the agreement with INCOSE and the company. Might mean:
  - Company will review application before it is submitted
  - Only need 2 References needed
- Ask your company INCOSE representative what the agreement means for you

https://www.incose.org/systems-engineering-certification/certification-agreements

Academic Equivalency

- University coursework approved as an alternative to the INCOSE knowledge exam

- I developed and teach **SYST 660: Systems Engineering Principles**
- Recognized by INCOSE as having the same content as the INCOSE knowledge exam

- Colorado State University
- Cornell University
- Drexel University
- Missouri S&T
- Naval Postgraduate School
- University of Alabama – Huntsville
- University of Detroit – Mercy
- **University of Maryland – Baltimore County**
- University of Michigan
- University of New South Wales
- Worcester Polytechnic Institute

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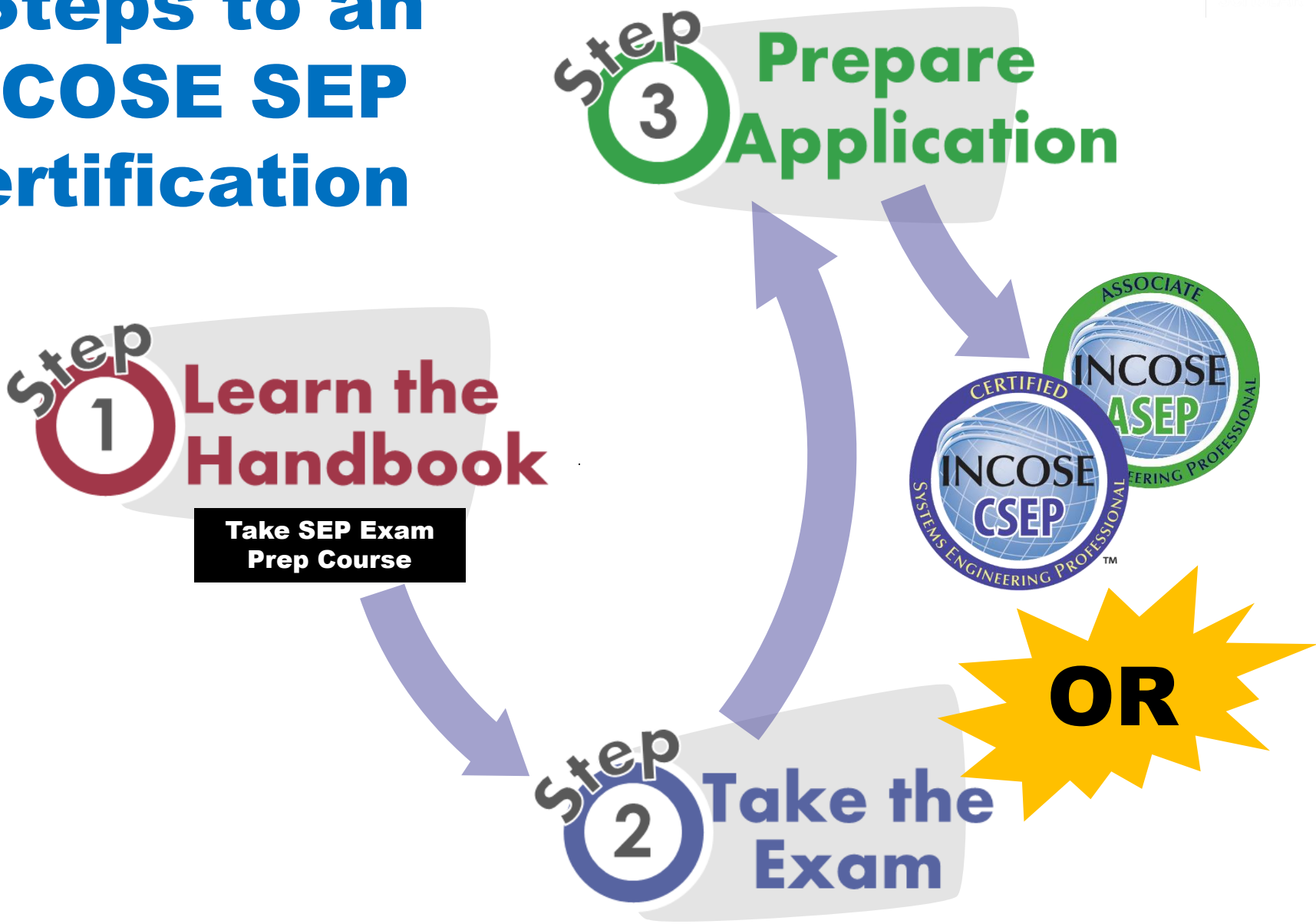
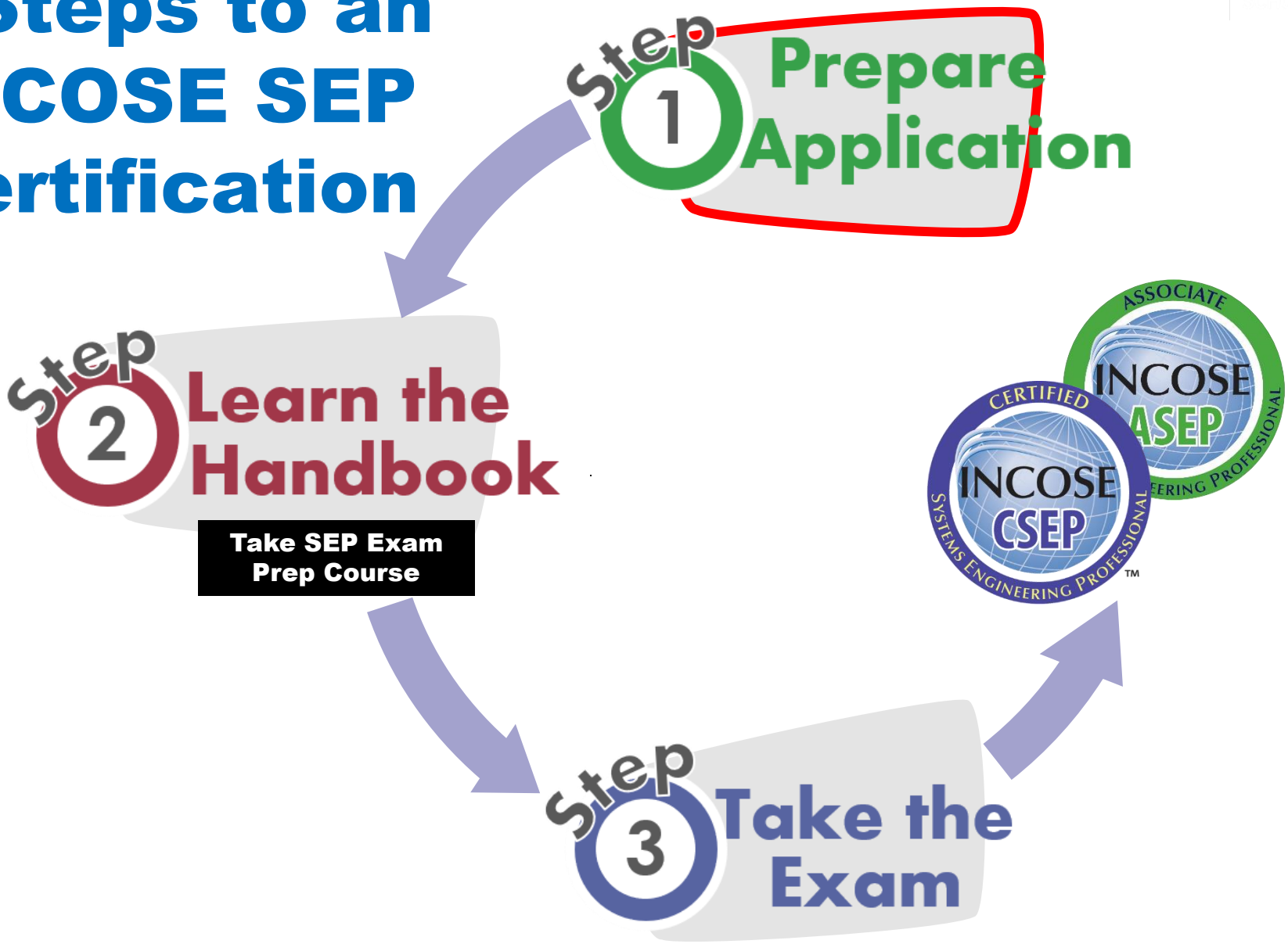
The INCOSE Certification Process

3 Steps to an INCOSE SEP Certification



3 Steps to an INCOSE SEP Certification

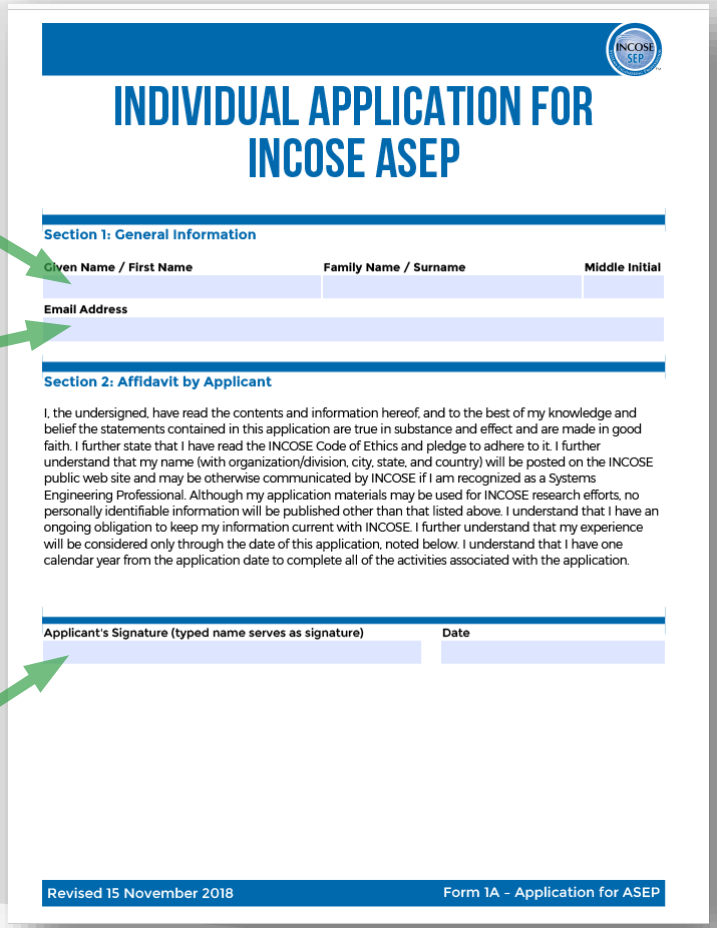


Step 1 Prepare Application OR Step 3

A. Name

B. Email

C. Sign it



INDIVIDUAL APPLICATION FOR INCOSE ASEP

Section 1: General Information

Given Name / First Name | Family Name / Surname | Middle Initial

Email Address

Section 2: Affidavit by Applicant

I, the undersigned, have read the contents and information hereof, and to the best of my knowledge and belief the statements contained in this application are true in substance and effect and are made in good faith. I further state that I have read the INCOSE Code of Ethics and pledge to adhere to it. I further understand that my name (with organization/division, city, state, and country) will be posted on the INCOSE public web site and may be otherwise communicated by INCOSE if I am recognized as a Systems Engineering Professional. Although my application materials may be used for INCOSE research efforts, no personally identifiable information will be published other than that listed above. I understand that I have an ongoing obligation to keep my information current with INCOSE. I further understand that my experience will be considered only through the date of this application, noted below. I understand that I have one calendar year from the application date to complete all of the activities associated with the application.

