



SATURDAY  
**18** JULY

11am - 12.30 pm UTC  
01pm - 02.30 pm CET

# CONSULTATION WEBINAR

UNESCO IEA WFEO DRAFT REVIEW IEA  
GRADUATE ATTRIBUTE AND PROFESSIONAL  
COMPETENCY FRAMEWORK (GAPC)

## MODERATOR:



Prof. GONG Ke  
President of WFEO

## SPEAKERS:



Dr Marlene Kanga  
WFEO Past President



Dr Michael Milligan  
CEO, ABET USA



Dr Charlie Than  
President of Myanmar  
Engg. Council



Prof. Bulent Ozguler  
Chair, WFEO-IEA  
Working Group



Mr Kang Jincheng  
Strategic Specialist,  
UNESCO-ICEE



7/20/2020



DCT



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<https://bit.ly/38PC0IX>



# PROPOSED CHANGES TO PROFESSIONAL COMPETENCIES (TABLE 5) OF THE FRAMEWORK

Presented by  
*Prof. Dr. Charlie Than*  
President of the Myanmar Engineering Council,  
Vice-President of Federation of Engineering Institutions in Asia Pacific

# Graduate Attributes

	WA Graduate (Professional)	SA Graduate (Technologist)	DA Graduate (Technician)
1. Engineering Knowledge			
2. Problem Analysis	Complex	Broadly defined	Well defined
3. Design/ development of solutions	Complex	Broadly defined	Well defined
4. Investigation	Complex	Broadly defined	Well defined
5. Modern Tool Usage	Complex	Broadly defined	Well defined
6. The Engineer and Society			
7. Environment and Sustainability			
8. Ethics			
9. Individual and Team work			
10. Communication	Complex	Broadly defined	Well defined
11. Project Management and Finance			
12. Life long learning			

