

FORM 42 – INSTRUCTIONS FOR COMPLETING FORM 41 (APPLICATION FOR INCOSE ESEP)

General Instructions

1. An electronic submission via the INCOSE website is preferred. You must be an individual INCOSE member to apply, and you must log in to the INCOSE website to upload your application. If you would like help submitting your application materials, please email sep-application@incose.net for advice.
2. The individual application form was created using Adobe Live Cycle Designer and works well with the free versions of Adobe Reader. It will not work well with Adobe Acrobat or the Apple Preview viewer of PDFs. Using Adobe Reader, you will be able to edit, save, and print the application form.
3. The applicant is responsible for providing the information requested on the application, and for providing Form 4A "Instructions to References" and Form 4B "Reference's Comments and Recommendations" to his or her qualified references for their use in submitting their reference information. A qualified reference is a supervisor or associate fellow worker who is equal or at a higher level in abilities and qualifications "systems engineering wise," and, because of that can attest to the applicant's systems engineering knowledge and past experience in successfully performing systems engineering tasks. References endorsing additional general engineering experience due to the applicant's educational situation need to be qualified to attest to the applicant's general engineering knowledge and past experience in successfully performing general engineering tasks. At least one reference should be a current or former supervisor. All references must report only on experience about which they have first-hand knowledge, performed during a time when they knew the applicant. Reference providers should not be related to the applicant by blood. The applicant's experience reported and confirmed by the references must cover the entire period of systems engineering experience (and additional general engineering experience, if applicable) needed by the applicant to qualify for certification. Each individual reference does not have to confirm the entire period of the applicant's experience, but the collective set of references must support the entire period of the applicant's required experience, including both depth and breadth of experience requirements. The applicant is also responsible for following up with his/her references to ensure that they have submitted their recommendations in a timely manner to the INCOSE Certification Office. Slow references are the primary cause of delay in application processing.
4. The non-refundable fees in United States dollars that must accompany certification applications are listed on the INCOSE Certification web site at: <http://www.incose.org/certification/CertProcess/CertCost>
The application will be processed after the fee is received. Payment is preferred through the INCOSE website. Help with payment may be obtained by emailing certification@incose.net
You have one year from the date of your application and payment to complete the entire certification process.
The applicant is responsible for any delays in application or reference submittals, delays due to incomplete or insufficient information, and successfully passing the examination. Failure to do so will result in your application for certification being denied and your fees will not be refunded.
5. **All supporting documentation and information must be received before an application is considered complete.** If the application is incomplete or one of your items is missing, you will be notified of the corrective actions that you must take. If you are requested to submit additional information, you will have three months from the time of notification to provide this additional information. Failure to do so will result in your application for certification being denied and your fees will not be refunded.



Section 1: General Information

Name: Given (First) Name(s), Family Name (Surname), and Middle Initial

Address: Preferred **permanent** complete mailing address, so that we can distinguish between candidates and to reach you if your email address changes.

Current e-mail address and phone numbers

Present organization

Section 2: INCOSE Membership and Certification Interest

Please indicate if you have a current certification. The application will be filled out the same. Those who are a CSEP, already, do not have to resubmit proof of education. If you do have a current or expired certification, please provide your certification number.

Section 3: Fee Payment

Some companies and universities have agreements with INCOSE related to the application process. Some companies and universities are part of INCOSE's Corporate Advisory Board (CAB). If either of these is true of your employer, select "Yes." If you are not sure, select "No" or leave this section blank.

If you are submitting as part of a group, you may list a group name or date in the optional field.

Indicate the applicable fee amount in dollars (e.g., \$550) and the approximate date when your payment was or will be submitted. You may type the date or use the calendar selector. Indicate also how the payment has been sent. This information helps our office match your payment to your application. Your application will not be processed until the non-refundable fee is received.

Section 4: Education

Candidates for INCOSE Certification at the CSEP and ESEP level are expected to have a qualifying degree. Those who do not have a qualifying degree must submit additional work experience. This section is where degrees are listed.

