



INCOSE Certification of Systems Engineers

SE
Certification

Certification Program Briefing

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14 March 2006



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- **Background**
- **Certified Systems Engineering Professional (CSEP) Requirements**
- **Certification Program Features**
- **Program Status**
- **Communications**





What Is Certification?



- ◆ **Certification is an occupational designation issued by an organization that provides confirmation of an individual's qualifications (specific knowledge and/or skill level) in a specified profession or occupational specialty.**
- ◆ **Certification is **voluntary**. That means it is neither a barrier nor a gate to entering or exiting a job. However, it may be used as a qualifier in placement.**





Certification – an Instrument for Realizing INCOSE Strategic Goals



- **Influence** – increase awareness among SE professionals, employers, and educators
- **Advance** – promulgate today’s “State of the Art” to broaden the foundation for advancement
- **Growth** – certification should improve INCOSE membership retention and stimulate growth





INCOSE Top Five Priorities



- ❖ Complete classification of all existing INCOSE products and make them available to members on web.
- ❖ Implement Guide to Systems Engineering Body of Knowledge and populate it.
- ❖ Complete INCOSE Technical Vision on the future of Systems Engineering.
- ❖ Revise Systems Engineering Handbook, Version 3.
- ❖ Implement Systems Engineering Certification Program





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Requirements for Certified Systems Engineering Professional (CSEP)*



- 1. SE Experience - 5 years minimum in multiple SE disciplines**
 - 2. Education – Bachelor’s degree/equivalent in technical field**
(Additional experience must be substituted for non-technical degree)
 - 5 more years of engineering for non-technical Bachelor’s (total 10 years)
 - 10 more years of engineering if no Bachelor’s degree (total 15 years)
 - 3. Recommendations from at least 3 Colleagues/Peers/Managers who are knowledgeable in Systems Engineering**
 - 4. Pass Certification Exam**
- * Application and Fee Submittals Required**
- Application requires copy of degree transcript or diploma
 - Application fee is \$400 – discounted to \$300 for INCOSE members
 - Test fee is \$80 payable to Test Organization when scheduling exam

INCOSE membership not required to participate in program





SE Disciplines Qualifying for SE Experience



- **Requirements Engineering**
- **Risk and Opportunity Management**
- **Baseline Control**
- **Technical Planning**
- **Technical Effort Assessment**
- **Design Development**
- **Qualification, Verification, and Validation**
- **Process Definition**
- **Tool Support**
- **Training**
- **System Integration**
- **Quality Assurance**
- **Specialty Engineering**
- **Other**





Exam Information



- ◆ **Exam is based on current INCOSE SE Handbook Version 2A which is available on INCOSE web site**
- ◆ **Exam cost is \$80 per exam**
- ◆ **Current exam has 120 questions (98 scored, 22 Beta questions)**
- ◆ **Current exam is 2 hours in length**
- ◆ **Pass/Fail results provided immediately upon exam completion**
- ◆ **Candidates eligible for two re-tests within one year of application submittal**
- ◆ **SE Handbook version 3 is in development. Expected release is in 2006.**
- ◆ **Exam will be updated for SE Handbook Version 3**





Exam Question Format



Which are three justifications for Configuration Management? (Choose three)

- A. Facilitates communication**
- B. Encourages requirements changes**
- C. Prevents requirements changes**
- D. Forces change evaluations**
- E. Control requirements changes**

SEHv2A Ref.
Pg 48, ¶1

Pg 48, ¶1

Pg 46, ¶2

This question ***IS NOT*** from the INCOSE Certification Exam.

The format and content (based on SEHv2a) are similar to exam questions.





