

# 团 体 标 准

T/CAS 326—2018

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## 工程能力评价通用规范

Capability evaluation of professional engineers  
general specification

2018-10-30 发布

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中国标准化协会 发布



## T/CAS 326—2018

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## 前 言

本标准是依据T/CAS 1.1—2017《团体标准的结构和编写指南》编制。

本标准由中国科协工程能力建设联盟提出并归口。

本标准起草单位：中国科协培训和人才服务中心、中国标准化协会、中国机械工程学会、中国汽车工程学会、中国电机工程学会、中国电工技术学会、中国仪器仪表学会、中国铁道学会、中国公路学会、中国核学会、中国建筑学会。

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本标准首次制定。

## 引 言

为建立国际实质等效的工程能力评价体系，推动工程师国际互认，提高工程技术人才职业化、国际化水平，中国科协成立工程能力建设联盟（以下简称联盟）。联盟负责统筹开展工程能力建设的专题研究、决策咨询、业务指导和评价服务等工作。联盟授权符合条件的中国科协所属全国学会（以下简称全国学会）承担具体的工程能力评价工作。获得授权的全国学会（以下简称获授权学会）可对其会员开展专业工程能力评价。会员经评价合格，可注册成为工程会员。

为规范工程能力评价活动，特制定本标准。

# 工程能力评价通用规范

## 1 范围

本标准规定了开展工程能力评价所涉及的评价授权、评价标准、评价程序、核准与注册、管理与服务、自律与监管等相关要求。

本标准适用于以下工程技术领域：

- 土木工程类；
- 电气工程类；
- 机械工程类；
- 铁路工程类；
- 核工程类。

## 2 术语和定义

下列术语和定义适用于本文件。

### 2.1

**申请人 applicant**

从事本标准规定的工程技术领域工作，提出工程能力评价申请的获授权学会会员。

### 2.2

**工程能力评价 engineering capability evaluation**

获授权学会根据工程能力评价标准，按照评价程序对申请人进行考核评价。

### 2.3

**考官 assessor**

具备从事工程能力评价工作需要的素质、知识和技能，并经联盟备案的考核人员。

### 2.4

**注册 registration**

申请人经工程能力评价合格，获得工程会员证书的程序。

### 2.5

**工程会员 professional engineer**

通过注册，获得工程会员证书的人员。

## 2.6

### 持续职业发展 continuous professional development

工程会员为保持和提高工程技术能力和素质能力，所参与的学习、培训、参观、交流和研讨等活动。

## 2.7

### 再注册 re-registration

工程会员在证书有效期到期前向获授权学会提出申请，经评价合格，换发工程会员证书的程序。

## 3 评价授权

3.1 全国学会可向联盟提出开展工程能力评价工作的申请。