Applicant's Signature (typed name serves as signature) | Date

Revised 15 November 2018 | Form 1A - Application for ASEP

Step 1 Prepare Application OR Step 3

A. Verifiable Education

B. Verifiable Experience

C. Applicant's Advocates

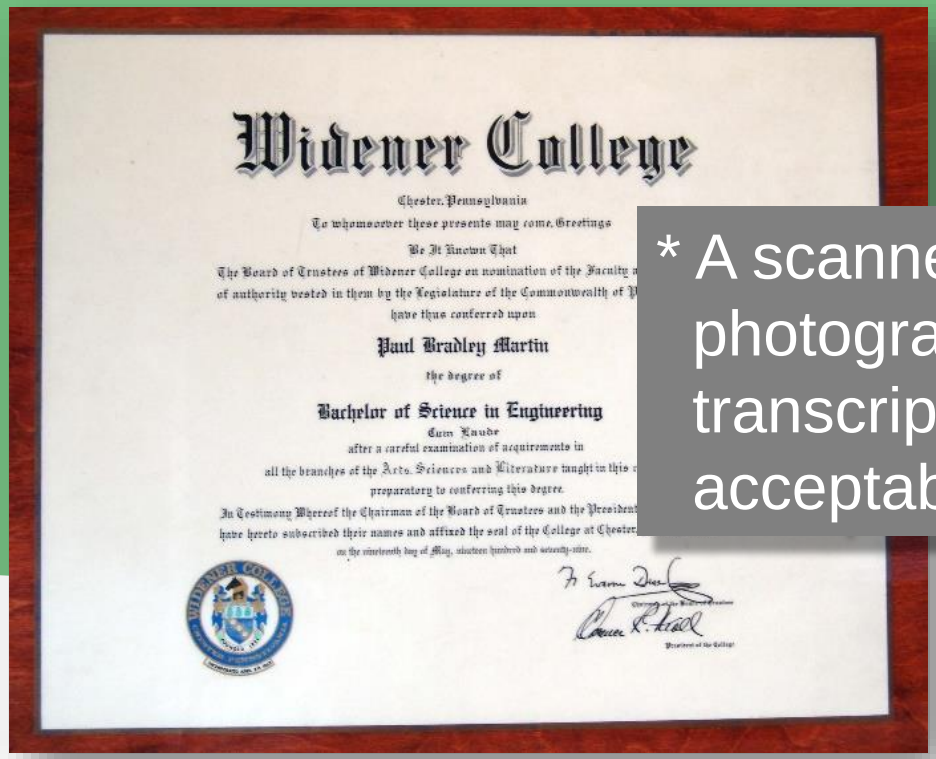
- Many misunderstand the effort it takes to fill out an application.
- It may **take over 20 hours to complete** the paperwork.

Therefore, **this step** is to concentrate on **filling out the CSEP Application** correctly.

Step 1 Prepare Application OR Step 3

A. Verifiable Education

- Technical Bachelor's Degree (or international equivalent)*


Widener College

Chester, Pennsylvania

To whomsoever these presents may come, Greetings

Be It Known That

The Board of Trustees of Widener College on nomination of the Faculty

of authority vested in them by the Legislature of the Commonwealth of

have thus conferred upon

Paul Bradley Martin

the degree of

Bachelor of Science in Engineering

Cum Laude

after a careful examination of acquirements in

all the branches of the Arts, Sciences and Literature taught in this

preparatory to conferring this degree.

In Testimony Whereof the Chairman of the Board of Trustees and the President

have hereto subscribed their names and affixed the seal of the College at Chester

on the nineteenth day of May, nineteen hundred and seventy-nine.

* A scanned copy or photograph of your transcript(s) or diploma(s) is acceptable.

A. Verifiable Education

B. Verifiable Experience

C. Applicant's Advocates

- Many misunderstand the effort it takes to fill out an application.
- It may **take over 20 hours to complete** the paperwork.

Therefore, **this step** is to concentrate on **filling out the CSEP Application** correctly.

B. Verifiable Experience

- **5 years of professional-level experience** in multiple SE functional areas
- At least **1 year of experience in each of 3 or more of the 14 Functional Areas** recognized for Systems Engineering Experience

CSEPs should have experience in performing some, but not necessarily all, of the SE functional areas

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
- **Lifecycle 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.

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

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

	1	2	3	4	5 Years
Option 1	A1	A2	A3		
Option 2	A1	A2	A3	A4	
Option 3	A1	A2	A3	A4	A5
Option 4	A1	A2	A3	A4	A5 A6
Option X	A1	A2	A3	Applicant's Choice	

Some Options for Distributing Five Years of SE Experience in Various SE Functional Areas (A1, A2, etc.)

Certification Forms

INCOSE ASEP Forms

Associate Systems Engineering Professionals (ASEPs) are required to pass the knowledge exam and to renew their certification every five years. They are not required to document their education or experience, and they are not required to submit references. The ASEP forms are found here.

File	Type	Size	Date	Download
Form 1A – Application for ASEP	PDF	467.41 KB	27 Mar, 2019	Download
Log of Continuing Education Credits Form 13	XLS	61.50 KB	14 Sep, 2020	Download

INCOSE CSEP Forms

Certified Systems Engineering Professionals (CSEPs) are required to pass the knowledge exam and to renew their certification every three years. They are required to document their education and experience in their individual application form, and they are required to submit references. The CSEP forms are found here.

File	Type	Size	Date	Download
Form 1 Individual Application for INCOSE CSEP	PDF	1003.79 KB	10 Oct, 2017	Download
Form 2 – Instructions for Completing Form 1	PDF	241.63 KB	25 Oct, 2019	Download
Form 4A – Instructions to References_01	PDF	83.50 KB	16 Aug, 2020	Download
Form 4B - Reference for CSEP _ ESEP	PDF	461.65 KB	02 Aug, 2017	Download
Form 1B – DAU Streamlined Individual Application for CSEP	PDF	917.83 KB	07 Nov, 2019	Download
Form 2B – DAU Streamlined Instructions for Form 1B	PDF	93.51 KB	10 Jan, 2020	Download
Form 4B CSEP-ESEP Reference Example	PDF	471.51 KB	07 Mar, 2019	Download
Form 1 Individual Application for INCOSE CSEP Good Example	PDF	1017.82 KB	07 Mar, 2019	Download

Download the forms from INCOSE website

found here.

File	Type	Size	Date	Download
Form 4B - Reference for CSEP _ ESEP	PDF	461.65 KB	02 Aug, 2017	Download
ESEP Individual Application Form 41	PDF	1.12 MB	18 Oct, 2017	Download

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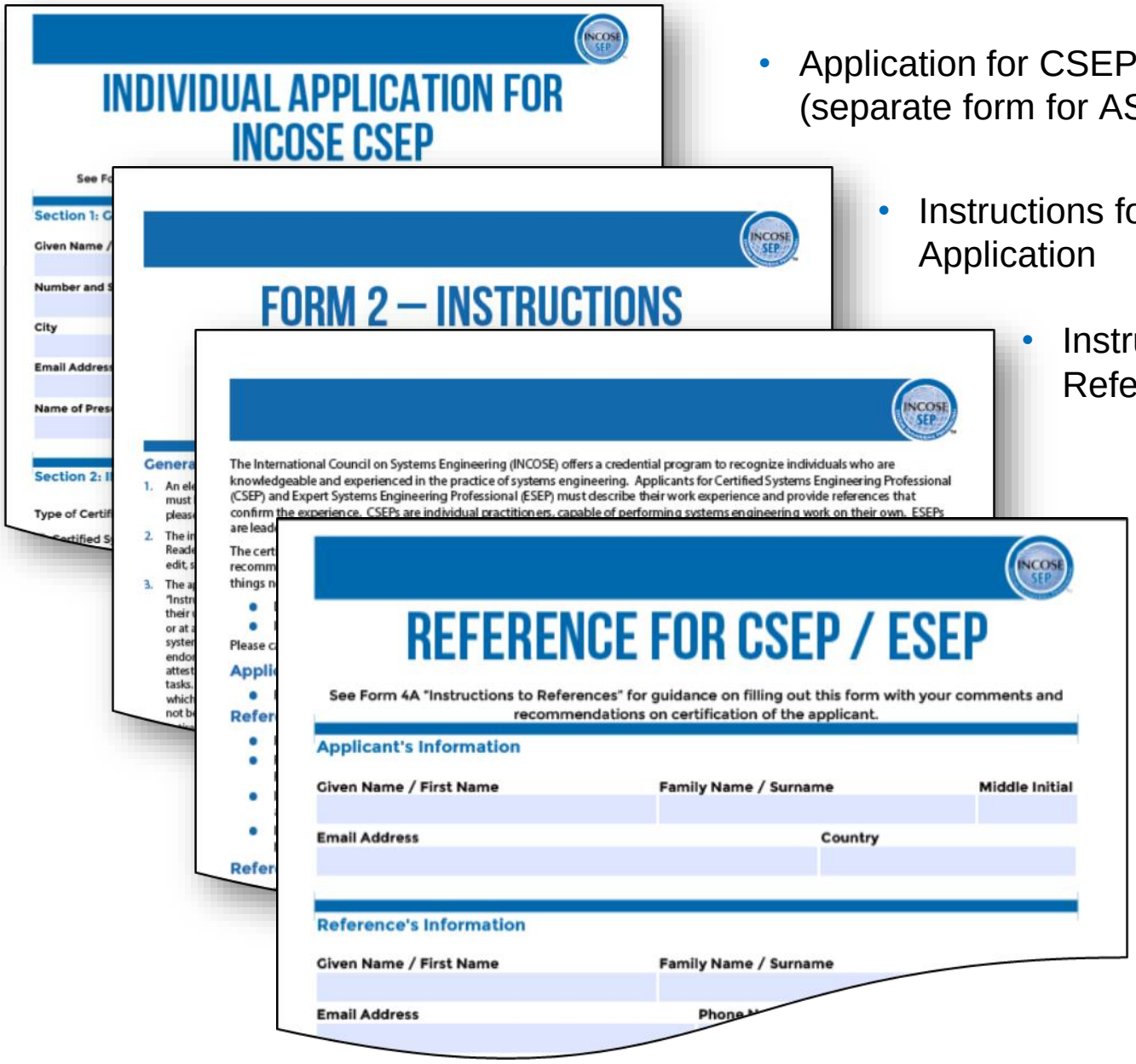
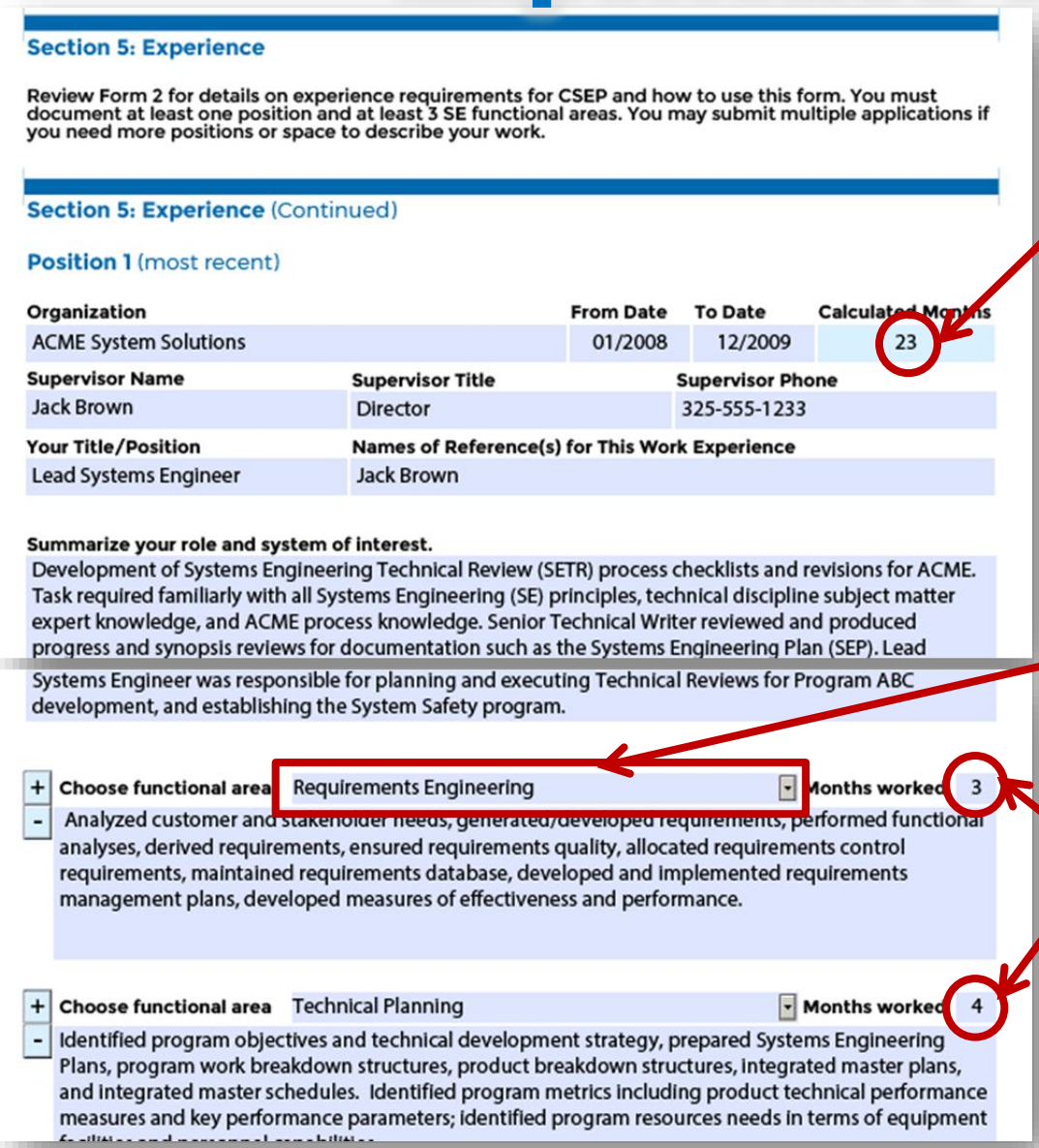