Requirements for CSEP 3-Year Renewal*



Continuing Education during Prior 3 Years - 120 PDUs

*** Renewal Application and Fee Submittals**

- **Must be submitted before current certification period ends**
- **Continuing education log submittal required**
- **Renewal Fee is \$100 – discounted to \$50 for INCOSE members**

INCOSE membership not required to participate in program



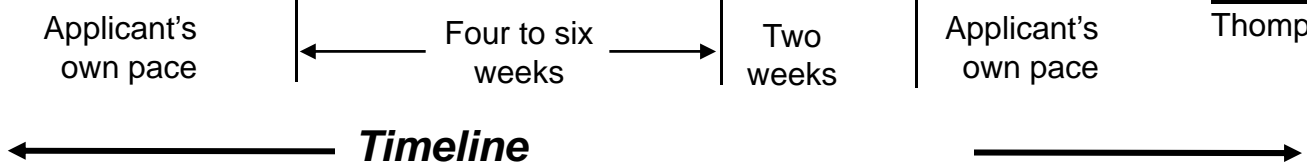
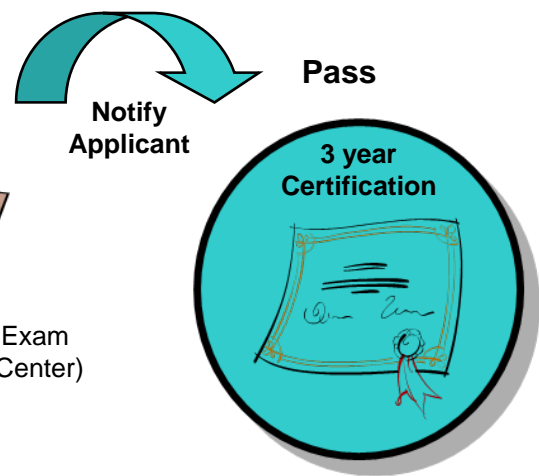
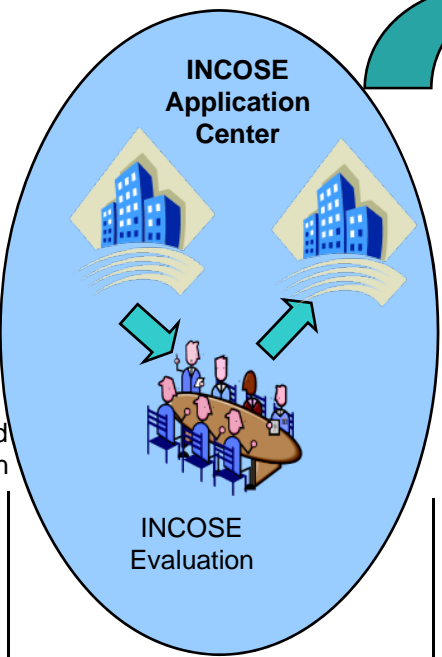
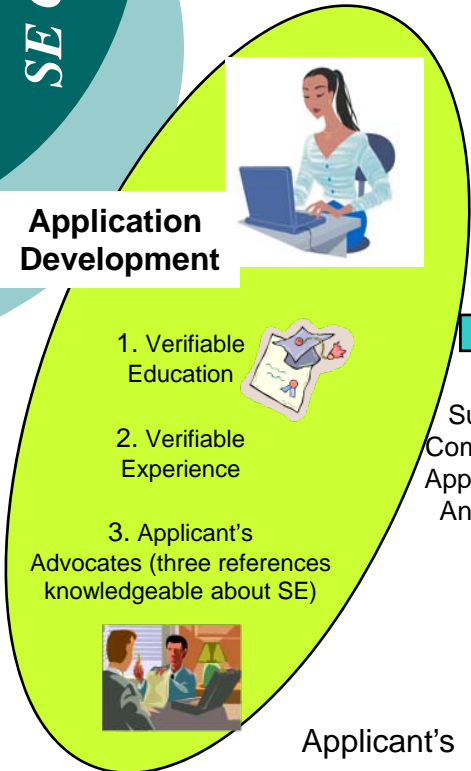
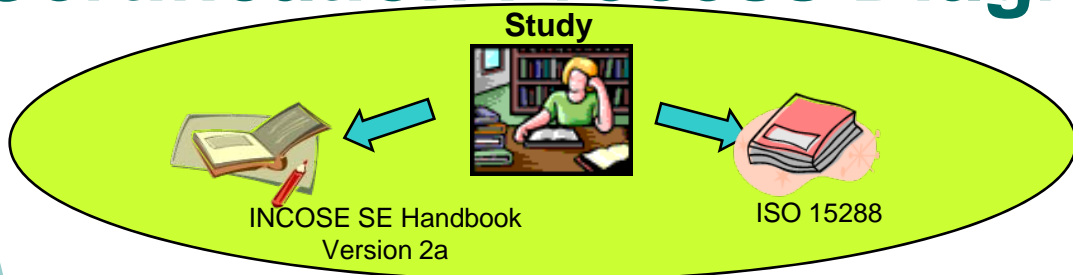
Continuing Education Credits for Certification Renewal