3.2 联盟组织对提出申请的全国学会进行资格审查。

3.3 联盟授权审查合格的全国学会，在授权有效期内开展本标准所规定的工程能力评价工作。

## 4 评价标准

### 4.1 教育经历要求

4.1.1 申请人应具有中华人民共和国教育部承认的工程类及相关专业大学本科及以上学历或在海外取得《华盛顿协议》认可的工程类及相关专业学位。

4.1.2 申请人应满足所申请工程技术领域对教育经历方面的特定要求。

### 4.2 专业工作经历要求

4.2.1 申请人的专业工作经历应在取得本科或以上学历后获得。

4.2.2 申请人应在工程会员指导下，获得至少5年的专业工作经历，其中至少包含2年重要工程工作经历。

4.2.3 申请人应满足所申请工程技术领域对专业工作经历方面的特定要求。

### 4.3 素质能力要求

4.3.1 申请人应满足素质能力要求（见附录A）。

4.3.2 申请人应满足所申请工程技术领域对素质能力方面的特定要求。

### 4.4 职业道德要求

申请人的职业道德应满足职业行为准则的要求（见附录B）。

## 5 评价程序

### 5.1 申请受理

5.1.1 申请人按照要求提交工程能力评价所需的申请信息和资料。

5.1.2 获授权学会对申请信息和资料进行初审，确认教育经历和专业工作经历等基本条件的符合性。

### 5.2 考核评价

5.2.1 获授权学会定期组织开展工程能力评价笔试和面试工作。通过笔试的申请人，方可参加面试。

5.2.2 获授权学会根据要求筛选、推荐考官，经联盟备案后纳入考官专家库。

5.2.3 面试时，获授权学会应从考官专家库中随机选择至少3名考官组成考核组，其中至少2名考官与申请人的工程技术领域相近。

5.2.4 考核组依据合格判定准则，对申请人评价是否合格给出意见。

### 5.3 审议

获授权学会根据申请人的相关情况和考核组的评价建议进行综合审议，确定是否予以注册。

## 6 核准与注册

6.1 获授权学会根据考核审议结果，将拟注册的申请人信息报送联盟。

6.2 联盟核准后，给予统一的工程会员注册编号。

6.3 获授权学会负责人为经联盟核准的申请人签发工程会员证书，证书有效期5年。

6.4 工程会员证书至少应包含下列信息：

- 联盟标识；
- 获授权学会的名称、标识；
- 人员姓名和身份识别信息；
- 注册工程技术领域；
- 注册编号；
- 照片；
- 批准日期和有效期。

6.5 对于未获批准的申请人，获授权学会应将评价意见及结论通知其本人。

6.6 获授权学会应及时公告工程会员注册情况，公告至少应包含下列信息：

- 人员姓名；
- 注册工程技术领域；
- 注册编号；
- 批准日期和有效期。

6.7 工程会员应在证书有效期到期前3个月内，向获授权学会提出再注册申请。经获授权学会评价合格，换发工程会员证书。

6.8 联盟每年4次向社会集中公告工程会员注册/再注册情况。

## 7 管理与服务

### 7.1 持续职业发展

7.1.1 工程会员每年应参加不少于 40 学时（每学时原则上不少于 30 min）的经获授权学会认可的持续职业发展活动，活动通常包括：

- 联盟和获授权学会指定或认可的知识培训或考试；
- 相关工程技术领域的研讨会、技术考察等活动；
- 相关工程技术领域专业机构的专业活动（如相关标准的起草、课题研究等）；
- 相关工程技术领域的专业论文发表或书籍出版；
- 相关工程技术领域的专业授课或会议演讲；
- 相关工程技术领域的技术咨询等服务活动；
- 获授权学会指定的自学活动。