- Application for CSEP Certification (separate form for ASEP)
- Instructions for Filling out CSEP Application
- Instruction Letter to References
- Certification Reference Endorsement Form

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



Section 5: Experience

Review Form 2 for details on experience requirements for CSEP and how to use this form. You must document at least one position and at least 3 SE functional areas. You may submit multiple applications if you need more positions or space to describe your work.

Section 5: Experience (Continued)

Position 1 (most recent)

Organization	From Date	To Date	Calculated Months
ACME System Solutions	01/2008	12/2009	23

Supervisor Name	Supervisor Title	Supervisor Phone
Jack Brown	Director	325-555-1233

Your Title/Position	Names of Reference(s) for This Work Experience
Lead Systems Engineer	Jack Brown

Summarize your role and system of interest.

Development of Systems Engineering Technical Review (SETR) process checklists and revisions for ACME. Task required familiarly with all Systems Engineering (SE) principles, technical discipline subject matter expert knowledge, and ACME process knowledge. Senior Technical Writer reviewed and produced progress and synopsis reviews for documentation such as the Systems Engineering Plan (SEP). Lead Systems Engineer was responsible for planning and executing Technical Reviews for Program ABC development, and establishing the System Safety program.

\+ **Choose functional area** Requirements Engineering **Months worked** 3

\- Analyzed customer and stakeholder needs, generated/developed requirements, performed functional analyses, derived requirements, ensured requirements quality, allocated requirements control requirements, maintained requirements database, developed and implemented requirements management plans, developed measures of effectiveness and performance.

\+ **Choose functional area** Technical Planning **Months worked** 4

\- Identified program objectives and technical development strategy, prepared Systems Engineering Plans, program work breakdown structures, product breakdown structures, integrated master plans, and integrated master schedules. Identified program metrics including product technical performance measures and key performance parameters; identified program resources needs in terms of equipment

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

Select the proper Functional Area

Months worked put into Experience Matrix

Experience to Matrix

Summary Table on Breadth and Depth of Applicant's SE Experience

This table automatically fills in with the total months of experience recorded in each systems engineering area above.

Work in Months by Position and SE Area	P1	P2	P3	P4	P5	P6	P7	Total Months of Effort in Each SE Area
SE Functional Areas								
Requirements Engineering	3	6	15	0	0	0	0	21
System and Decision Analysis	0	0	0	0	0	0	0	0
Architecture/ Design Development	0	7	0	0	0	0	0	7
Systems Integration	0	0	0	0	0	0	0	0
Verification and Validation	0	5	2	0	0	0	0	7
System Operation and Maintenance	0	0	9	0	0	0	0	9
Technical Planning	4	6	13	0	0	0	0	23
Technical Monitoring and Control	0	3	0	0	0	0	0	3
Acquisition and Supply	0	0	0	0	0	0	0	0
Information and Configuration Management	0	0	0	0	0	0	0	0
Risk and Opportunity Management	0	10	0	0	0	0	0	10
Lifecycle Process Definition and Management	5	6	7	0	0	0	0	18
Specialty Engineering	0	3	11	0	0	0	0	14
Organizational Project Enabling Activities	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0
Total Months of SE in Position (documented)	12	48	57	0	0	0	0	112
Total Months in Position (calendar)	23	47	71					

Under P1 in Matrix

The form transferred the months worked in Section 5: Experience

Notice they make sure your SE Experience isn't more then months worked.

Experience to Matrix

Summary Table on Breadth and Depth of Applicant's SE Experience

This table automatically fills in with the total months of experience recorded in each systems engineering area above.

Work in Months by Position and SE Area	P1	P2	P3	P4	P5	P6	P7	Total Months of Effort in Each SE Area
SE Functional Areas								
Requirements Engineering	3	3	15	0	0	0	0	21
System and Decision Analysis	0	0	0	0	0	0	0	0
Architecture/ Design Development	0	7	0	0	0	0	0	7
Systems Integration	0	0	0	0	0	0	0	0
Verification and Validation	0	5	2	0	0	0	0	7
System Operation and Maintenance	0	0	9	0	0	0	0	9
Technical Planning	4	6	13	0	0	0	0	23
Technical Monitoring and Control	0	3	0	0	0	0	0	3
Acquisition and Supply	0	0	0	0	0	0	0	0
Information and Configuration Management	0	0	0	0	0	0	0	0
Risk and Opportunity Management	0	10	0	0	0	0	0	10
Lifecycle Process Definition and Management	5	6	7	0	0	0	0	18
Specialty Engineering	0	3	11	0	0	0	0	14
Organizational Project Enabling Activities	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0
Total Months of SE in Position (documented)	12	43	57	0	0	0	0	112
Total Months in Position (calendar)	23	47	71					

Total Months of Effort in Matrix

- The key is to ensure you have <u>12 months or more of SE experience</u> in each of <u>3 or more</u> of the 15 systems engineering functional areas

Certification Forms

INCOSE ASEP Forms

Associate Systems Engineering Professionals (ASEPs) are required to pass the knowledge exam and to renew their certification every five years. They are not required to document their education or experience, and they are not required to submit references. The ASEP forms are found here.

File	Type	Size	Date	Download
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Log of Continuing Education Credits Form 13	XLS	61.50 KB	14 Sep, 2020	Download

INCOSE CSEP Forms

Certi…ns Engineering Professio… …re required to … …he knowled… …and to renew … …tification even… …rs. They are require…

Appeals

Download the forms from INCOSE website

Group Related Forms

File	Type	Size	Date	Download
Group Submission Form (New/Renewal)	XLSX	17.78 KB	12 Feb, 2020	Download

Renewal of INCOSE Systems Engineering Certification

File	Type	Size	Date	Download
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Back to Top

Step 1 Prepare Application OR Step 3

A. Verifiable Education

B. Verifiable Experience

C. Applicant's Advocates

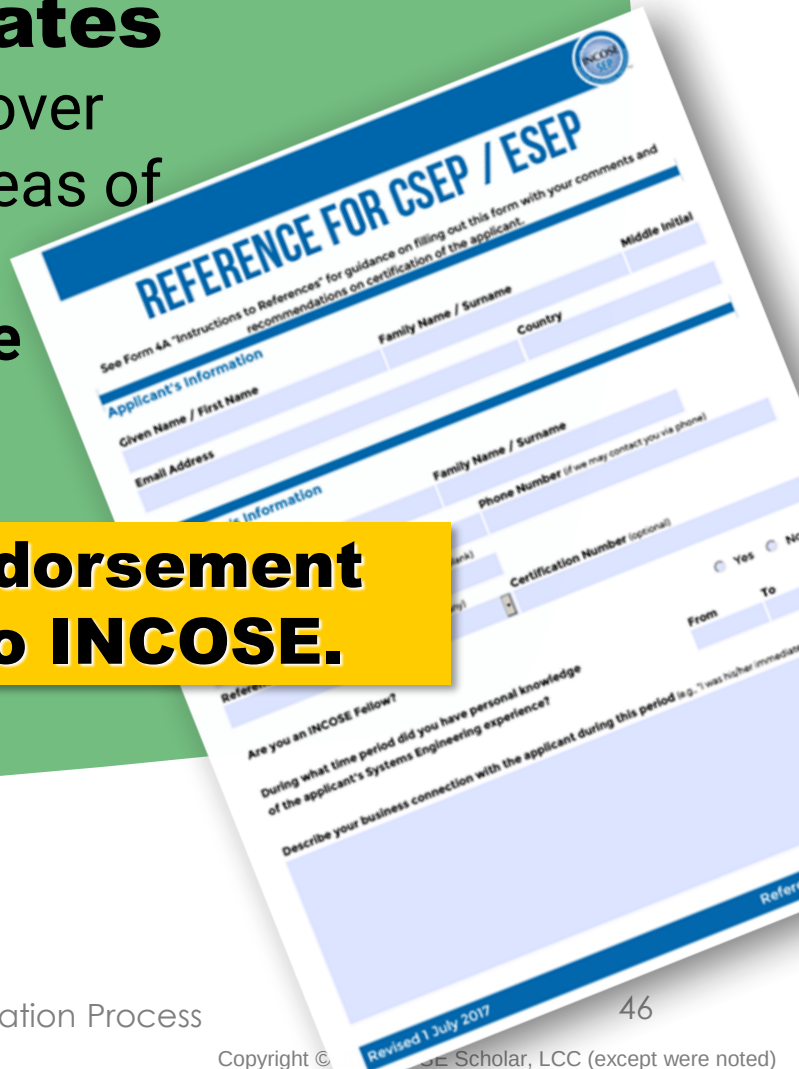
- Many misunderstand the effort it takes to fill out an application.
- It may **take over 20 hours to complete** the paperwork.