<http://www.ieagreements.com/GradProfiles.cfm>



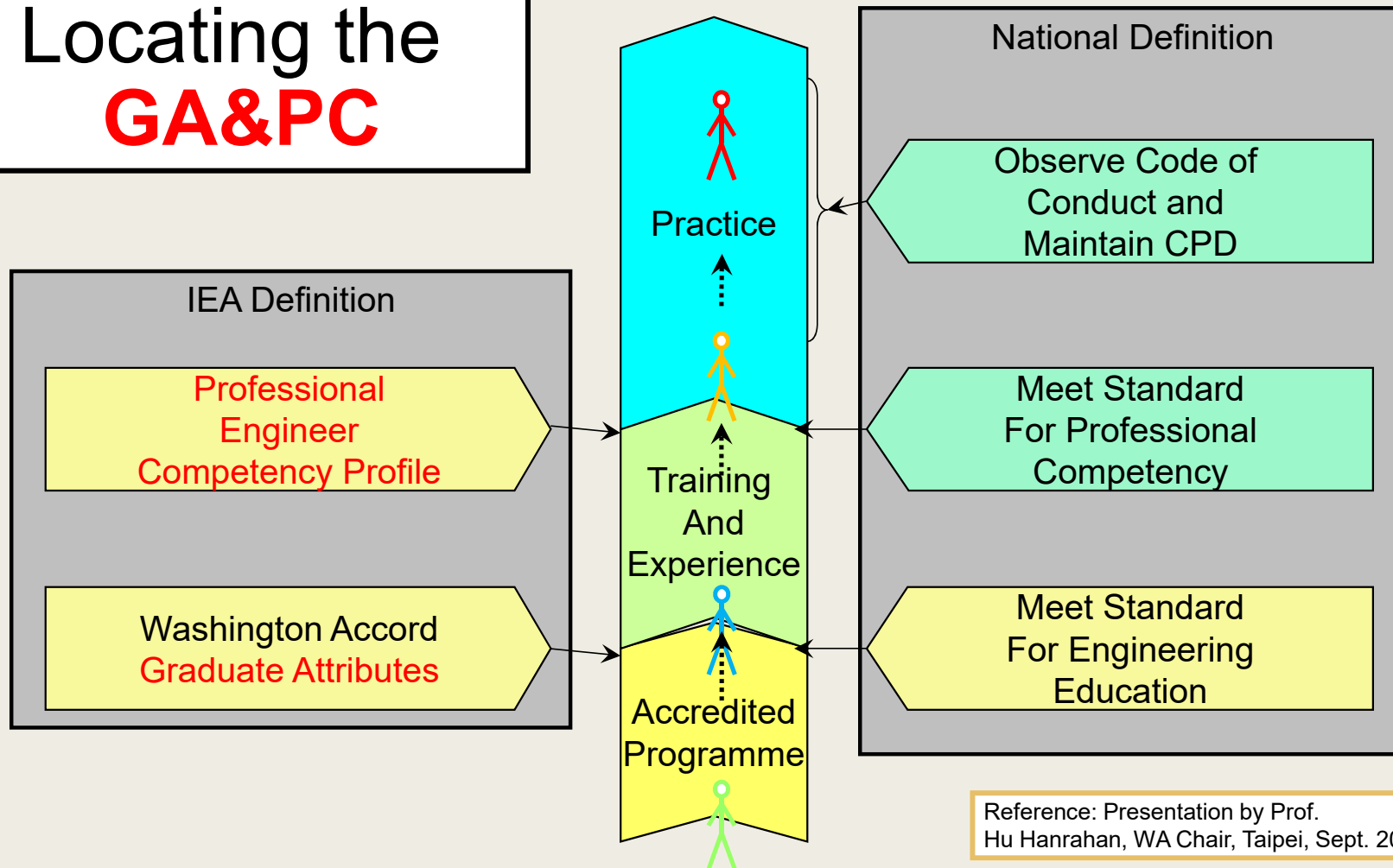
# Professional Competency Profiles

Element	Professional Engineer	Engineering Technologist	Engineering Technician
1. <b>Comprehend and apply universal knowledge</b>	advanced	widely accepted applied	standardised
2. <b>Comprehend and apply local knowledge</b>	advanced	widely accepted applied	standardised
3. <b>Problem analysis</b>	complex	broadly-defined	well-defined
4. <b>Design and development of solutions</b>	complex	broadly- defined	well- defined
5. <b>Evaluation</b>	complex	broadly defined	well-defined
6. <b>Protection of society</b>	complex	broadly-defined	well-defined
7. <b>Legal and regulatory</b>	=	=	=
8. <b>Ethics</b>	=	=	=
9. <b>Manage engineering activities</b>	complex activities	broadly- defined	well- defined
10. <b>Communication</b>	=	=	=
11. <b>Lifelong learning</b>	=	=	=
12. <b>Judgment</b>	complex	broadly defined	well-defined
13. <b>Responsibility for decisions</b>	complex	broadly defined	well- defined

<http://www.ieagrements.com/GradProfiles.cfm>



# Locating the **GA&PC**



Reference: Presentation by Prof.  
Hu Hanrahan, WA Chair, Taipei, Sept. 2011.

## **Table 5 Professional Competency Profiles**

To meet the minimum standard of competence a person must demonstrate that he/she is able to practice competently in his/her practice area to the standard expected of a reasonable Professional Engineer/Engineering Technologist/Engineering Technician.

The extent to which the person is able to perform each of the following elements in his/her practice area must be taken into account in assessing whether or not he/she meets the overall standard.

### **Proposed changes**

To meet the minimum standard of competence a person must demonstrate **the ability he/she is able** to practice competently **in his/her- their** practice area to the standard expected of a reasonable Professional Engineer/Engineering Technologist/Engineering Technician.

The extent to which the person is able to perform each of the following elements in **their his/her** practice area must be taken into account in assessing whether or not **he/she meets** the overall standard **is met**.

Reason for change:  
Gender neutral language used.

### GAPC Version-3.EC,TC,NC-1

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Comprehend and apply universal knowledge:</b> Breadth and depth of education and type of knowledge	<b>EC1:</b> Comprehend and apply advanced knowledge of the widely-applied principles underpinning good practice	<b>TC1:</b> Comprehend and apply the knowledge embodied in widely accepted and applied procedures, processes, systems or methodologies	<b>NC1:</b> Comprehend and apply knowledge embodied in standardised practices

No Changes proposed.