You may assign a number to your degrees, in case that is helpful in your communication of documentation. You may list your degrees in any order. Incomplete work toward a degree may also be listed but will not be credited.

For each degree, list the awarding institution as the College or University. List the start year and graduation year, as these help indicate whether the study was done in parallel with work and how many years the program took to complete. For "Major Field," list the engineering field (E.g., "Mechanical Engineering") or other major course of study. For "Original Degree name," list what is found on your diploma and then translate, if necessary, into what you believe is the equivalent name in the "Equivalent degree" dropdown. E.g., you may have a "Diploma of Engineering" that is equivalent to a "BE," which stands for "Bachelor of Engineering." The equivalent degrees are: Bachelor of Arts (BA), Bachelor of Engineering (BE), Bachelor of Science (BS), Master of Arts (MA), Master of Business Administration (MBA), Master of Engineering (ME), Master of Science (MS), Doctor of Philosophy (PhD).

You must submit a **copy** of your college transcript(s) or diploma(s) to receive credit for having a degree(s). A scanned copy or photograph of your transcript(s) or diploma(s) is acceptable. Please do not submit your actual diploma; we will not return it to you. If you have multiple degrees, you only need to submit proof of one qualifying degree.

For applicants possessing a qualifying degree, the minimum required amount of systems engineering experience to be considered for ESEP certification is twenty-five (25) years. Qualifying Bachelor's degrees include BS or BSE (or international equivalents through such mechanisms as the Washington Accord or the Bologna Agreement) in the following or related engineering disciplines: aeronautics, astronautics, biomedical, chemical, civil, computer, electrical, environmental, industrial, mechanical, nuclear, software, systems. Other qualifying fields of study include: chemistry, computer science, mathematics, chemistry, 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. The acceptability of other degrees outside this guideline is subject to the decision of the Certification Program Office. To expedite the review in cases where there may be any doubt about the acceptability of the degree, applicants should submit with their application a copy of their transcript showing the courses taken to obtain the degree. Degrees such as Information Technology and Systems Management may be accepted if they include coursework similar to the calculus and physics classes typically included in engineering programs of study.

Applicants who lack a qualifying degree must submit an additional five (5) years of engineering experience with a non-qualifying Bachelor's degree, or an additional ten (10) years of engineering experience in lieu of no Bachelor's degree. The additional years of engineering experience required to compensate for lack of a qualifying degree may be in any engineering field, including systems engineering.

In the response to the question about certification and degree status, please check your qualifying degree status with the corresponding minimum number of years of systems engineering experience that is required. **Note: INCOSE is the final authority on degree applicability.**

Section 5: Experience

Please start with your current position for P1 and continue in reverse chronological order. The form will expand to submit additional SE experience areas within each position using the "+" symbol. If you need more than 7 positions, please submit an additional application form to cover the additional positions.

Provide the organization name and dates of experience (from/to month & year). The form will round to the first date of each month and will calculate the elapsed time in position. This is important, as you must claim fewer or equal months of work experience than the calendar months of experience. You will see a pop-up until you have this corrected, and these dates are key to that calculation.

Include the name of your immediate supervisor/peer and how he/she may be contacted, though such contact is not standard. List your title/position and the reference(s) for that work experience. This list of references will help your application review team know whether they have received a reference to validate the experience. Only validated experience can count toward meeting the depth and breadth requirement. If you have no references for a position, type "None" in that field.

Begin each position by summarizing your role and system of interest. This is an optional section that may be useful for you to give context to the functional descriptions that follow. In this section, you may explain if your role changed. You are not required to name the specific system on which you worked.

Using the SE experience area drop-down, choose a systems engineering type of work you did. Next to that, type the number of months during which you did this work. Because you may only count each calendar month once, you will need to consider how you are allocating time to each SE experience area. If you worked for 12 months and did two different types of systems engineering, you will allocate X months to one type and (12 - X) months to the other type. If your time was equally split between the two, you will give 6 months to each type.

