

BEM POLICY ON NAMING AND CONTENT OF EDUCATION PROGRAMMES

at Dublin, Sydney and Washington Accord Levels

November 2019

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Chapter 1: PREAMBLE

1. PREAMBLE

1.1. Introduction

The policy is intended to:

- 1.1.1. Ensure that programme names are consistent with existing MQA guidelines, BEM registration categories, and the Standards of ETAC and EAC.
- 1.1.2. Provide clarity to the public, particularly to avoid misleading programme names.

1.2. **Scope**

The scope of the Policy covers the following:

- 1.2.1. New programmes seeking approval.
- 1.2.2. Current ongoing programmes requesting for change of programme name.
- 1.2.3. Programmes for engineering and engineering technology at :-
 - Diploma level, meeting ETAC and Dublin Accord Standards;
 - Bachelor level, meeting ETAC and Sydney Accord Standards; and
 - Bachelor level, meeting EAC and Washington Accord Standards;
- 1.2.4. Programmes meeting Dublin and Sydney Accord standards under ETAC are practice-oriented in nature and are known as Engineering TVET programmes.

1.3. **Definitions**

1.3.1. Definitions as per MQA Guidelines on programme names.

1.3.1.1. Major

A **major** is the primary focus area of study in the programme. The **major** in programme naming must represent at least 70% of engineering technology content in curriculum.

1.3.1.2. Specialisation

A **specialisation** is a sub-area within the **major** area of study. A specialisation in programme naming must represent between 25-30% of engineering technology content in curriculum. The specialisation, if present within a programme, is indicated within brackets in the programme name.

1.3.2. Definitions as per BEM Guidelines on registration.

1.3.2.1. Main branch

The approved main branches for BEM registration, namely civil, electrical, mechanical and chemical.

1.3.2.2. Sub-set branch.

The approved sub-set branches under any of the four (4) main branches for BEM registration.

1.3.3. Definitions as per EAC and ETAC Standards.

1.3.3.1. Engineering and Engineering Technology content

The minimum core credits for engineering and engineering technology content as specified in the EAC and ETAC Standards.

1.4. Degrees with Honours.

- 1.4.1. All engineering and engineering technology degree programmes at Bachelor level which adhere to the EAC and ETAC Standards will meet both the following characteristics:-
 - Four (4) years minimum duration; and
 - Have a research component in the form of Final Year Project.
- 1.4.2. In meeting both of these two characterstics, EAC and ETAC accredited bachelor degree programmes will meet the generally accepted guidelines for Degrees with Honours.
- 1.4.3. Diploma level programmes do not have the phrase "With Honours" attached.

1.5. Exemptions

- 1.5.1. Exemptions from the provisions of this policy may be considered on a case-to-case basis based on individual merit.
- 1.5.2. If IHLs feel that any programme deserves a new name outside the current list of registration branches as approved by the Board, they may subit their case and present it as an exemption request as per (1.5.3) below. This provision allows for IHLs to innovate new pioneering frontiers of engineering and engineering technology disciplines.
- 1.5.3. Exemption 1:
- a) The phrase "Electrical & Electronics" (E&E) is accepted as an alternative to represent the programme major "Electrical" in programme naming.
- b) The justification is its historical usage, and that it is widely accepted especially among the non-engineering technology stakeholders (e.g. the use of E&E in international trade negotiations).
- c) Example: "Bachelor of **Electrical & Electronics** Engineering with Honours" is a programme with major in electrical engineering.
- d) The recommended branch of registration for its graduates will be "electrical".

1.6. Effective Date and Revision of Policy

- 1.6.1. The effective date for this policy is 1st of September 2019.
- 1.6.2. This policy incorporates all items in previous BEM policies on naming of education programmes, and hence supersedes them.
- 1.6.3. The Board reserves the right to review this policy from time to time.

1.7. References

- 1.7.1. MQA Guidelines on Programme Naming.
- 1.7.2. BEM's Main and Sub-Sets for BEM registration branch (Appendix 1).

Chapter 2: DIPLOMA PROGRAMMES AT DUBLIN ACCORD LEVEL

2. DIPLOMA PROGRAMMES AT DUBLIN ACCORD LEVEL

2.1. Name options

- 2.1.1. The normal Diploma programme name would utilise the phrase "Engineering Technology", but due to historical and common-usage reasons, the phrase "Engineering" may also be used.
- 2.1.2. The phrase "with Honours" will not be used in the programme name.
- 2.1.3. Example:

Diploma of Civil Engineering Technology Diploma of Civil Engineering

2.1.4. Either one of the above names in the example can be adopted by the IHL. The phrase "Engineering Technology" normally refers to programmes which are relatively more practice-oriented, i.e. where more than 70% of programme content are practical components.