**EC: Professional Engineer Competency Profile**

**TC: Engineering Technologist Competency Profile**

**NC: Engineering Technician Competency Profile**

## GAPC Version-3.EC,TC,NC-2

Differentiating characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Comprehend and apply local knowledge:</b> Type of local knowledge	<b>EC2:</b> : Comprehend and apply advanced knowledge of the widely-applied principles underpinning good practice specific to the jurisdiction in which he/she practices.	<b>TC2:</b> Comprehend and apply the knowledge embodied procedures, processes, systems or methodologies that is specific to the jurisdiction in which he/she practices	<b>NC2:</b> Comprehend and apply knowledge embodied in standardised practices specific to the jurisdiction in which he/she practices.

## Proposed changes

Differentiating characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Comprehend and apply local knowledge:</b> Type of local knowledge	<b>EC2:</b> Comprehend and apply advanced knowledge of the widely-applied principles underpinning good practice specific to the jurisdiction <del>of in which he/she</del> practice..	<b>TC2:</b> Comprehend and apply the knowledge embodied procedures, processes, systems or methodologies that is specific to the jurisdiction <del>of in which he/she</del> practices.	<b>NC2:</b> Comprehend and apply knowledge embodied in standardised practices specific to the jurisdiction <del>in which he/she of</del> practice..

Reason for change:  
Gender neutral language used.



### GAPC Version-3.EC,TC,NC-3

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Problem analysis:</b> Complexity of analysis	<b>EC3:</b> Define, investigate and analyse complex problems.	<b>TC3:</b> Identify, clarify, and analyse broadly-defined problems.	<b>NC3:</b> Identify, state and analyse well-defined problems.

### Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Problem analysis:</b> Complexity of analysis	<b>EC3:</b> Define, investigate and analyse complex problems <b>using data and information technologies</b>	<b>TC3:</b> Identify, clarify, and analyse broadly-defined problems <b>using the support of computing and information technologies</b>	<b>NC3:</b> Identify, state and analyse well-defined problems <b>using the support of computing and information technologies</b>

Reason for change:  
The use of computing and IT tools has been added.

## GAPC Version-3.EC,TC,NC-4

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Design and development of solutions:</b> Nature of the problem and uniqueness of the solution	<b>EC4:</b> Design or develop solutions to complex problems	<b>TC4:</b> Design or develop solutions to broadly- defined problems	<b>NC4:</b> Design or develop solutions to well-defined problems

## Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Design and development of solutions:</b> Nature of the problem and uniqueness of the solution	<b>EC4:</b> Design or develop <b>inclusive</b> solutions to complex problems <b>with stakeholder consultation</b>	<b>TC4:</b> Design or develop <b>inclusive</b> solutions to broadly- defined problems	<b>NC4:</b> Design or develop <b>inclusive</b> solutions to well- defined problems

Reason for change:  
The importance of inclusive solutions and stakeholder consultation has been added.

### GAPC Version-3.EC,NC,TC-5

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Evaluation:</b> Type of activity	<b>EC5:</b> Evaluate the outcomes and impacts of complex activities	<b>TC4:</b> Evaluate the outcomes and impacts of broadly defined activities	<b>NC5:</b> Evaluate the outcomes and impacts of well-defined activities

### Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Evaluation:</b> Type of activity	<b>EC5:</b> Evaluate the outcomes and impacts of complex activities in the contexts of risk and social, environmental, economic and resource impacts	<b>TC4:</b> Evaluate the outcomes and impacts of broadly defined activities in the contexts of risk and social, environmental, economic and resource impacts	<b>NC5:</b> Evaluate the outcomes and impacts of well-defined activities

Reason for change:  
The importance of evaluation and risk assessment in broad contexts has been added.