Therefore, **this step** is to concentrate on **filling out the CSEP Application** correctly.

Step 1 Prepare Application OR Step 3

C. Applicant's Advocates

- **Three references** that cover at least 5 years and 3 areas of SE experience claimed
- **MUST be knowledgeable about SE**



They fill out a Reference Endorsement Form that they will e-mail to INCOSE.

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.

E-mails

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 where 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,

Step 1 Prepare Application OR Step 3

A. Verifiable Education

B. Verifiable Experience

C. Applicant's Advocates

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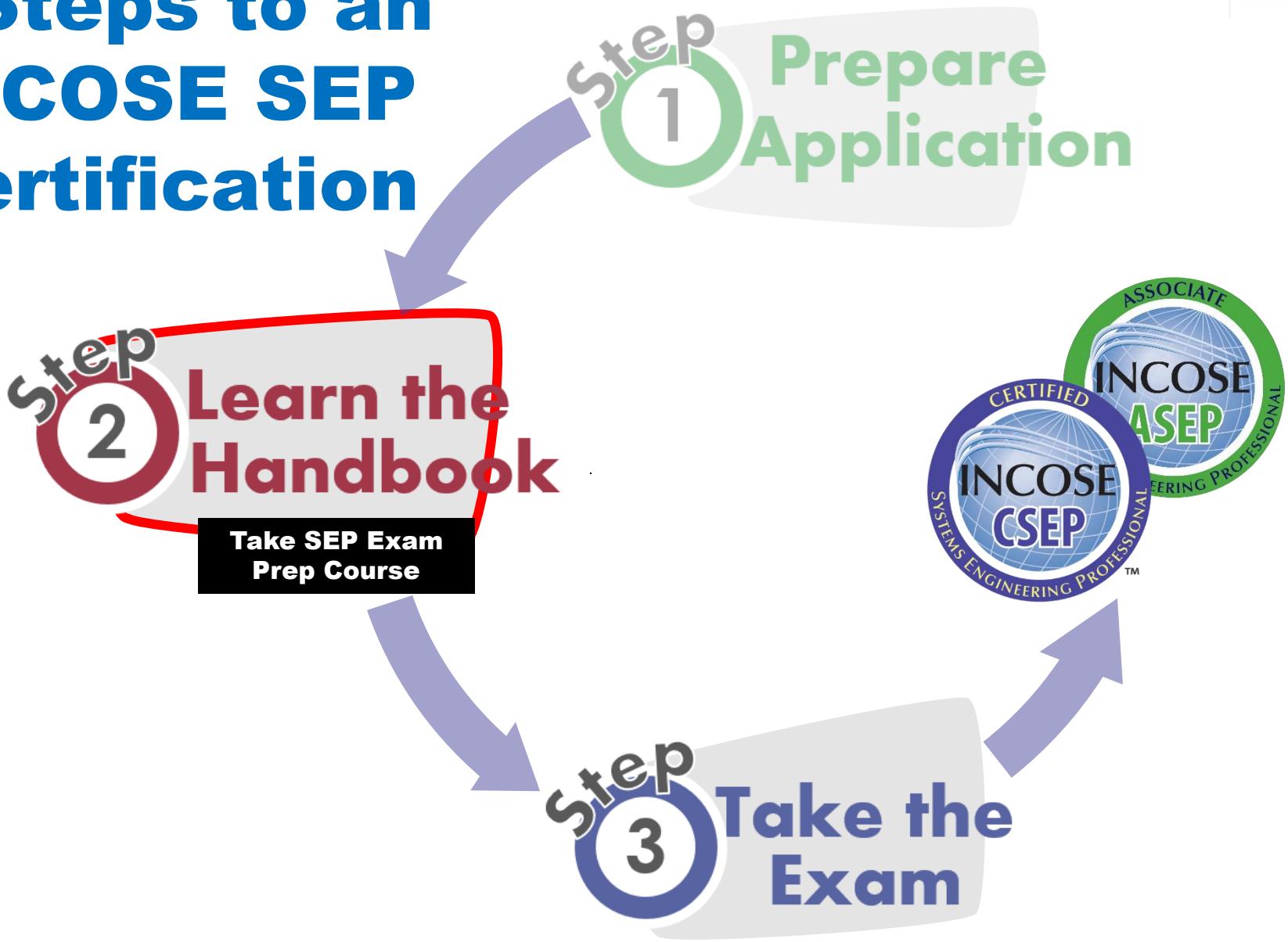
3 Steps to an INCOSE SEP Certification



Step 2 Learn the Handbook OR Step 1

- The INCOSE SEP Exam is totally based on the INCOSE SE Handbook

Complete set of Lectures

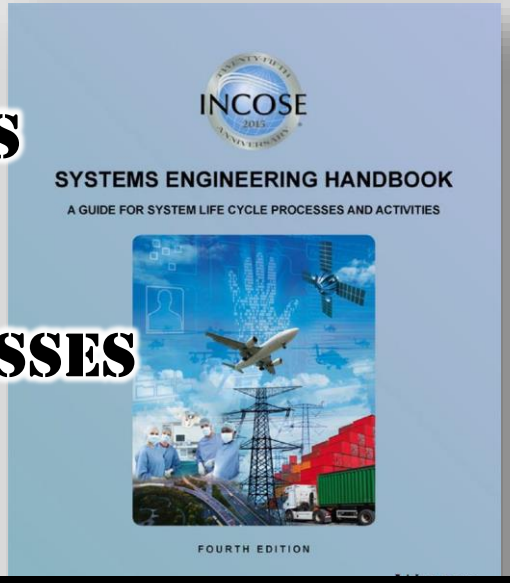
Comprehensive Process Flow Diagram

Sample Exam Questions

Study Guide

305 PAGES

31 PROCESSES



Take SEP Exam Prep Course

From SE SCHOLAR

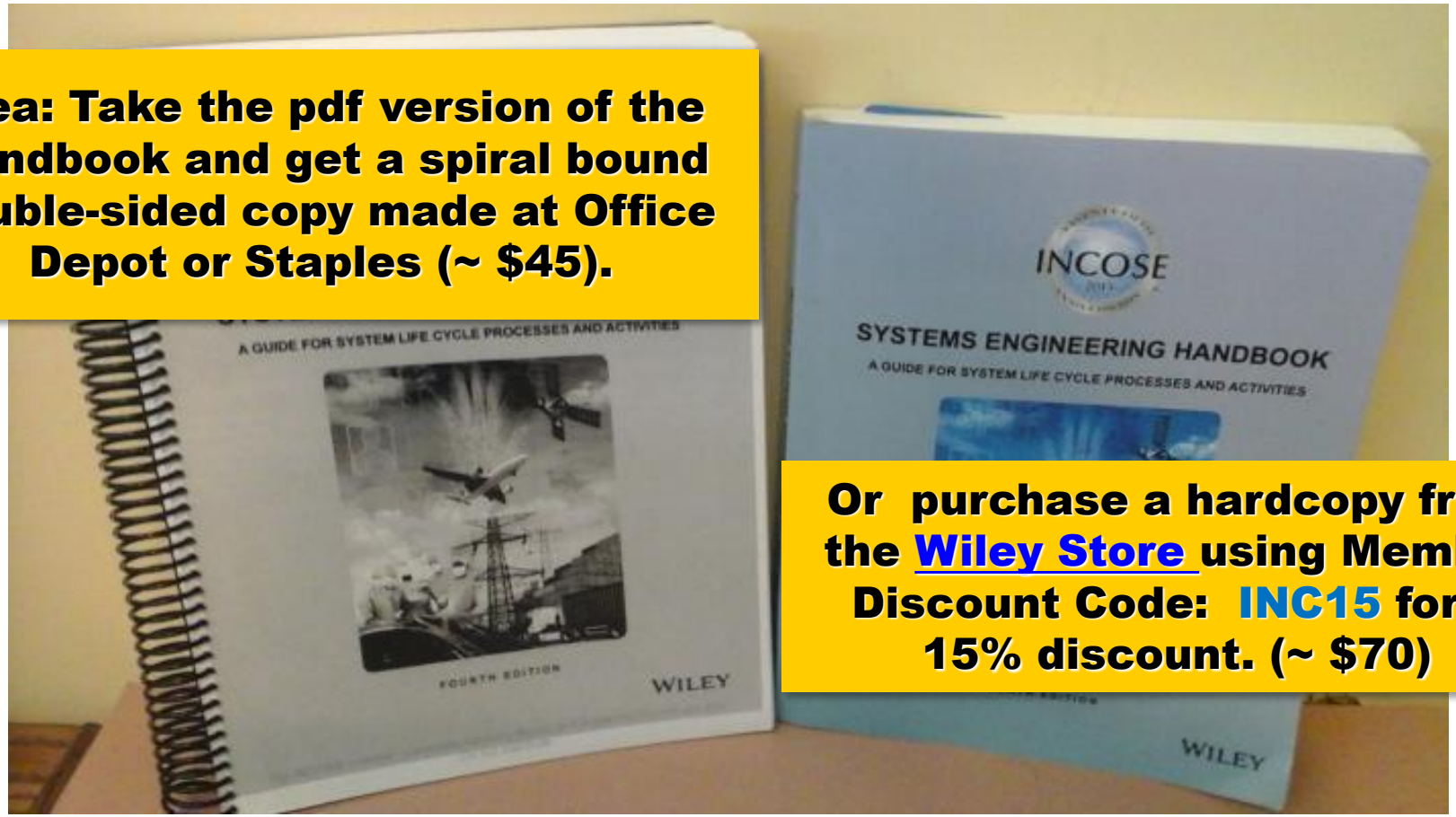
- **CSEP/ASEP Exam Basis**

  "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*

Getting the Handbook

- As an INCOSE Member – you have access to a pdf version for FREE!

Idea: Take the pdf version of the Handbook and get a spiral bound double-sided copy made at Office Depot or Staples (~ $45).