Education Activity	Credit
1 College or unit semester hour	45 PDU
1 College or unit quarter hour	30 PDU
1 Continuing Education Unit (CEU)	10 PDU
1 Professional Development Hour (PDH)	1 PDU
1 hour of teaching of professional development coursework. Teaching credit is awarded for teaching a course/seminar for the first time only. Not applicable to full-time faculty.	2 PDU
Authoring published papers, articles or books in any area relevant to practice	10 PDU
1 hour of participation in professional and technical society working groups/management	1 PDU
Patents	10 PDU
1 hour of professional development in coursework, seminars, or professional or technical presentation made at meetings, conventions, conferences, or exam preparation	1 PDU



Certification Process Diagram



Applicant has **up to one year** to pass the test (three tries 3 months apart). **Test is scheduled directly** with Thompson-Prometrics.



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- ➔ ■ **Certification Program Features**
- Program Status
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Certification Program Features

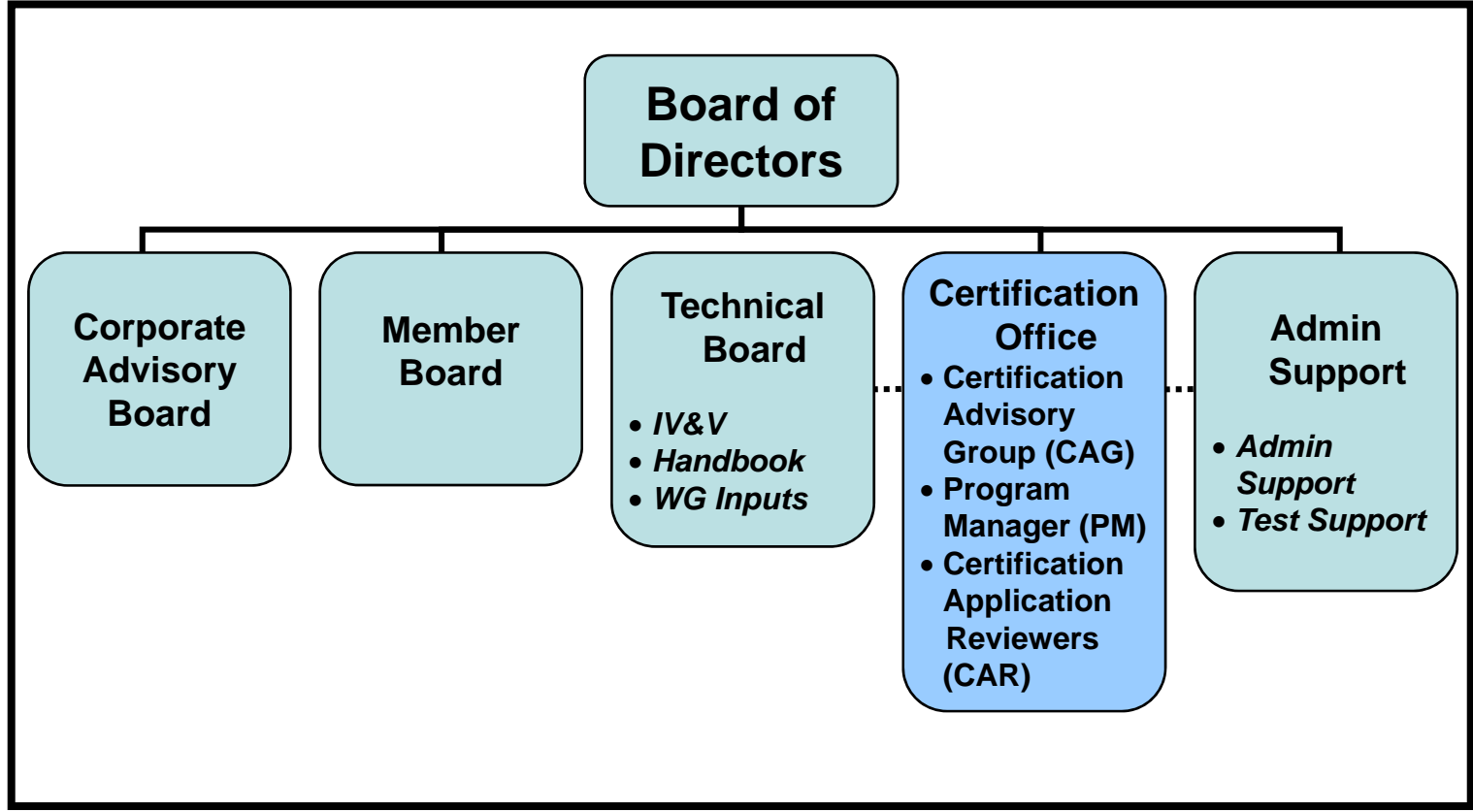
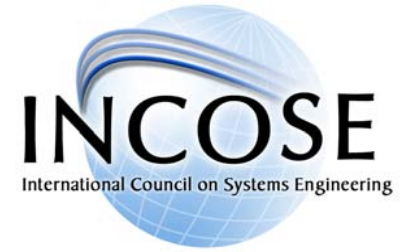


