WFEO / FMOI

Organisation des Nations Unies pour l'éducation, la science et la culture

FIDIC

INTERNATIONAL ENGINEERING ALLIANCE

Thursday
4 February
12.00pm to 1.00pm (CET, Paris time)

CONSULTATION WEBINAR WITH MEMBERS OF FIDIC ON

UNESCO IEA WFEO Draft Review IEA Graduate Attribute and Professional Competency Framework (GAPC)

Moderator:

GONG Ke
President, WFEO

Speakers:

William Howard
President, FIDIC

Marlene Kanga
Past President, WFEO

Charlie Than
President, Myanmar Engineering Council

Stephane Giraud
Chair, Capacity Building Committee of FIDIC

Adam Bialachowski
Chair, Future Leaders Council of FIDIC

Register at https://bit.ly/36czkoJ
YouTube Livestream at http://bit.ly/2MqGsqi

World Federation of Engineering Organizations
Fédération Mondiale des Organisations d'Ingénieurs

INTERNATIONAL ENGINEERING ALLIANCE

မြန်မာနိုင်ငံအင်ဂျင်နီယာကောင်စီ
Myanmar Engineering Council

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

Presented by
Prof. Dr. Charlie Than
Chair, WFEO Education in Engineering Committee,
President of the Myanmar Engineering Council, Myanmar

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

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

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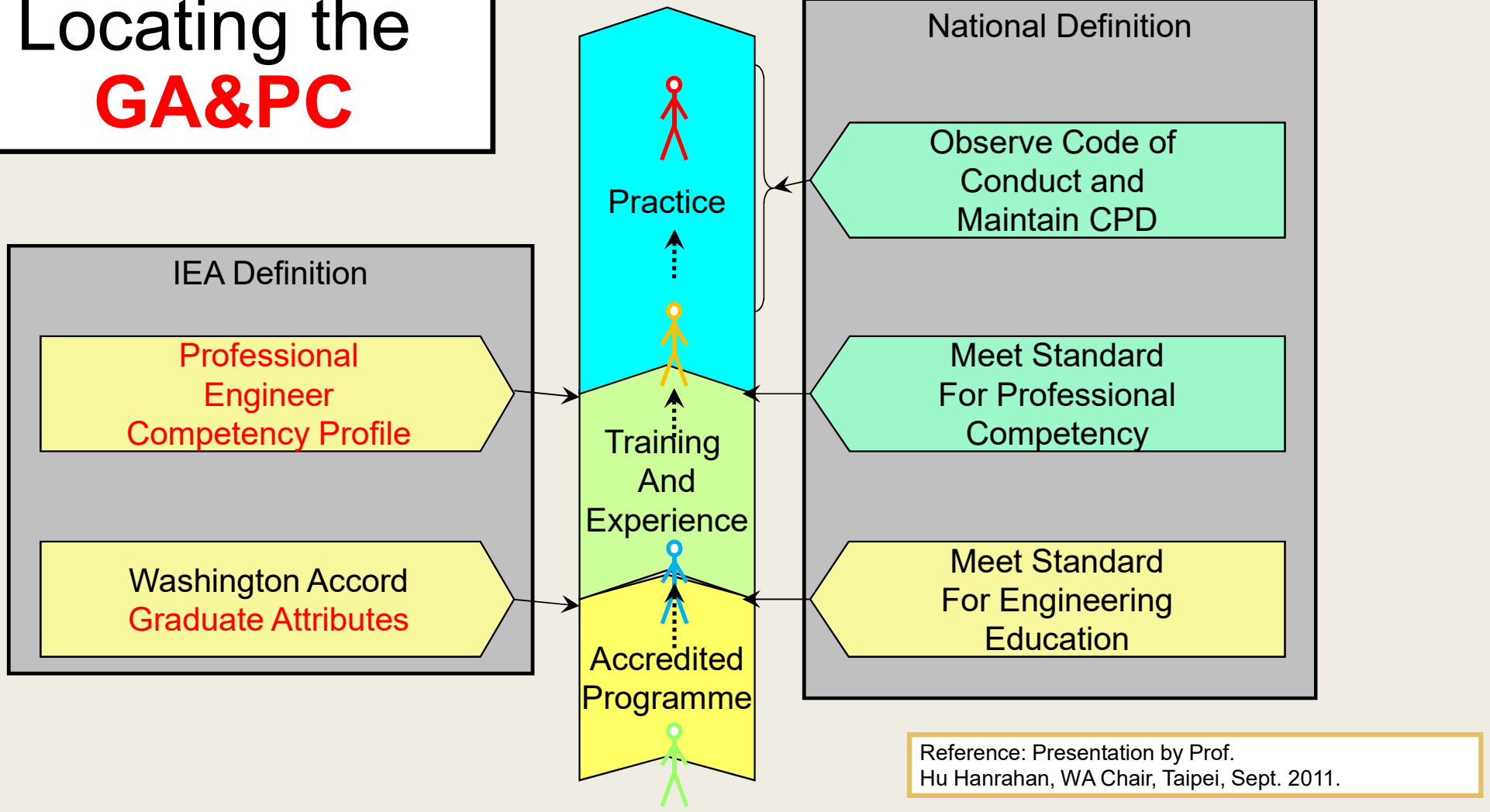
Locating the **GA&PC**