7.1.2 联盟和获授权学会应确定每年工程会员持续职业发展活动的具体内容及对应的学时。

### 7.2 证书管理

7.2.1 获授权学会应明确工程会员证书管理的要求，确定一般/严重不符合情形及相应的处置细则。

7.2.2 工程会员出现一般不符合情形，获授权学会应暂停其证书使用，暂停期不超过六个月；暂停证书原因消除后，应办理恢复证书使用手续。

7.2.3 工程会员不再保持资格的，应办理注销证书手续。

7.2.4 工程会员出现严重不符合情形或暂停证书到期未办理恢复使用手续的，获授权学会应办理撤销证书手续。

7.2.5 在证书有效期截止日前，工程会员没有提出再注册申请，证书到期后自动失效。

7.2.6 工程会员使用证书，应遵守获授权学会相关要求。工程会员资格被暂停期间、注销和撤销后，不得使用相应证书。

### 7.3 信息公开

获授权学会应及时向社会公开工程会员证书暂停、恢复、注销、撤销信息，并将变动信息向联盟通报。

## 8 自律与监管

### 8.1 自律和公正性

8.1.1 联盟、获授权学会及相关工作人员遵照诚信、自律、公正的原则，开展工程能力评价相关工作。

8.1.2 获授权学会应建立回避制度，以确保申请受理、考核评价、审议等全过程的公正性。

8.1.3 工程会员应遵守职业行为准则。

### 8.2 监管

联盟对获授权学会开展的工程能力评价相关工作进行监督，对出现问题的学会，联盟要求其限期整改；视问题严重程度，联盟撤销其授权资格。

### 8.3 保密制度

联盟、获授权学会及相关工作人员对申请人和工程会员提交的个人相关信息负有保密义务，不得向第三方泄露（法律有要求时除外）。

### 8.4 申诉和投诉

8.4.1 联盟和获授权学会分别建立申诉与投诉的渠道。

8.4.2 申请人对评价结果存有异议的，可向获授权学会提出申诉。

8.4.3 申请人对获授权学会申诉处理决定不接受的，可向联盟提出申诉。

8.4.4 申请人对获授权学会在工程能力评价工作中违反程序和规则的，可向获授权学会或联盟提出投诉。

8.4.5 工程会员注册后，对获授权学会的相关管理不当行为，可向获授权学会或联盟提出投诉。

8.4.6 获授权学会、联盟应及时受理并妥善处理相关申诉和投诉，并保留相关处理手续和证据。

### 8.5 反馈机制

8.5.1 联盟和获授权学会应及时向申（投）诉人反馈处理结果。

8.5.2 单位或个人可直接向联盟提出工程能力评价工作的相关意见或建议。

附 录 A  
(规范性附录)  
工程会员素质能力要求

中国科协工程能力建设联盟工程会员应满足表A.1的要求。

表A.1 工程会员素质能力要求

素质能力	要求
A 工程知识与专业 能力	A1 具有本专业工程教育背景，接受过工程基础和专业知识学习以及专业技能训练。
	A2 能运用数学、自然科学、工程基础和专业知识以及专业技能解决复杂问题。
	A3 具备收集、分析、判断国内外相关技术信息的能力，能进行复杂问题的研究、提出开发方向和思路及解决方案。
	A4 具备系统思维和创新思维能力，能提出创新方案。
B 工程伦理与职业 道德	B1 具有社会责任感和敬业精神，能在工作中正确运用专业知识保证工程和自然、社会的和谐发展，树立全面、协调、可持续发展理念。
	B2 能在工作中遵循法律法规、技术规范和正确运用质量、安全、节能环保知识。
	B3 具有本专业职业健康安全、节能、环保、知识产权保护意识，能在工作中正确运用专业知识维护以上要素。
C 团队合作与交流 能力	C1 能使用工程语言制定工程文件，并与同行深入交流。
	C2 有团队合作精神和良好的人际交往关系，能够控制自我并理解他人意愿。
	C3 能适应各种环境并发挥自身能力。
	C4 能够进行国际交流与合作。
D 持续发展与终身 学习能力	D1 制定并实施自身职业发展规划；积极参与业内学术活动。
	D2 主动跟踪本专业国内外技术发展趋势，不断掌握新知识、新技能，并应用于工作中。
E 组织领导与项目 管理能力	E1 具备市场调研、需求预测和技术经济分析能力，能评估工程项目的效果和影响。
	E2 具备团队组建和管理能力，具备项目监控和过程管理能力，能组织实施工程项目。
	E3 具备风险管控能力，能进行风险预判并提出风险规避预案。
	E4 具备综合分析、判断能力，能在工程项目实施过程中展现很强的判断力。
	E5 能提出决策意见，并对所作出的决定负责任。

附 录 B  
(规范性附录)  
职业行为准则

中国科协工程能力建设联盟结合工程特点和社会可持续发展要求制定以下职业行为准则：

- 以公众的安全、健康和幸福为基本原则；
  - 对于自己熟知技术领域内有争议的公共事件，有义务从专业的角度向公众解释；
  - 遵守法律法规及工程规章制度要求，维护国家、联盟、工程相关方、获授权学会和个人的声誉；
  - 爱岗敬业，履职尽责，不承担超出自身能力范围的专业工作；
  - 不得以自己的专业知识从事迷惑或欺诈行为；
  - 树立全面、协调、可持续发展理念，将职业健康安全、节能、环保意识贯彻于工程实践中，预防或减少对健康、安全、环境和社会造成的不利影响；
  - 不断保持和提高自身的工程能力的同时，鼓励和帮助他人提高工程能力；
  - 尊重和公平对待他人，针对影响他人的危险、风险、玩忽职守或不当行为应予以制止或向有关部门反映；
  - 避免不必要的利益冲突，维护工程利益相关方的合法权益；
  - 注重知识产权保护，履行必要的保密责任，不参与不公平竞争，拒绝贿赂和一切形式的腐败行为。
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ICS 01.120