In the expandable text box below the drop-down, include the full depth of detail about the SE tasks/functions you performed and the products you produced. Describe in detail your role in leading/performing systems engineering tasks, the products produced, and the duration of your efforts in producing those products. The Certification Application Review Team makes its assessments based on the information provided in the application and is looking for your direct contributions to a work effort. For example:

Identify and describe the products or services for which SE was applied.

Describe the sub-level activities performed in SE experience areas, such as what parts of requirements engineering were done – requirements elicitation, definition, decomposition, allocation, control, management, etc. It is too vague to just state "I worked on requirements for the system."

Describe your qualifications in more detail than just saying that you were involved with an effort, led an effort, or contributed to an effort. Simply stating a job title or position is not a description of experience. Non-technical roles/tasks in program management, resource management and business development are not regarded as SE functions and do not count as appropriate experience. Also, describe additional years of engineering experience required due to your educational situation. Applications with insufficient detail may result in denial.

An Expert Systems Engineering Professional must have a demonstrated breadth and depth of systems engineering experience. In order to ensure a sound systems engineering technical foundation, the systems engineering experience documented in the application needs to include *two-year or greater* totals in *at least six* of the following areas of systems engineering. These areas are further defined in Attachment A:

- Requirements Engineering
- System and Decision Analysis
- Architecture/ Design Development
- Systems Integration
- Verification and Validation
- System Operation and Maintenance
- Technical Planning
- Technical Monitoring and Control
- Acquisition and Supply
- Information and Configuration Management
- Risk and Opportunity Management
- Lifecycle Process Definition and Management
- Specialty Engineering
- Organizational Project Enabling Activities
- Other

A summary table has been provided for the applicant to identify that he or she has the required depth and breadth of systems engineering experience. This summary table is broken down by the 14 SE experience areas listed in Attachment A to this form. Check that the number of full-time equivalent calendar months (rounded to the nearest whole month and no credit for overtime work/penalty for vacation time) worked in each of the system engineering experience areas confirms the depth and breadth requirement by looking for a number greater than or equal to 24 in the right-hand column of the summary table. You must have at least six rows greater than or equal to 24, and confirmed by references, to meet the depth and breadth requirement.

The time for each period of performance in the summary table must be less than or equal to the respective period of performance calendar time claimed on your application. As an example, assume you worked in 4 different SE experience areas in a 7-year period and the total of all your SE experience amounted to 5 years. The summary table breakout should reflect your equivalent full-time experience, such as: Requirements Engineering for 18 months; Systems Integration for 15 months; Information and Configuration Management for 15 months; and Technical Planning for 12 months; thus equaling 60 months of SE experience for the 7-year period. As another check, the total amount of SE experience in the summary table must be less than or equal to the calendar time of your claimed periods of performance on the application. A pop-up will display if any positions violate this rule.

Please identify employment periods at different organizations, or significant changes of responsibilities within the same organization as separate positions. Do not differentiate between different projects or various placements within the same organization unless there was a significant change in responsibility. Also, time in school as a student does not count as experience. It is recommended that you fit all your work experience into seven positions. If that is not possible, you may submit a second application form addressing additional positions.

All experience is useful for reviewers to understand your work experience, but only that confirmed by references can count toward meeting the minimum experience requirements. Your references must cover the same time periods and describe the same types of work in their statements as you have described in your application. They must not use identical wording to your application and to each other.

Section 6: Professional Development & Contribution to Systems Engineering Profession

In addition to on-the-job experience, the ESEP is expected to have demonstrated a minimum of five (5) years of post-Bachelor's leadership and continued professional development contributions to the systems engineering profession. These five (5) years of leadership and professional development contributions to the systems engineering profession may have been acquired concurrent with, or in addition to, the years of on-the-job systems engineering experience. Qualifying activities in this category include:

- Product Development or Technical Service Leadership in a product development or technical service position, such as chief engineer or development team lead - you may claim one year for each year in a leadership position, with no total limit.