- **Certification Program Architecture**
 - **Initially only one level: Certified Systems Engineering Professional (CSEP) “Foundation Level”**
 - **Advanced and Specialty area levels of certification may be added later**
- **Certification Program Operations**
 - **Administration**
 - **Implement procedures for handling applications**
 - **Handle applications for certifications and renewals**
 - **Authorizes applicants to schedule exam**
 - **Act as focal point for communications and coordination**
 - **Management**
 - **INCOSE BOD provides funding approval and Program oversight**
 - **Certification Advisory Group (CAG) establishes policy and provides oversight to the Program**
 - **Program Manager implements policy/procedures, manages operations, oversees application reviews**
 - **Certification Application Reviewers (CAR) are a pool of CSEPs to review candidate qualifications**





Certification Organization



Certification Advisory Group (CAG)



- **Provides INCOSE Oversight to Certification Program Office**
 - **Represents INCOSE perspective and interests**
 - **9 members appointed by BOD for 3 year terms (staggered, limited to six consecutive years of service)**
 - **Chair elected on annual basis by CAG members**
- **Establishes Certification Program Policy**
- **Identifies and Recommends Qualified PM Candidates to BOD for Appointment**
- **Oversees Program Manager's Performance**
- **Provides Appeal Process for Contested Decisions**
- **Oversees Certification Examination Content**





Program Manager (PM)



- **Contracted by INCOSE BOD to 2-year Renewable Term**
- **Reports to CAG**
- **Operates Program Office**
- **Interfaces with Administrative & Test Support**
- **Ensures Satisfactory Interfaces and Services to All Clients of the Certification Program**
- **Publicizes and Markets the Certification Program**





Certification Application Reviewers (CARs)



- **Pool of CSEPs available for evaluation of applicants' technical credentials**
- **Applications assigned by PM to groups of CARs for review (min of 3 per application)**
- **CAG selects CARs based on following criteria:**
 - **INCOSE member in good standing**
 - **Current CSEP status**
 - **At least 20 years of engineering experience**
 - **At least 10 years of systems engineering experience**
 - **Some experience in hiring/managing engineering /technical personnel is desired, but not required.**





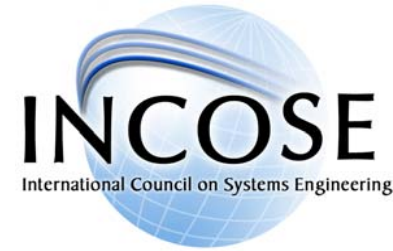
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Certification Program Milestones

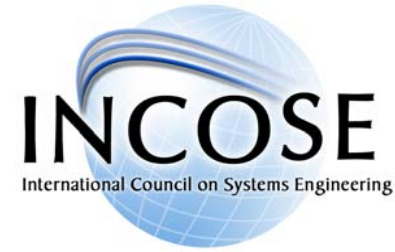


- ❖ **Program Development Authorized by BOD - IS 02**
- ❖ **Certification Exam Beta Tested – IS 03**
- ❖ **Program Operational Plan Approved by BOD – IS 04**
- ❖ **Initial CAG and Acting Program Manager Appointed – September 2004**
- ❖ **Initial CSEPs Awarded – IW 05**
- ❖ **Certification Program Available to Public via INCOSE Web Page – March 2005**