A00

关键词：工程能力评价、通用规范

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ICS 01.120

A 00

# Social Organization Standard

T/CAS 326—2018

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## Capability evaluation of professional engineers general specification

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China Association for Standardization (CAS) is a nationwide public organization that organizes and carries out activities about domestic and international standardization. Developing CAS Standard to meet the needs of enterprises and promote the work of enterprise standardization is one of CAS' work contents. Both groups and individuals at home can offer the suggestion on developing or revising CAS standard, and participate in the relevant work.

CAS standard is managed according to "Management Rules for the Standards of CAS" .

The draft of CAS Standard is open to the society for suggestion. Only with the vote of more than 75 percent experts and members who attend the Meeting can the draft be issued as the CAS Standard.

In the process of implementing the standard, please mail the opinion and relevant materials to CAS or China Health Care Association if you find something to be revised or complemented.

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## Foreword

This Standard was formulated on the basis of the *Guideline for Structure and Drafting of Social Organization Standard* (T/CAS 1.1-2017)

This Standard was proposed and managed by Engineering Capability Building Alliance (hereinafter referred to as the Alliance) of China Association for Science and Technology (CAST).

This Standard was drafted by the following organizations: Center for Professional Training and Services of CAST, China Association for Standardization, Chinese Mechanical Engineering Society, China-SAE, Chinese Society for Electrical Engineering, China Electrotechnical Society, China Instrument and Control Society, China Railway Society, China Highway and Transportation Society, Chinese Nuclear Society, and Architectural Society of China.

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It is the first time to issue the standard.

## Introduction

In order to establish an internationally equivalent engineering capability evaluation system, advance international mutual recognition of engineers, and improve the professional and international level of professional engineers, the China Association for Science and Technology (CAST) has established the Engineering Capability Building Alliance (hereinafter referred to as the Alliance) to take charge of special research, decision-making consultation, business guidance and evaluation service related to engineering capability building. The Alliance authorizes the qualified National Societies under the CAST (hereinafter referred to as the National Societies) to undertake specific engineering capability evaluation. The authorized National Societies (hereinafter referred to as the authorized Societies) shall assess the professional engineering capability of their respective members. Once considered qualified after evaluation, the respective members can be registered as professional engineers.

This Standard is hereby formulated to standardize engineering capability evaluation activities.

# Capability evaluation of professional engineers general specification

## 1 Scope of application

This Standard specifies the evaluation authorization, evaluation criteria, evaluation procedures, approval and registration, management and services, self-regulation and supervision and other requirements concerning the engineering capability evaluation.

- This Standard applies to the following engineering and technical fields:
- Civil Engineering;
- Electrical Engineering;
- Mechanical Engineering;
- Railway Engineering;
- Nuclear Engineering.

## 2 Terms and definitions

For the purpose of this Standard, the terms and definitions given below apply.

### 2.1 Applicant

The applicants shall be members of the authorized Societies who work in the engineering and technical fields stipulated by this Standard, and apply for the engineering capability evaluation.

### 2.2 Engineering Capability Evaluation

The authorized Societies carry out evaluation and assessment on the applicants in accordance with the engineering capability evaluation criteria and the evaluation procedures.

### 2.3 Assessor

The assessor refers to the assessment personnel who has the competences, knowledge and skills necessary for engineering capability evaluation and is registered by the Alliance.

### 2.4 Registration

Registration refers to the procedure that the applicants are granted the professional engineer certificates after being considered qualified after the engineering capability evaluation.

### 2.5 Professional Engineer

Professional engineer refers to the individual who is granted professional engineer certificates after registration.

## **2.6 Continuous Professional Development**

Continuous Professional Development (CPD) refers to the study, training, visits, exchanges, discussions and other activities which the professional engineers engage in to maintain and improve their engineering capability and competence.