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

GAPC Version-3

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
Comprehend and apply universal knowledge: Breadth and depth of education and type of knowledge	**EC1**: Comprehend and apply advanced knowledge of the widely-applied principles underpinning good practice	**TC1**: Comprehend and apply the knowledge embodied in widely accepted and applied procedures, processes, systems or methodologies	**NC1**: Comprehend and apply knowledge embodied in standardised practices

No Changes proposed.

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

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

Reason for change:
Gender neutral language used.

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

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

Proposed changes

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

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
Design and development of solutions: Nature of the problem and uniqueness of the solution	**EC4**: Design or develop solutions to complex problems	**TC4**: Design or develop solutions to broadly- defined problems	**NC4**: Design or develop solutions to well-defined problems

Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
Design and development of solutions: Nature of the problem and uniqueness of the solution	**EC4**: Design or develop inclusive solutions to complex problems with stakeholder consultation	**TC4**: Design or develop inclusive solutions to broadly- defined problems	**NC4**: Design or develop inclusive 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
Evaluation: Type of activity	**EC5**: Evaluate the outcomes and impacts of complex activities	**TC4**: Evaluate the outcomes and impacts of broadly defined activities	**NC5**: Evaluate the outcomes and impacts of well-defined activities

Proposed changes

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

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
Protection of society: Types of activity and responsibility to consider public.	**EC6**: 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	**TC6**: 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	**NC6**: 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
Protection of society: Types of activity and responsibility to consider advancement of the UN Sustainable Development Goals ~~public~~	**EC6**: Recognise the reasonably foreseeable social, cultural and environmental effects of complex activities generally, and have regard to the need for sustainable outcomes that leave no one behind per the UN Sustainable Development Goals; global quality of life for humans and the environment. ~~ility~~; ~~recognise that the protection of society is the highest priority~~	**TC6**: Recognise the reasonably foreseeable social, cultural and environmental effects of broadly-defined activities generally, and have regard to the need for 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~~.	**NC6**: Recognise the reasonably foreseeable social, cultural and environmental effects of well-defined activities generally, and have regard to the need for 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.~~