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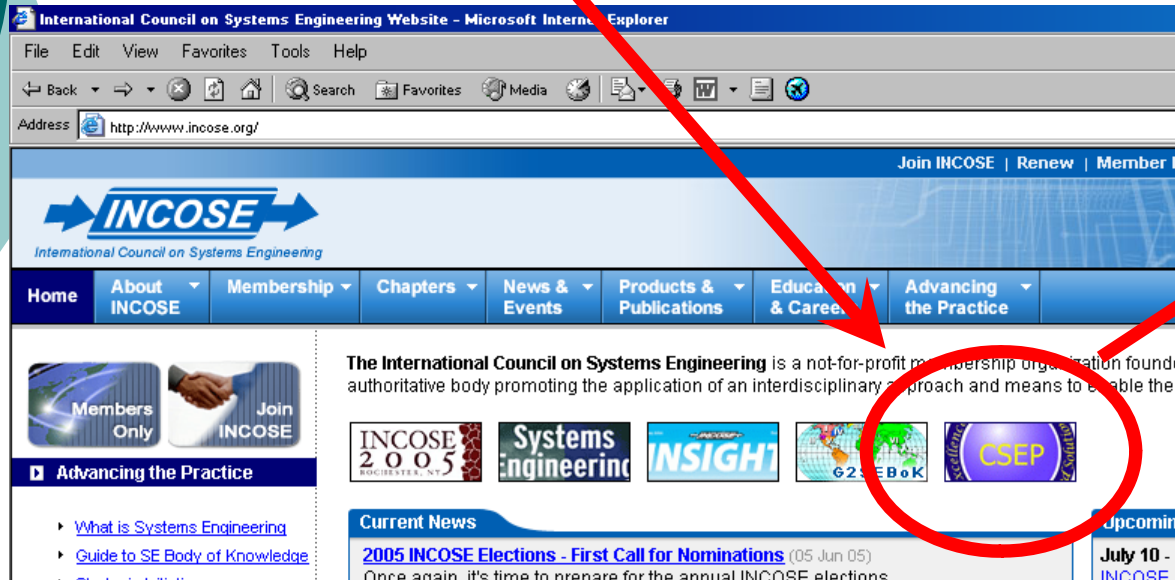
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Where Do I Find More Information?



INCOSE Certification web site at
<http://www.incose.org>



Certification Program Detail

- ▶ Certification Requirements
- ▶ Certification Renewal Requirements
- ▶ Certification Fees
- ▶ Online Payment
- ▶ Certification Examination
- ▶ Continuing Education
- ▶ Experience Applicable to Certification
- ▶ Colleagues/Peers Used for References
- ▶ Forms
- ▶ Ethics Statement
- ▶ FAQs
- ▶ Possible Future Levels of Certification
- ▶ Certification Reconsideration Appeal
- ▶ Certified Systems Engineering Professionals