## **2.7 Re-registration**

Re-registration refers to the procedures in which professional engineers file an application to the authorized Societies prior to the expiration of the certificate validity period, and if considered qualified after evaluation, they will be granted new professional engineer certificate respectively.

## **3 Evaluation authorization**

**3.1** The National Societies may submit an engineering capability evaluation application to the Alliance.

**3.2** The Alliance organizes the review of the qualification of the National Societies that have submitted applications.

**3.3** The Alliance authorizes the National Societies that have passed the review to carry out the engineering capability evaluation stipulated by this Standard within the validity period of the authorization.

## **4 Evaluation criteria**

### **4.1 Education background requirements**

**4.1.1** The applicant shall have an accredited bachelor' s or higher-level degree in engineering or related majors recognized by the Ministry of Education of the People' s Republic of China, or the overseas degree in the engineering or related majors recognized by the Washington Accord.

**4.1.2** The applicant shall meet the specific requirements on education background in the engineering and technical fields concerning the application.

### **4.2 Professional work experience requirements**

**4.2.1** The applicant' s professional work experience shall be accumulated after obtaining an accredited bachelor' s or higher-level degree in engineering or related majors.

**4.2.2** The applicant shall have at least 5 years of professional work experience of which at least 2 years shall be in important engineering posts under the guidance of professional engineers.

**4.2.3** The applicant shall meet the specific requirements on professional work experience in the engineering and technical fields concerning the application.

### **4.3 Competence requirements**

**4.3.1** The applicant shall meet the competence requirements (refer to Annex A).

**4.3.2** The applicant shall meet the specific requirements on competence in the engineering and technical fields concerning the application.

#### **4.4 Professional ethics requirements**

**4.4.1** The applicant shall meet the requirements of the professional code of conduct (refer to Annex B).

### **5 Evaluation procedures**

#### **5.1 Application acceptance**

**5.1.1** The applicant shall submit the application information and materials required for the engineering capability evaluation.

**5.1.2** The authorized Societies shall conduct preliminary review of the application information and materials, and confirm whether the basic conditions such as educational background and professional work experience meet the requirements.

#### **5.2 Examination and evaluation**

**5.2.1** The authorized Societies shall organize and carry out written examination and interview concerning engineering capability evaluation at regular intervals. The applicants who have passed the written examination shall take part in the interview.

**5.2.2** The authorized Societies shall screen and recommend to the assessors according to the requirements, and incorporate them into the assessor expert bank after filing with the Alliance.

**5.2.3** During the interview, the authorized Societies shall randomly select at least three assessors from the expert bank to form an Assessment Team, and the major of at least two assessors shall be similar to the applicant's engineering and technical field.

**5.2.4** The Assessment Team shall issue opinions concerning whether the applicants have passed the evaluation according to the evaluation criteria.

#### **5.3 Review**

The authorized Societies shall conduct review according to the relevant conditions of the applicant and the evaluation opinions of the Assessment Team, and then make a decision to register or not.

### **6 Approval and registration**

**6.1** The authorized Societies shall submit the assessment results and the information of the applicant to be approved for registration to the Alliance.

**6.2** Upon approval by the Alliance, the unified registration numbers shall be issued to professional engineers.

**6.3** The persons in charge of the authorized Societies shall sign and issue the professional engineer certificates to the applicants approved by the Alliance. The certificates are valid for 5 years.

**6.4** The professional engineer certificate shall contain at least the following information:

— Alliance logo;

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- The name and logo of the authorized Society;
- Personnel name and identification information;
- Registered engineering and technical fields;
- Registration number;
- Photo;
- Approval date and validity period.

**6.5** For any unapproved applicant, the authorized Society shall inform him/her of the evaluation opinions and results.

**6.6** The authorized Society shall announce the professional engineer registration in a timely manner, which shall contain at least the following information:

- Name of the professional engineer;
- Registered engineering and technical fields;
- Registration number;
- Approval date and validity period.

**6.7** The professional engineers shall file a re-registration application to the authorized Societies within 3 months prior to the expiration of the certificate validity period, and if considered qualified after evaluation, they will be granted new professional engineer certificate respectively.