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
Legal and regulatory: No differentiation in this characteristic	**EC7**: Meet all legal and regulatory requirements and protect public health and safety in the course of his or her activities	**TC7**: Meet all legal and regulatory requirements and protect public health and safety in the course of his or her activities	**NC7**: 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
Legal, environment, cultural and regulatory: No differentiation in this characteristic	**EC7**: Meet all legal and regulatory Requirements, protect public health and safety, environment and cultural heritage in the course of all ~~his or her~~ Activities	**TC7**: Meet all legal and regulatory requirements and protect public health and safety environment and cultural heritage in the course of all ~~his or her~~ activities	**NC7**: Meet all legal and regulatory requirements and protect public health and safety environment and cultural heritage in the course of all ~~his or her~~ 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
Ethics: No differentiation in this characteristic	**EC8**: Conduct his or her activities ethically	**TC8**: Conduct his or her activities ethically	**NC8**: Conduct his or her activities ethically

Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
Ethics, Diversity, and Inclusion: No differentiation in this characteristic	**EC8**: Conduct ~~his or her~~ all activities ethically and inclusively, respecting cultural, ethnic, religious and all other differences	**TC8**: Conduct ~~his or her~~ all activities ethically, ~~Respect~~ in diverse teams and understand the need for inclusion	**NC8**: Conduct ~~his or her~~ all activities ethically, in diverse teams ~~Respect~~ ~~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
Manage engineering activities: Types of activity	**EC9**: Manage part or all of one or more complex activities	**TC9**: Manage part or all of one or more broadly-defined activities	**NC9**: 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
Communication: No differentiation in this characteristic	**EC10**: Communicate clearly with others in the course of his or her activities	**TC10**: Communicate clearly with others in the course of his or her activities	**NC10**: Communicate clearly with others in the course of his or her activities

Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
Communication and Collaboration: Requirement for inclusive communications, No differentiation in this characteristic	**EC10**: Communicate and collaborate using multiple mediums clearly and inclusively with a broad range of stakeholders in the course of ~~his or her~~ all activities	**TC10**: Communicate and collaborate using multiple mediums clearly and inclusively with a broad range of stakeholders with others in the course of ~~his or her~~ all activities	**NC10**: Communicate and collaborate using multiple mediums clearly and inclusively with a broad range of stakeholders with others in the course of ~~his or her~~ 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
Lifelong learning: Preparation for and depth of continuing learning.	**EC11**: Undertake CPD activities sufficient to maintain and extend his or her competence	**TC11**: Undertake CPD activities sufficient to maintain and extend his or her competence	**NC11**: Undertake CPD activities sufficient to maintain and extend his or her competence

Proposed changes

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
Continuing Professional Development (CPD) ~~**Lifelong learning:**~~ Preparation for and depth of continuing learning.	**EC11**: 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. ~~sufficient to maintain and extend his or her competencies~~	**TC11**: Undertake CPD activities to adapt to emerging technologies and the ever changing nature of work ~~sufficient~~ to maintain and extend ~~his or her~~ competence	**NC11**: Undertake CPD activities to adapt to emerging technologies ~~sufficient~~ to maintain and extend ~~his or her~~ 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-11

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
Judgement: Level of developed knowledge, and ability and judgement in relation to type of activity	**EC11**: 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	**TC12**: Choose appropriate technologies to deal with broadly defined problems. Exercise sound judgement in the course of his or her broadly-defined activities	**NC12**: 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
Judgement: Level of developed knowledge, and ability and judgement in relation to type of activity	**EC11**: Recognize complexity and assess alternatives in light of competing social, economic, environmental, cultural and other requirements and considering incomplete knowledge. Exercise sound judgement in the course of all ~~his or her~~ complex activities	**TC12**: Choose appropriate technologies to deal with broadly defined problems considering social, economic, environmental, cultural as needed. Exercise sound judgement in the course of ~~his or her~~ broadly-defined activities	**NC12**: Choose and apply appropriate technical expertise. Exercise sound judgement in the course of ~~his or her~~ 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
Responsibility for decisions: Type of activity for which responsibility is taken	**EC12**: Be responsible for making decisions on part or all of complex activities	**TC13**: Be responsible for making decisions on part or all of one or more broadly defined activities	**NC13**: 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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4th February 2021