### GAPC Version-3.EC,TC,NC-6

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Protection of society:</b> Types of activity and responsibility to consider public.	<b>EC6:</b> Recognise the reasonably foreseeable social, cultural and environmental effects of complex activities generally, and have regard to the need for sustainability; recognise that the protection of society is the highest priority	<b>TC6:</b> Recognise the reasonably foreseeable social, cultural and environmental effects of broadly-defined activities generally, and have regard to the need for sustainability; take responsibility in all these activities to avoid putting the public at risk	<b>NC6:</b> Recognise the reasonably foreseeable social, cultural and environmental effects of well-defined activities generally, and have regard to the need for sustainability; use engineering technical expertise to prevent dangers to the public

### Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Protection of society:</b> Types of activity and responsibility to consider <b>advancement of the UN Sustainable Development Goals</b> public	<b>EC6:</b> Recognise the reasonably foreseeable social, cultural and environmental effects of complex activities generally, and have regard to the need for <b>sustainable outcomes that leave no one behind per the UN Sustainable Development Goals; global quality of life for humans and the environment. ility;</b> <b>recognise that the protection of society is the highest priority</b>	<b>TC6:</b> Recognise the reasonably foreseeable social, cultural and environmental effects of broadly-defined activities generally, and have regard to the need for <b>sustainable outcomes that leave no one behind per the UN Sustainable Development Goals; global quality of life for humans and the environment. sustainability; take responsibility in all these activities to avoid putting the public at risk.</b>	<b>NC6:</b> Recognise the reasonably foreseeable social, cultural and environmental effects of well-defined activities generally, and have regard to the need for <b>sustainable outcomes that leave no one behind per the UN Sustainable Development Goals; global quality of life for humans and the environment. sustainability; use engineering technical expertise to prevent dangers to the public.</b>

### Reason for change:

The importance of consideration of the advancement of the UN Sustainable Development Goals where relevant has been added

### GAPC Version-3,EC,TC,NC-7

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Legal and regulatory:</b> No differentiation in this characteristic	<b>EC7:</b> Meet all legal and regulatory requirements and protect public health and safety in the course of his or her activities	<b>TC7:</b> Meet all legal and regulatory requirements and protect public health and safety in the course of his or her activities	<b>NC7:</b> Meet all legal and regulatory requirements and protect public health and safety in the course of his or her activities

### Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Legal, environment, cultural and regulatory:</b> No differentiation in this characteristic	<b>EC7:</b> Meet all legal and regulatory Requirements, protect public health and safety, <b>environment and cultural heritage</b> in the course of <del>all his or her</del> Activities	<b>TC7:</b> Meet all legal and regulatory requirements and protect public health and safety <b>environment and cultural heritage</b> in the course of <del>all his or her</del> activities	<b>NC7:</b> Meet all legal and regulatory requirements and protect public health and safety <b>environment and cultural heritage</b> in the course of <del>all his or her</del> activities

### Reason for change:

The importance of compliance with relevant laws and regulations including to protect the environment and cultural heritage and gender neutral language has been added.

### GAPC Version-3.EC,TC,NC-8

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Ethics:</b> No differentiation in this characteristic	<b>EC8:</b> Conduct his or her activities ethically	<b>TC8:</b> Conduct his or her activities ethically	<b>NC8:</b> Conduct his or her activities ethically

### Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Ethics, Diversity, and Inclusion:</b> No differentiation in this characteristic	<b>EC8:</b> Conduct <del>his or her</del> all activities ethically and inclusively, respecting cultural, ethnic, religious and all other differences	<b>TC8:</b> Conduct <del>his or her</del> all activities ethically, <del>Respect</del> in diverse teams and understand the need for inclusion	<b>NC8:</b> Conduct <del>his or her</del> all activities ethically, in diverse teams <del>Respect</del> diversity and understand the need for inclusion

### Reason for change:

The ethics of equal opportunity for all through working effectively in diverse and inclusive teams and gender neutral language has been added.