**6.8** The Alliance will make the professional engineer registration/re-registration public four times a year.

## **7 Management and services**

### **7.1 Continuous Professional Development**

**7.1.1** Professional engineers shall attend no less than 40 study hours (each study hour shall be no less than 30 minutes in principle) of continuous professional development activities recognized by the authorized Societies each year, and the activities normally include:

- Knowledge training or examinations designated or recognized by the Alliance and authorized Societies;
- Seminars, technical investigations etc. in the related engineering and technical fields;
- Special activities organized by professional agencies in the related engineering and technical fields (such as the drafting of relevant product or industrial standards/criteria and research etc.);
- Publication of professional papers, theses or books in the related engineering and technical fields;
- Professional lectures or conference speeches in the related engineering and technical fields;

-- Service activities such as technical consulting in the related engineering and technical fields;

-- Self-study activities specified by the authorized Societies.

**7.1.2** The Alliance and authorized Societies shall decide on the specific contents and relevant study hour requirements of CPD activities for professional engineers every year.

## **7.2 Certificate Management**

**7.2.1** The authorized Societies shall clarify the way to manage the certificates of professional engineers, specifying in detail the general/serious violations and corresponding disposal methods.

**7.2.2** In case of general violations on the part of the professional engineers, the authorized Societies shall suspend the use of the certificates for no longer than six months; and after the causes for the suspension of the certificate are eliminated, the procedures for resuming the use of the certificate can be gone through;

**7.2.3** The professional engineer no longer needing to maintain his/her qualification shall cancel his/her certificate;

**7.2.4** If serious violations of the requirements herein occur, or if the resumption procedure is not gone through after the certificate suspension period expires, the authorized Societies shall cancel the certificates;

**7.2.5** The certificate shall automatically become null and void upon its expiration if the professional engineer does not apply for re-registration before the expiration date.

**7.2.6** The professional engineer shall comply with the relevant regulations of the authorized Societies in use of the certificate. After the professional engineer's qualification is suspended, cancelled or revoked, the corresponding certificate shall not be used.

## **7.3 Information publication**

The authorized Societies shall make the information on suspension, restoration, cancellation and revocation of professional engineers' certificates public in time, and inform the Alliance of the alteration.

## **8 Self-discipline and supervision**

### **8.1 Self-discipline and fairness**

**8.1.1** The Alliance, authorized Societies and related staff shall carry out the work related to engineering capability evaluation under the principles of integrity, self-discipline and fairness.

**8.1.2** The authorized Societies shall establish an avoidance system to ensure the fairness in the whole process of application acceptance, evaluation and assessment, and review.

**8.1.3** The professional engineers shall abide by professional code of conduct.

## **8.2 Supervision**

The Alliance will supervise the authorized Societies in engineering capability evaluation. For those that have ordinary problems, the Alliance shall require them to make rectification within a definite time; and the Alliance shall revoke the authorization depending on the severity of the problems.

## **8.3 Confidentiality System**

The Alliance, authorized Societies and related staff shall be obliged to keep confidential the personal information submitted by applicants and professional engineers, and shall not disclose it to any third party (except as otherwise required by law).

## **8.4 Appeal and Complaint**

**8.4.1** The Alliance and authorized Societies establish the channels for appeal and complaint respectively.

**8.4.2** If the applicant has any objection to the evaluation result, he or she may lodge an appeal with the authorized Society.

**8.4.3** If the applicant refuses to accept the appeal handling decision by the authorized Society, he/she may lodge an appeal with the Alliance.

**8.4.4** If the applicant believes that the authorized Society violates procedures and rules of the engineering capability evaluation, he or she may file a complaint with the authorized Society or the Alliance.

**8.4.5** With regard to the mismanagement of an authorized Society after registration, the professional engineer may file a complaint with the authorized Society or the Alliance.

**8.4.6** The authorized Society and the Alliance shall promptly accept and properly handle relevant appeals and complaints, and retain the related procedures and evidences.