Or purchase a hardcopy from the Wiley Store using Member Discount Code: INC15 for a 15% discount. (~ $70)

Step 2 Learn the Handbook OR Step 1

Take SEP Exam Prep Course

From SE SCHOLAR

Complete set of Lectures

Comprehensive Process Flow Diagram

Sample Exam Questions

Study Guide

Online Live Course

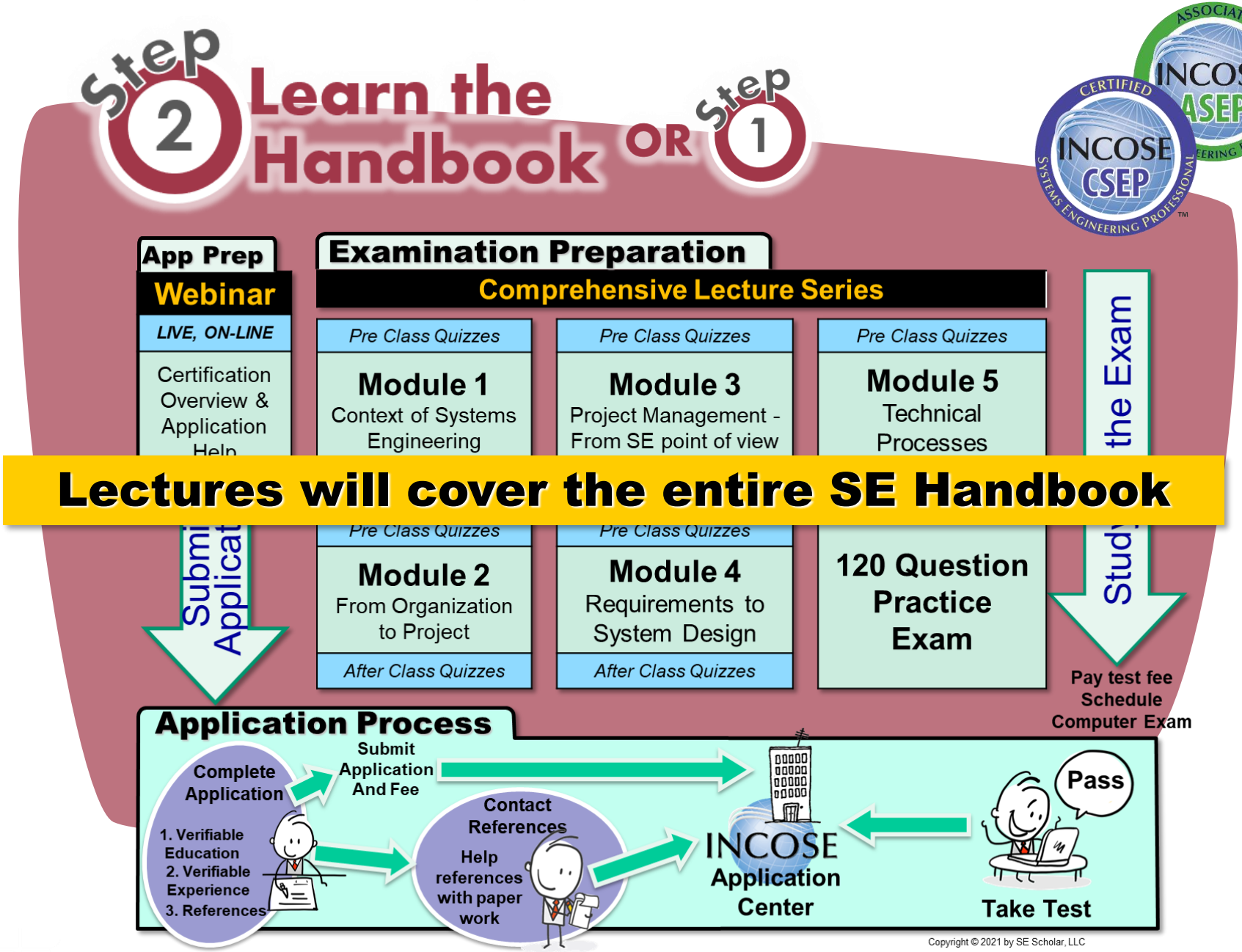
November 8th to 12th

Pass the INCOSE SEP Exam with confidence…

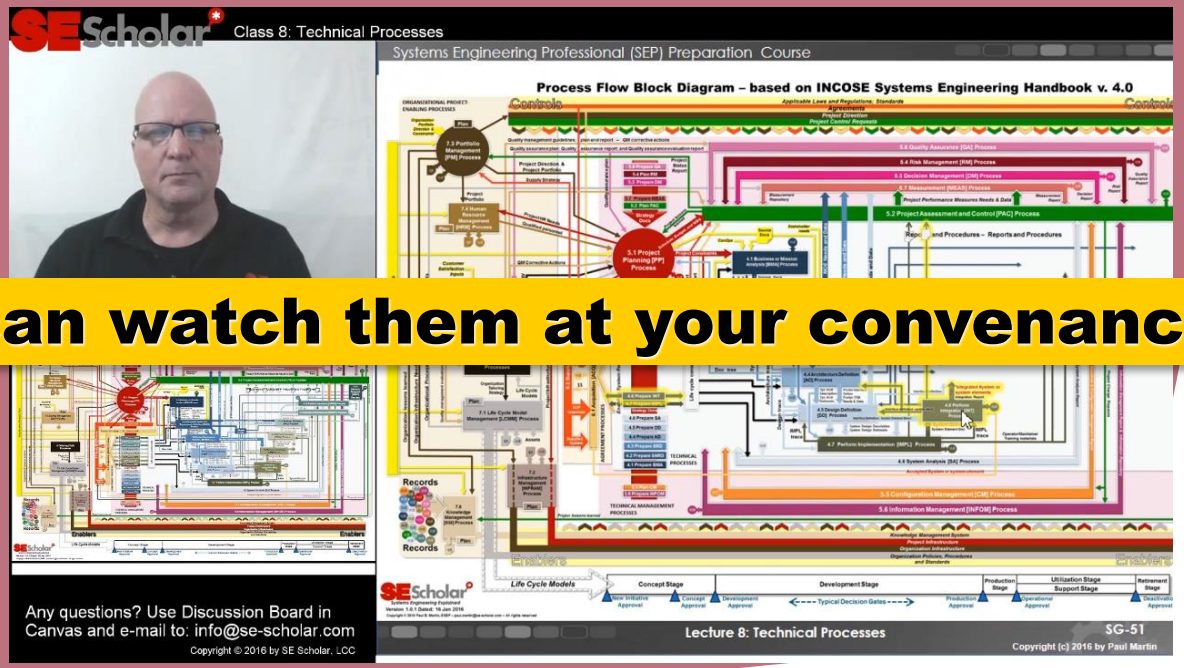
- **Learn the context of ALL 31 PROCESSES using a Comprehensive Process Flow diagram**
- **Take numerous quizzes and a sample exam**

Increase your competitive advantage!