### GAPC Version-3.EC,TC,NC-9

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Manage engineering activities:</b> Types of activity	<b>EC9:</b> Manage part or all of one or more complex activities	<b>TC9:</b> Manage part or all of one or more broadly-defined activities	<b>NC9:</b> Manage part or all of one or more well-defined activities

Reason for change:  
No proposed changes

### GAPC Version-3.EC,TC,NC-10

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Communication:</b> No differentiation in this characteristic	<b>EC10:</b> Communicate clearly with others in the course of his or her activities	<b>TC10:</b> Communicate clearly with others in the course of his or her activities	<b>NC10:</b> Communicate clearly with others in the course of his or her activities

### Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Communication and Collaboration:</b> Requirement for inclusive communications, No differentiation in this characteristic	<b>EC10:</b> Communicate and collaborate using multiple mediums clearly and inclusively with a broad range of stakeholders in the course of <del>his or her</del> all activities	<b>TC10:</b> Communicate and collaborate using multiple mediums clearly and inclusively with a broad range of stakeholders with others in the course of <del>his or her</del> all activities	<b>NC10:</b> Communicate and collaborate using multiple mediums clearly and inclusively with a broad range of stakeholders with others in the course of <del>his or her</del> all activities

Reason for change:

The importance of inclusive communications and gender neutral language has been added.



### GAPC Version-3.EC,NC,TC-11

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Lifelong learning:</b> Preparation for and depth of continuing learning.	<b>EC11:</b> Undertake CPD activities sufficient to maintain and extend his or her competence	<b>TC11:</b> Undertake CPD activities sufficient to maintain and extend his or her competence	<b>NC11:</b> Undertake CPD activities sufficient to maintain and extend his or her competence

### Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Continuing Professional Development (CPD)</b> <del>Lifelong learning:</del> Preparation for and depth of continuing learning.	<b>EC11:</b> Undertake CPD activities sufficient to maintain and extend technical competencies and enhance their ability to adapt to emerging technologies and the ever changing nature of work. <del>sufficient to maintain and extend his or her competencies</del>	<b>TC11:</b> Undertake CPD activities to adapt to emerging technologies and the ever changing nature of work sufficient to maintain and extend <del>his or her</del> competence	<b>NC11:</b> Undertake CPD activities to adapt to emerging technologies sufficient to maintain and extend <del>his or her</del> competence

Reason for change:  
The importance of lifelong learning in a world of rapidly changing technologies and gender neutral language has been added.

## GAPC Version-3.EC,NC,TC-12

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Judgement:</b> Level of developed knowledge, and ability and judgement in relation to type of activity	<b>EC11:</b> Recognize complexity and assess alternatives in light of competing requirements and incomplete knowledge. Exercise sound judgement in the course of his or her complex activities	<b>TC12:</b> Choose appropriate technologies to deal with broadly defined problems. Exercise sound judgement in the course of his or her broadly-defined activities	<b>NC12:</b> Choose and apply appropriate technical expertise. Exercise sound judgement in the course of his or her well-defined activities

## Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Judgement:</b> Level of developed knowledge, and ability and judgement in relation to type of activity	<b>EC11:</b> Recognize complexity and assess alternatives in light of competing <b>social, economic, environmental, cultural and other</b> requirements <b>and considering</b> incomplete knowledge. Exercise sound judgement in the course of <b>all his or her</b> complex activities	<b>TC12:</b> Choose appropriate technologies to deal with broadly defined problems considering <b>social, economic, environmental, cultural as needed.</b> Exercise sound judgement in the course of <b>his or her</b> broadly-defined activities	<b>NC12:</b> Choose and apply appropriate technical expertise. Exercise sound judgement in the course of <b>his or her</b> well-defined activities

Reason for change:

The need to exercise judgement and application of knowledge and ability in broad context and gender neutral language has been added.

### GAPC Version-3.EC,TC,NC-13

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
<b>Responsibility for decisions:</b> Type of activity for which responsibility is taken	<b>EC12:</b> Be responsible for making decisions on part or all of complex activities	<b>TC13:</b> Be responsible for making decisions on part or all of one or more broadly defined activities	<b>NC13:</b> Be responsible for making decisions on part or all of all of one or more well- defined activities

Reason for change:  
No proposed changes

# Thank For Your Attention

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18<sup>th</sup> July 2020