Technical Society Leadership of a professional technical society as elected officer or appointed committee chair – you may claim one-half year for each year of service, with no total limit.

Advanced Academics – you may claim a maximum of four (4) years, even if the sum of the values below is greater than that. An ESEP's professional development must come from more than just advanced academics.

- o Earning a Master's degree, or equivalent, in a technical field – you may claim one (1) year.
- o Earning a Doctor of Philosophy degree, or equivalent, in a technical field – you may claim two (2) years if separate credit is given for a Master's degree; three (3) years if separate credit is not given for a Master's degree.
- o Systems engineering graduate-level teaching as a secondary job – you may claim a maximum of three (3) years. [One year of credit is earned for each five hundred (500) hours of classroom instruction spread over a three (3) year time period.]

The tables in Form 41 will guide you on these limits. E.g., if you have two Master's degrees plus a PhD, and have taught graduate-level courses for twenty years, you would enter those actual numbers but then would be limited to three years for advanced degrees and three years for teaching, for a sum of six years. Those six years would be further limited to the maximum of four years in Advanced Academics. An additional year of either Product Development, Technical Service Leadership, or Technical Society Leadership would be needed to reach the five-year professional development minimum.

At the bottom of Section 6, provide a list of SE-related publications and SE-related honors or other examples of you sharing knowledge and having an influence. Include the titles of publications, publication dates, names of the honors, and the dates on which honors were bestowed.

Leadership is a position or function of going before, showing the way, leading, guiding, directing, managing, escorting, coaching, influencing or directing others to follow. Without followers, there is no leadership. Only include the type of assignments that count as systems engineering leadership. For example, 1-2 person tasks or assignments shortly after earning your Bachelor's degree are highly unlikely to satisfy these requirements.

Detailed Guidance for Product Development or Technical Service Leadership

Indicate the amount of time spent in systems engineering leadership positions for product development or technical services, such as a program vice-president, chief engineer, chief systems engineer, director, or equivalent. Include the names of the positions held, the products or service programs, the time period of each position, and the total years in each position.

Detailed Guidance for Technical Society Leadership

Indicate the contribution to furthering the systems engineering profession through participation in technical society leadership at any level (local, national, or international). Provide the names of the technical societies, the positions held, the time periods of the positions, and the number of years in each position.

Detailed Guidance for Advanced Academics Inputs

If advanced technical degrees have been earned, indicate the types of degrees and be sure that Section 4 contains information on the institution awarding the degrees, the dates the degrees were awarded, and the technical disciplines of the degrees. Credit is given for at most one Master's degree and one Doctoral degree.

If you have developed or taught graduate level SE courses, insert the information requested in the table provided. These courses must be related to SE and may be for internal organizational use or public offerings at universities and colleges. The requested information includes the names of the institutions, the names of the courses, the time periods when the courses were taught, and the course class hours. As an example of an entry to make for a course, if a course is taught for three one-hour time periods over ten weeks, the number of course class hours to be entered is thirty.

Section 7: Affidavit

Read, check, sign, and date your decision on accepting the affidavit. Your typed name is accepted as a signature on an electronically submitted application.

You must sign the affidavit to have your application processed.

Section 8: Optional Information

Your birth year and gender are useful for our internal analysis but will not affect your application processing. You may choose whether you submit this information.

If recognized as an INCOSE Systems Engineering Professional, your name along with your organization/division, city, state, and country will be posted on the INCOSE public web site and may be otherwise communicated by INCOSE.

Attachment A - Experience Applicable for Certification

Applicants for certification as a Certified Systems Engineering Professional or Expert Systems Engineering Professional are required to submit evidence of systems engineering experience in addition to having a qualifying degree.