5-day Bootcamp



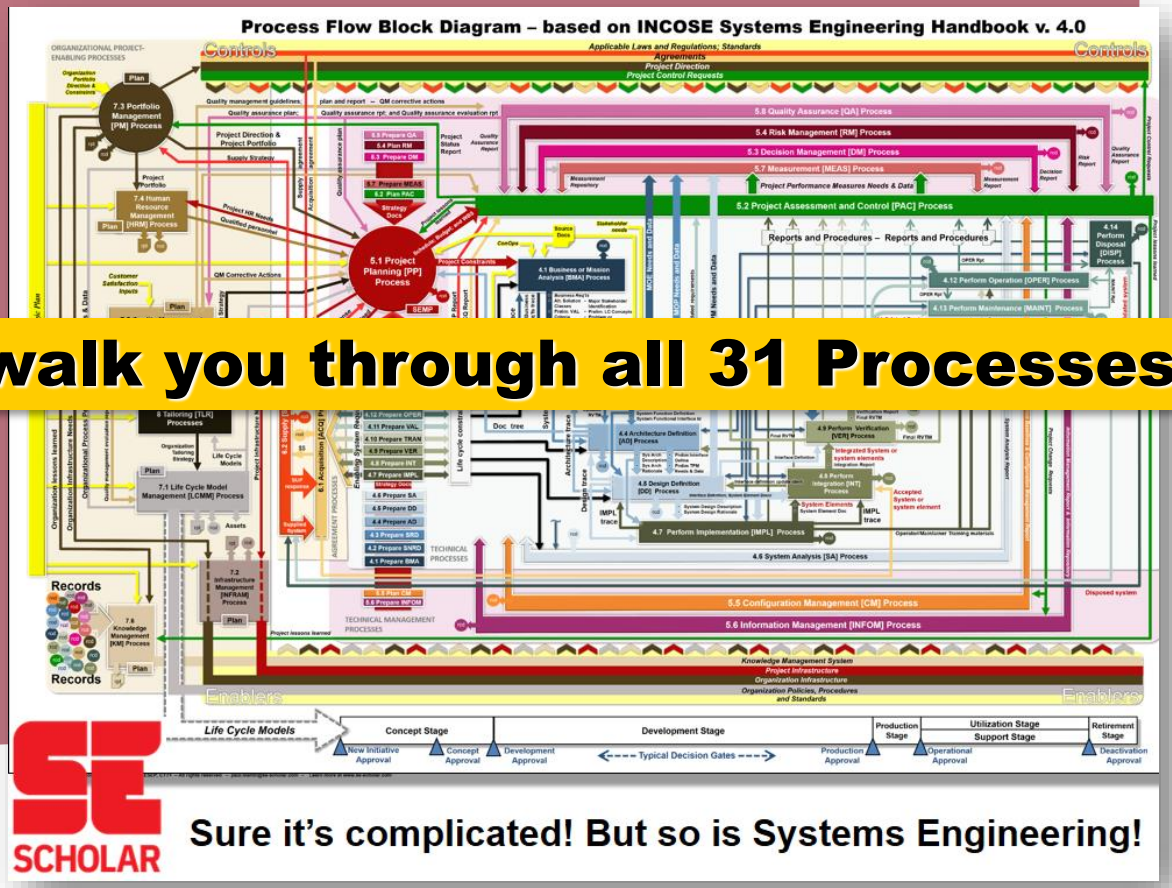
All the Lectures will be recorded



... so, you can watch them at your convenance

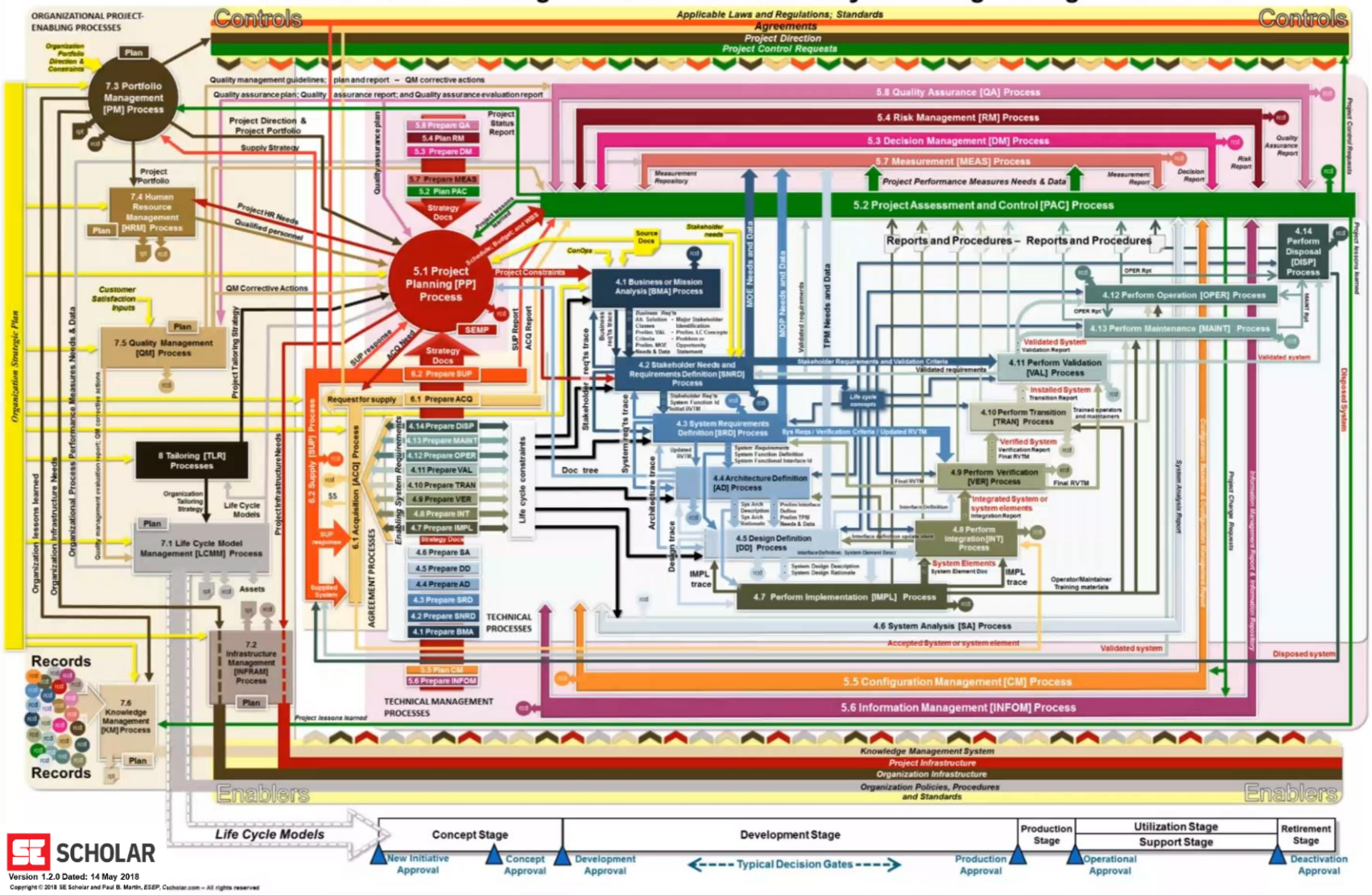
Step 2 Learn the Handbook OR Step 1

Comprehensive Process Flow Diagram



We will walk you through all 31 Processes

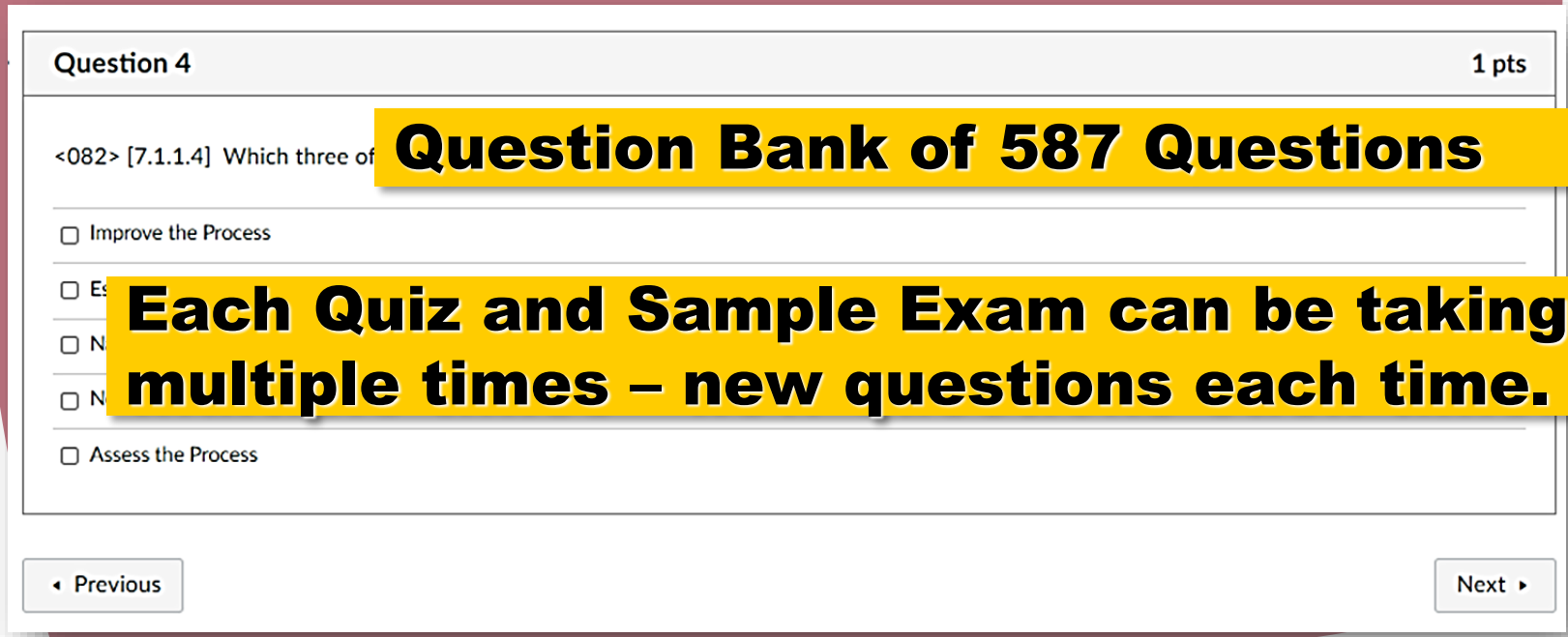
Process Flow Block Diagram – based on INCOSE Systems Engineering Handbook v. 4.0



SE SCHOLAR
Version 1.2.0 Dated: 14 May 2018

Step 2 Learn the Handbook OR Step 1

Sample Exam Questions



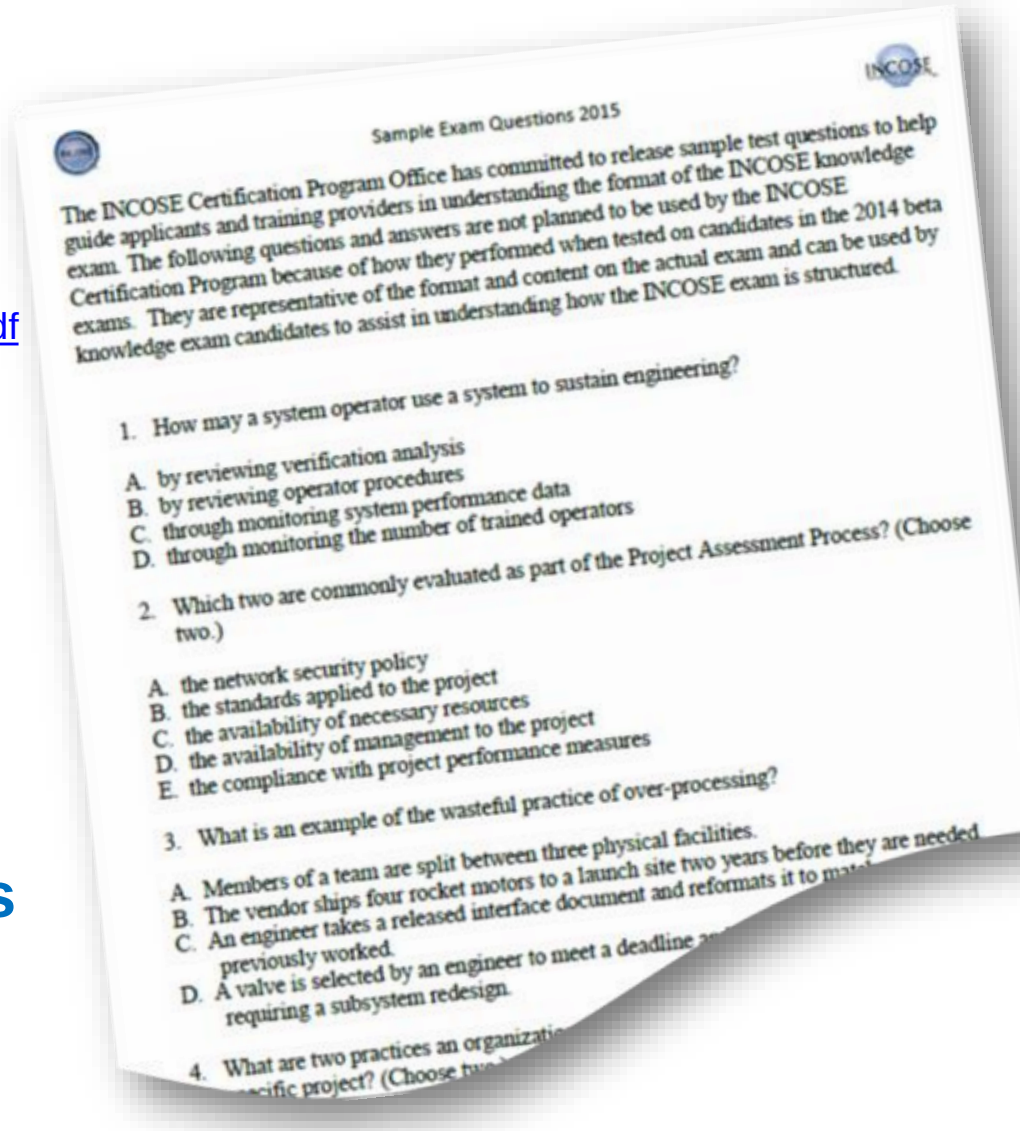
Question Bank of 587 Questions

Each Quiz and Sample Exam can be taking multiple times – new questions each time.

Provides the student with a familiarity and comfort level they'll need to pass the Exam

Representative Exam Questions

- Sample Questions from INCOSE
  - 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 reformats it to
previously worked.
D. A valve is selected by an engineer to meet a deadline
requiring a subsystem redesign.

4. What are two practices an organizati
cific project? (Choose

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

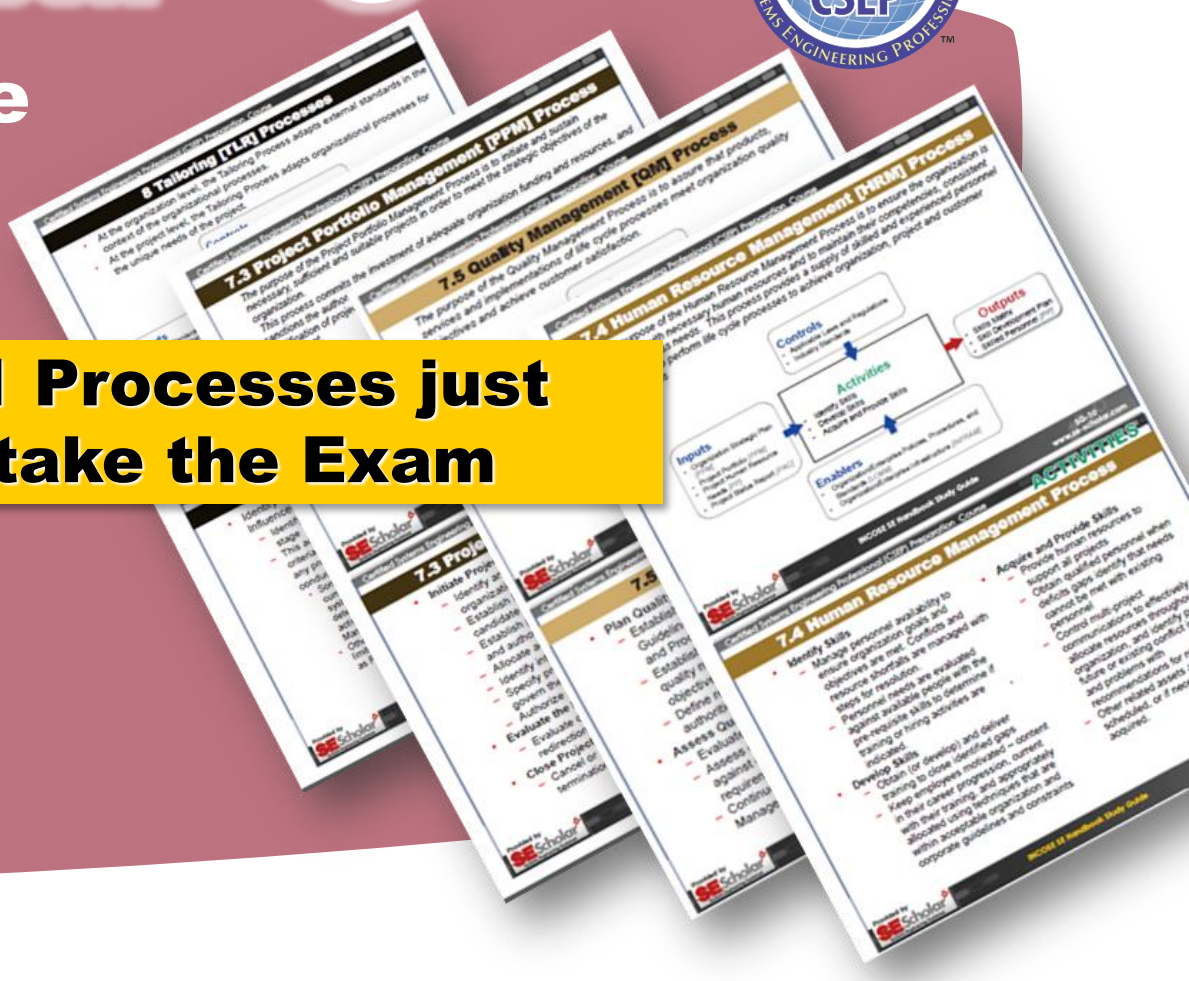
- Which are three justifications for CM? (Choose three)
  - ❑ A. facilitates communication
  - ❑ B. forces change evaluations
  - ❑ C. prevents requirements changes
  - ❑ D. controls requirements changes
  - ❑ E. encourages requirements changes

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.