## **8.5 Feedback Mechanism**

**8.5.1** The Alliance and authorized Society shall give a feedback of the result to the claimant in time.

**8.5.2** The unit or individual may report directly to the Alliance about any opinions or suggestions on the engineering capability evaluation.

## Annex A (Normative)

### Competence requirements for professional engineers

Members of the Professional Engineering Capability Building Alliance of CAST shall meet the requirements specified in the Table A.1

**Table A.1 Competence requirements for professional engineers**

Competence	Requirements
A: Engineering knowledge and professional competence	A1: Have an educational background in the engineering major, and have participated in the study on engineering foundation and professional knowledge as well as professional skill training.
	A2: Be able to solve complicated problems by using mathematics, natural science, engineering fundamentals, expertise and professional skills.
	A3: Be able to collect, analyze, and judge relevant technical information at home and abroad, conduct research on complex problems, propose development directions and ideas, and provide solutions.
	A4: Have the ability in systematic thinking and innovative thinking, and be able to put forward innovative solutions.
B: Engineering and professional ethics	B1: Have a sense of social responsibility and professional dedication, be able to correctly apply professional knowledge in work to ensure a harmonious development of the engineering projects, nature and society, and develop a concept of comprehensive, coordinated and sustainable development.
	B2: Have the capability to comply with the laws and regulations and technical specifications, and apply the knowledge of quality, safety, energy conservation and environmental protection in engineering practices.
	B3: Have the awareness of occupational health and safety, energy conservation, environmental protection, and intellectual property protection, and be able to apply professional knowledge in work to safeguard the above factors.
C: Teamwork and communicative competence	C1: Have the capability to formulate engineering documents using engineering languages and conduct in-depth communication with peers.
	C2: Have teamwork spirit, be able to exercise self-control and understand other people's intentions.
	C3: Be able to adapt to various environment and apply one's skills and abilities.
	C4: Be able to conduct international exchanges and cooperation.
D: Sustainable development and lifelong learning	D1: Formulate and implement personal career development plan, and actively participate in academic activities in the engineering field.
	D2: Be able to proactively track domestic and overseas technical development trends in the engineering field and continuously grasp new knowledge and new skills to apply them in practice.

Table A.1 Competence Requirements for Professional Engineers (Cont'd)

Competence	Requirements
E: Organizational leadership and project management capability	E1: Be able to conduct market research, demand projection and technical and economic analysis, and evaluate the effect and impact of engineering projects.
	E2: Be able to build and manage a team, and conduct project monitoring and process management so as to organize and implement engineering projects.
	E3: Have the risk control ability, and be capable of predicting risks and proposing risk aversion plans.
	E4: Have the ability of comprehensive analysis and judgment, and show strong discretion in the course of implementing engineering projects.
	E5: Be able to present opinions for decision-making, and be responsible for the decisions.

**Annex B  
(Normative)**

**Professional ethics and code of conduct**

The Engineering Capability Building Alliance of CAST formulate the following professional code of conduct according to the engineering characteristics and social sustainable development requirements:

- Follow the basic principles of public safety, health and happiness;
- Be obliged to explain the controversial public events in the familiar technical fields to the public from the professional point of view;
- Comply with the laws, regulations, and engineering rules and regulations, and safeguard the reputation of the State, the Alliance, engineering related parties, authorized Societies and individuals;
- Cherish profession and be devoted wholeheartedly to work, and do not undertake the professional work beyond your own capability;
- Do not engage in any behavior of confusion or fraud using your own professional knowledge;
- Establish the concept of comprehensive, coordinated, and sustainable development, have the awareness of occupational health and safety, energy conservation and environmental protection in the engineering practice, and prevent or reduce the adverse impacts on health, safety, environment and society;
- Continuously maintain and improve your own engineering capability, encourage and help others improve their engineering capability;
- Respect and treat others impartially, stop any dangers, risks, negligence or misconduct affecting others or report them to relevant departments;
- Avoid unnecessary conflicts of interest and safeguard the legitimate rights and interests of engineering stakeholders;
- Value the protection of intellectual property rights, perform necessary confidentiality duties, and refuse bribery and all forms of corruption, and do not participate in unfair competition.



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