Experience to satisfy the minimum requirements for initial certification includes performing systems engineering technical activities, but does not include time spent in receiving a technical education.

Systems engineering technical activities include but are not limited to those identified in the table below. For further information and for detail on typical tasks associated with each activity, please refer to the INCOSE Systems Engineering Handbook (V4.0):

Systems Engineering Experience Area:	Principle SE Activities associated with the SE experience area
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.
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.

Information and Configuration Management	Planning Configuration Management; 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 <u>professional-level</u> systems engineering activities associated with one or more Specialty Engineering area(s). Typical Specialty Engineering areas include but are not limited to those identified in the INCOSE SE Handbook V4.0, namely: Affordability/Cost-Effectiveness/Life Cycle Cost analysis; Electromagnetic Compatibility Analysis; Environmental Engineering/Impact Analysis; Interoperability Analysis; Logistics Engineering; Manufacturing and Produceability Analysis; Mass Properties Engineering; Reliability, Availability and Maintainability analysis; Resilience Engineering; System Safety Engineering; System Security Engineering; Training Needs Analysis; Usability Analysis/Human Systems Integration; Value Engineering.
Organizational Project Enabling Activities	Infrastructure Management, including establishing and maintaining the Infrastructure; HR Management, including identifying and developing SE Skills, acquiring and providing SE skills for projects; Quality Management including planning and assessing Quality Management, Performing Quality Management corrective and preventative actions; Knowledge Management, including Planning Knowledge Management, Sharing Knowledge and skills throughout the organization, Managing Knowledge, skills and knowledge assets; Project Portfolio Management at Organizational level, including defining and authorizing SE projects, evaluating a portfolio of SE projects and terminating SE projects.
Other	Other functions and activities performed that you can justify as Systems Engineering activities.

Certification at CSEP level will indicate that the individual has a balance between the *depth* and *breadth* of SE experience in performing some, but not all, of the SE activities identified above.

Applicants lacking a qualifying degree, but with a non-qualifying Bachelor's degree, are required to submit an additional five (5) years of engineering experience; whilst those without any Bachelor's degree must submit an additional ten (10) years of engineering experience in lieu of a qualifying degree.

Note that the additional years of engineering experience required to compensate for lack of a qualifying degree may be in any engineering field, not just systems engineering.

Attachment B - Colleagues/Peers Used for References

A "Colleague/Peer" used as a reference is a supervisor, associate, or fellow worker who is equal or at a higher level in abilities and qualifications "systems engineering wise," and, because of that can attest to your "systems engineering knowledge" and past experience in successfully performing "systems engineering tasks." Qualifying work may have been performed as part of a paid or volunteer position but cannot include tasks for which academic credit was awarded.

Part of the process in certifying an applicant is to obtain data from qualified references that the applicant performed the tasks as described in the application. A qualified reference is an associate or fellow worker who is equal or at a higher level in abilities and qualifications "systems engineering wise," and, because of that can attest to the applicant's systems engineering knowledge and past experience in successfully performing systems engineering tasks.

In addition to being qualified to serve as a reference based on systems engineering knowledge, a reference must also have specific knowledge of the applicant's SE work. The reference should have known the applicant during the time when the work was performed and been aware of the work during that time. The reference should have no family or blood relationship to the applicant.

All of the following categories of people should qualify as credible references:

- Supervisors for whom you work and/or who provide your systems engineering performance rating

- Program Managers/Task Leaders for whom you work and/or who provide input for your systems engineering performance rating

- INCOSE CSEPs and ESEPs who are acquainted with your work (experience), knowledge, leadership, and contributions to systems engineering

- INCOSE Fellows or other leaders who are acquainted with your work (experience), knowledge, leadership, and contributions to systems engineering

An applicant should provide references from a mixture of these categories. Thus, an applicant should limit references to two from any one category. References provide information to support an applicant and their reasons for the recommendation and will be requested to submit information on their own work experience, knowledge, leadership, and contributions to systems engineering.