Step 2 Learn the Handbook OR Step 1

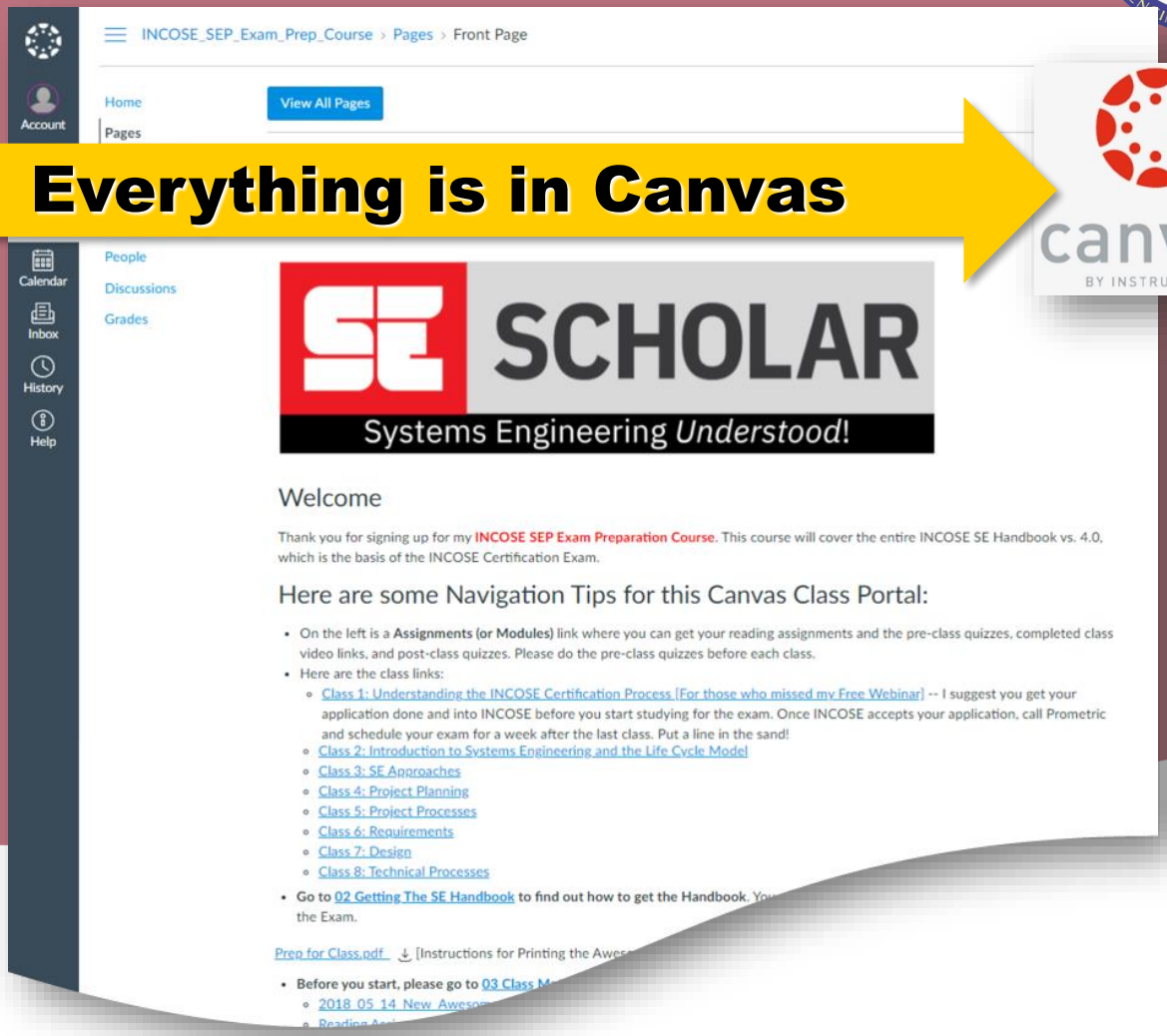
Study Guide

Review all 31 Processes just before you take the Exam



Step 2 Learn the Handbook OR Step 1

Everything is in Canvas



Step 2 Learn the Handbook OR Step 1

Take SEP Exam Prep Course

From SE SCHOLAR

- Complete set of Lectures
- Comprehensive Process Flow Diagram
- Sample Exam Questions
- Study Guide

5-day Bootcamp

November 8th – 12th 2021

http://se-scholar.eventbrite.com for Tickets

$750

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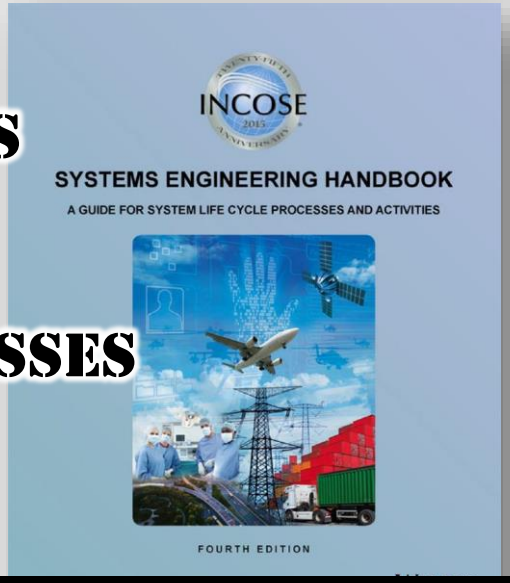
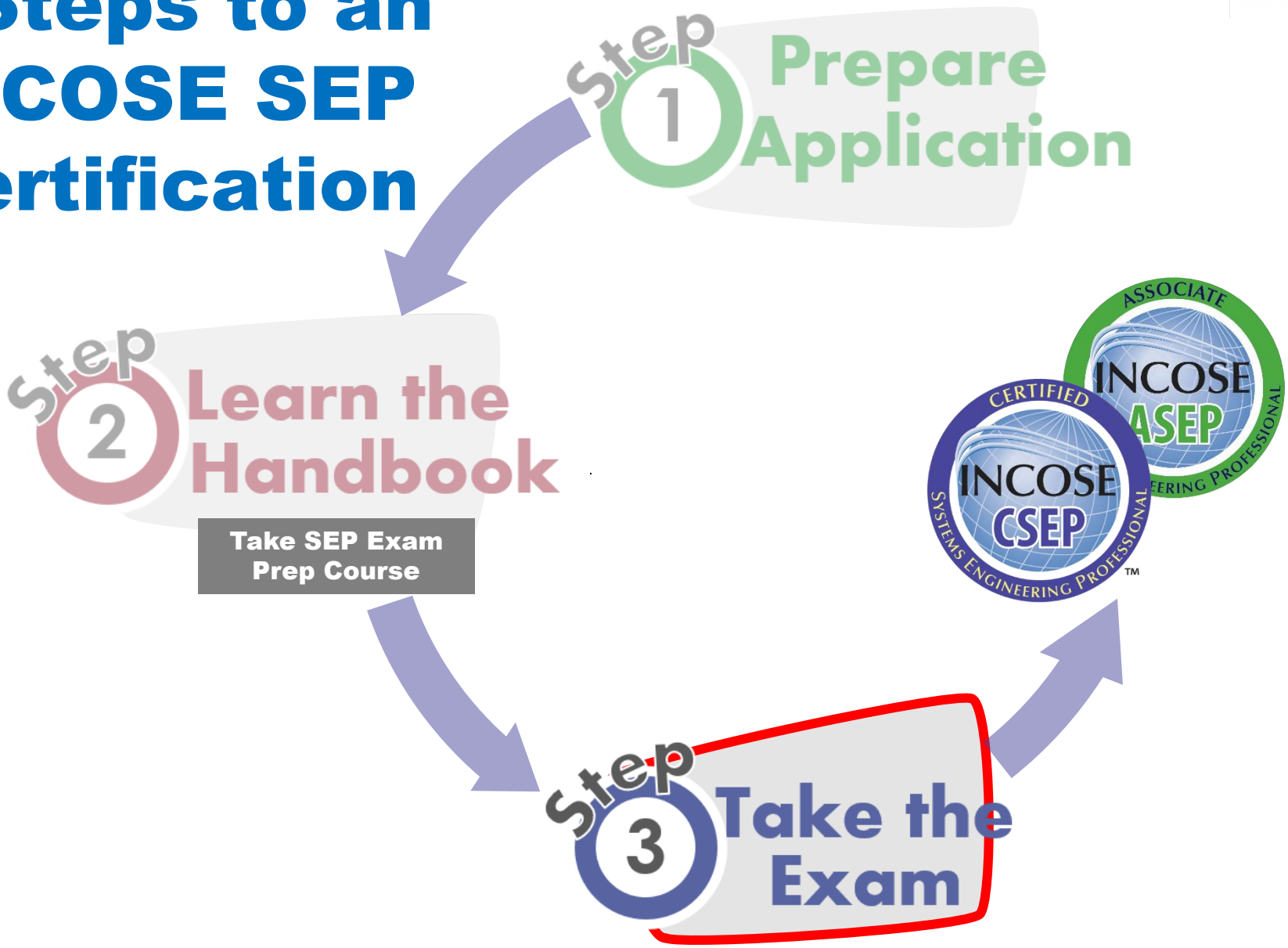