53 CSEPs to Date

Online Application Preparation - Coming

**OPEN FOR BUSINESS (Mar 2005) &
Accepting Applications**



Posted Certification Program Details



INCOSE Certification Web Area at

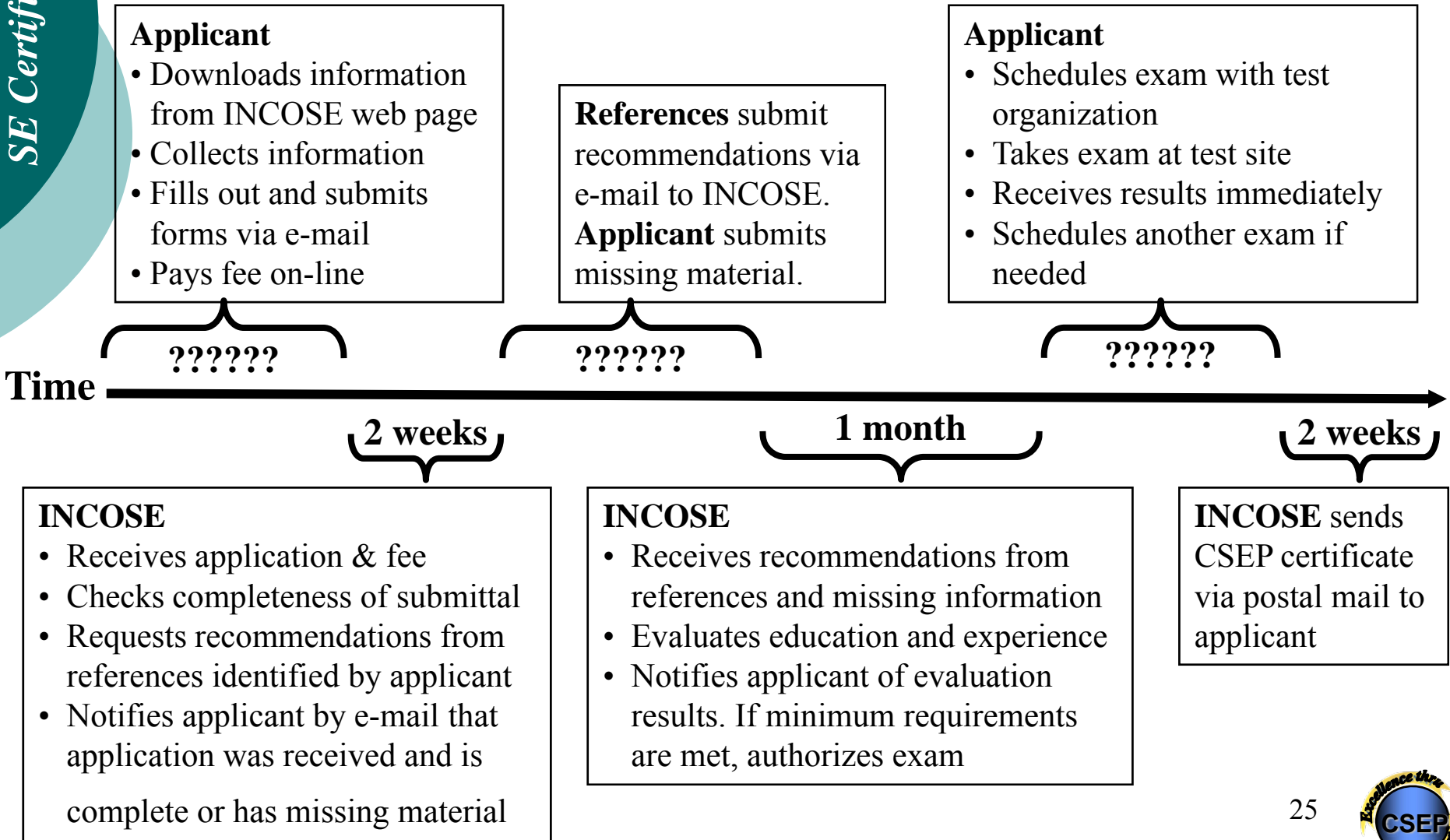
<http://www.incose.org/educationcareers/certification/index.aspx>

- **Introduction and Overview Briefing**
- **Certification Requirements**
- **Certification Renewal Requirements**
- **Certification Fees**
- **Online Payment**
- **Certification Exam**
- **Continuing Education**
- **Experience Applicable to Certification**
- **Colleagues/Peers Used for References**
- **Certification Forms**
- **Ethics Statement**
- **Frequently Asked Questions (FAQs - 47)**
- **Possible Future Levels of Certification**
- **Certification Reconsideration Appeal**
- **Certified Systems Engineering Professionals (53)**



How Long Will It Take Me to Become Certified?

There is no one answer. Much depends on the applicant.





Program Change Considerations



- **Selection of a Permanent Program Manager**
- **Online Submission of Applications and Renewals**
- **Update Exam After SE Handbook Version 3 Is Introduced**
- **Exam Training Programs**
 - Courseware
 - List of Knowledge Providers
- **Internationalize the Program (Multiple Languages)**
- **Multiple Levels of Certification**
 - Systems Engineering Management
 - Systems Engineering Specialist
 - Systems Engineering Enterprise Processes
 - Systems Engineering Fellow



Any Questions?



**For Answers,
Contact the Certification Office at
secert@ incose.org**