Take SEP Exam Prep Course

From SE SCHOLAR

3 Steps to an INCOSE SEP Certification



Step 3 Take the Exam OR Step 2

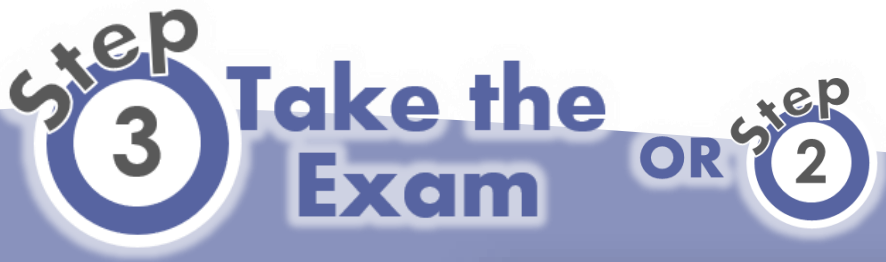
REGISTER Online

Computer Exams

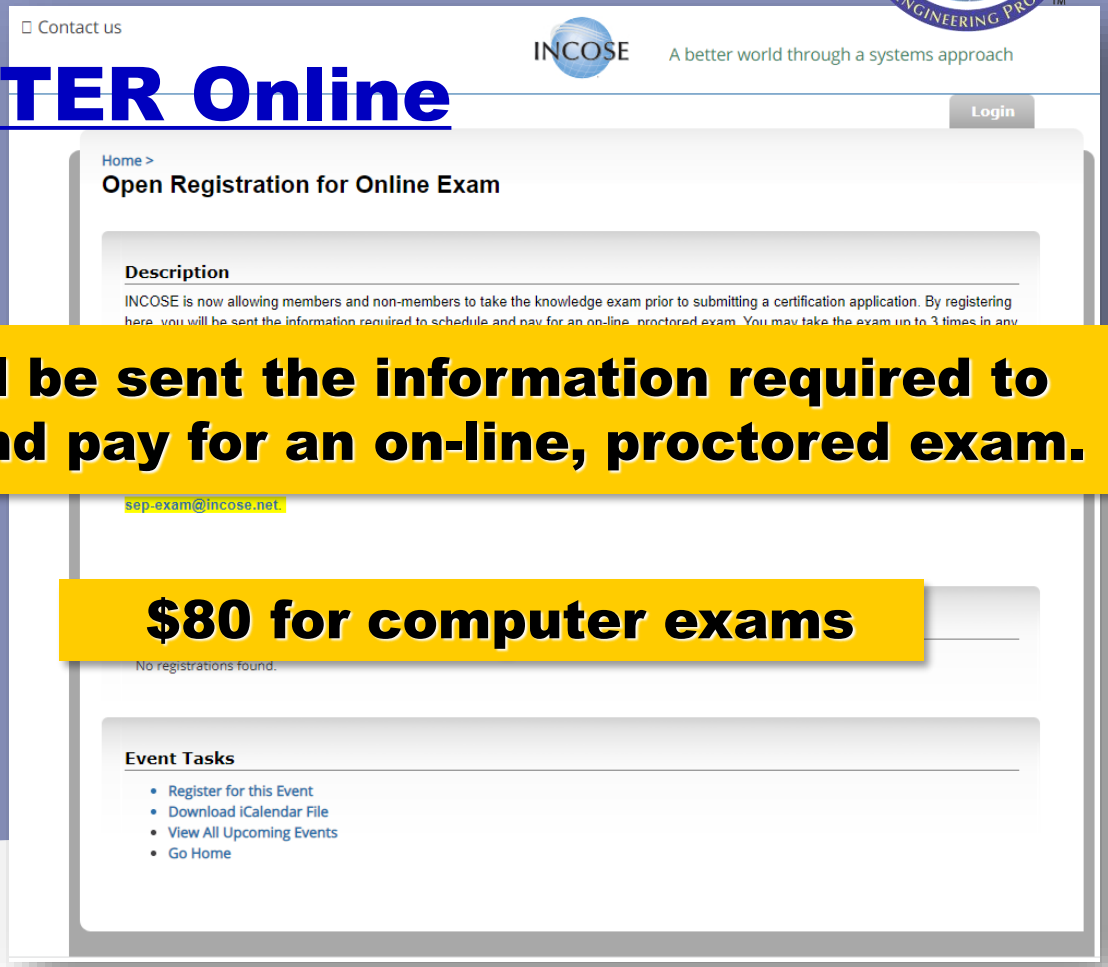
Open Registration for Online Exam

- **Members and non-members** to take the knowledge exam prior to submitting a certification application.
- You may take the exam up to 3 times in any 12 month period.

- **Schedule the exam as close to the end of the SEP Exam Prep Course**

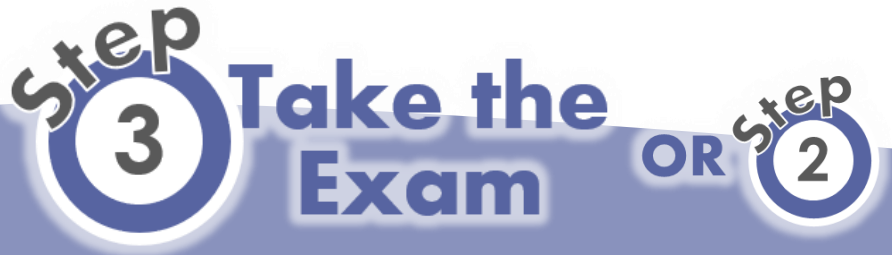


A. REGISTER Online



… you will be sent the information required to schedule and pay for an on-line, proctored exam.

$80 for computer exams

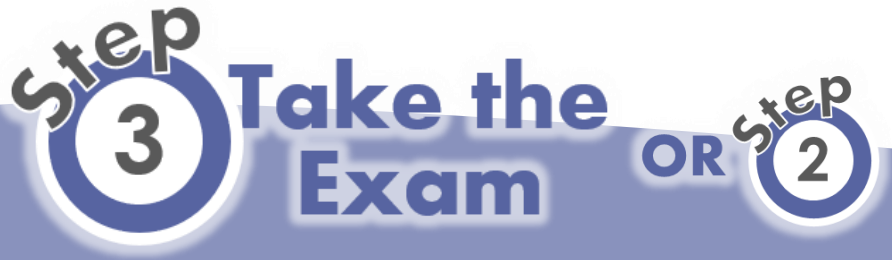


Computer Exams

- Candidates can take the exam from a **location of their choice, with their own computer**.
- This system uses **live, remote, video proctoring**.

For more information on that, review the testing guide.

CMS Certification Management Services
TESTWise™

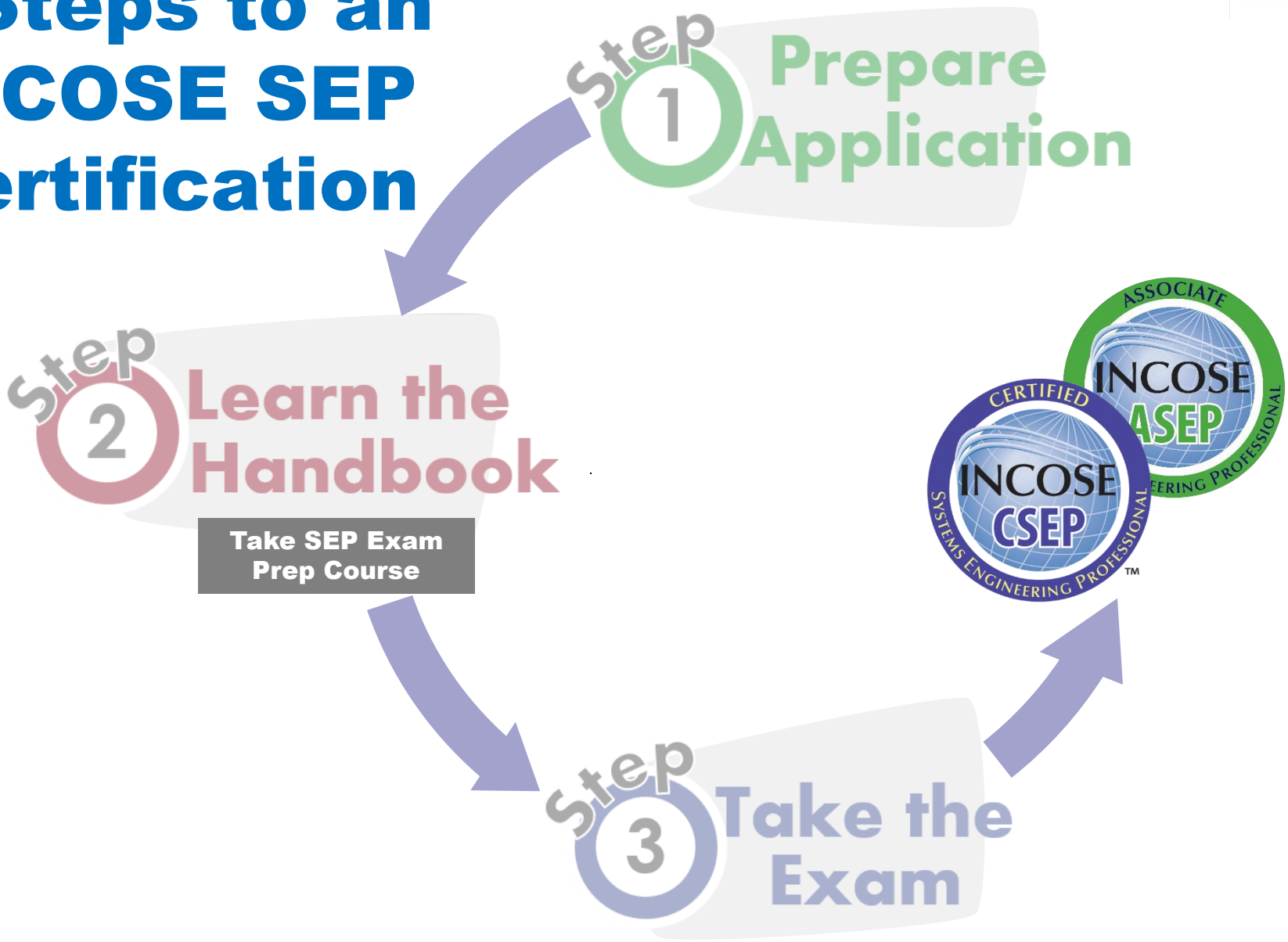


Computer Exams

- 120 multiple-choice questions
- 2 hours in length
- Pass/Fail results provided immediately
- Will have an online "scratch paper" where they can write notes during the exam.

INCOSE also offers pencil-and-paper exams [$30] at many INCOSE events – check the Exam Events Webpage

3 Steps to an INCOSE SEP Certification



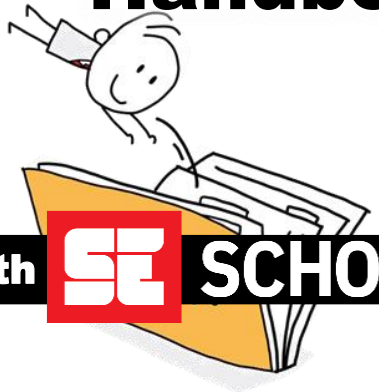
3 Steps to an INCOSE SEP Certification

1. Application

1. Verifiable Education
2. Verifiable Experience
3. Applicant's Advocates (three references knowledgeable about SE)

2. Learned the Handbook

With SE SCHOLAR



3. Exam Results

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)

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

(all must be relevant to the practice of systems engineering) (Proof of all activities required if audited)

PDUs for Certification Renewal (2 of 2)

Professional Development Activities	Credit	Renewal Limit
SE Course Work & Publication Category		
Complete a technical graduate level course	2 PDU/class hour	No limit
Attend educational course, tutorial, or seminar	1 PDU/hour	No limit
Teach professional development coursework, including presentations not part of job function.	2 PDU/hour (prep) 1 PDU/hour (teach)	40 PDU
Write & publish SE article	5 PDU/article	No limit
Write & publish SE book	30 PDU (primary author)/book 10 PDU (contributing author)/book	No limit
Attend vendor presentation with educational value	1 PDU/hour attendance 5 PDU/year limit	15 PDU
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)

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Certi…ns Engineering Professio… …re required to … …he knowled… …and to renew … …tification even… …rs. They are require…

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Back to Top

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]

You can also reach out to INCOSE

Email Contacts

Certification Office:

certification@ incose.org

Courtney Wright, CSEP
Certification Program Manager:

courtney.wright@incose.org

For more information visit:
www.incose.org/certification/