2.2. Programmes with a single major

- 2.2.1. The format of the naming shall be :-
 - Diploma of "major" Engineering Technology.
- 2.2.2. At least 70% of engineering technology content is in the major, and
- 2.2.3. The major must be either a main branch **or** sub-set branch of registration.
- 2.2.4. Example: **Diploma of** *Civil* **Engineering Technology** (Civil is a main branch of registration)
- 2.2.5. Example: **Diploma of** *Mechatronics* **Engineering Technology** (Mechatronics is a sub-set branch of registration)
- 2.2.6. The following example is not allowed:-
 - **Diploma of** *Instrumentation* **Engineering Technology,** because "Instrumentation" is not a main or sub-set branch.

2.3. Programmes with a major with a specialisation.

- 2.3.1. The format of the naming shall be :Diploma of "major" Engineering Technology ("specialisation").
- 2.3.2. A minimum of 70% of engineering technology content shall be within the major.
- 2.3.3. A range of 25-30% of engineering technology content shall be within the specialisation.
- 2.3.4. The major must be either a main branch or sub-set branch of registration.
- 2.3.5. The specialisation must be <u>either a sub-set branch of registration or any other sub-discipline not in the BEM-approved list but deemed appropriate by the IHL</u>. This "other sub-discipline" is normally a very new and/or specialised technology.
- 2.3.6. Example:

Diploma of Civil Engineering Technology (Highway)

("Civil" is a main branch, and "Highway" is a sub-set branch)

2.3.7. Example:

Diploma of Highway Engineering Technology (Pavement)

(Highway is a sub-set branch, and "Pavement" is a very specialised discipline)

2.3.8. Example:

Diploma of Civil Engineering Technology (Pavement)

("Civil" is a main branch, and "Pavement" is a very specialised discipline)

2.3.9. Example:

Diploma of Petroleum Engineering Technology (Drilling)

("Petroleum" is a sub-set branch, and "Drilling" is a very specialised discipline)

2.3.10. The following example is not allowed:

Diploma of Structural Engineering Technology (Building),

both "Structural" and "Building" are sub-set branches.

2.4. Multi-disciplinary (general) programmes with no major but with a specialisation

2.4.1. The format of the naming shall be :-

Diploma of Engineering Technology ("specialisation").

- 2.4.2. A range of 25-30% of engineering technology content shall be in the specialisation.
- 2.4.3. The remainder range of 70-75% of engineering technology content is mixed such that it cannot be categorised under any of the main or sub-set branches.
- 2.4.4. The specialisation may <u>either a sub-set branch of registration or any other sub-discipline not in the BEM-approved list but deemed appropriate by the IHL</u>, but it cannot be a main branch.
- 2.4.5. Example:

Diploma of Engineering Technology (Manufacturing)

("Manufacturing" is a sub-set branch)

2.4.6. Example: Diploma of Engineering Technology (Tool & Die)

("Tool & Die" is a very specialised sub-discipline)

2.4.7. The following example is not allowed:

Diploma of Engineering Technology (Mechanical),

because "Mechanical" is a main branch.

2.5. Multi-disciplinary or general programmes with no major or specialisation.

2.5.1. The naming shall be:

Diploma of Engineering Technology.

- 2.5.2. The engineering technology content is mixed which cannot be categorised under any of the main or sub-set branches.
- 2.5.3. The engineering technology content nevertheless meets the minimum engineering technology core credits as per ETAC Standard and hence deserves accreditation (upon meeting other stipulated criteria).
- 2.5.4. It is recognised that IHLs should have the flexibility and freedom to innovate new engineering technology programmes which address pioneering frontier areas of engineering technology knowledge outside the current scope of registration branch recognised by the Board. This provision allows for such flexibility and freedom.

2.6. Engineering Technology programmes with additional non-engineering technology major

2.6.1. For additional non-engineering technology major such as Law, Business or IT, the additional components must be over and above minimum required total ETAC credits.

2.6.2. Example: Diploma of Civil Engineering Technology and Law

(Law discipline contents should meet the relevant standards for the law profession, over and above the minimum required total ETAC credits. Engineering Technology contents must meet the preceding provisions).

2.7. Determination of Branch for Registration of graduates with BEM

- 2.7.1. The branches for registration of Graduates will be restricted to one of the four main branches of BEM, i.e. Civil, Mechanical, Electrical and Chemical.
- 2.7.2. If the major in the name of the programme is one of the four main branches of BEM, the branch for registration of graduates as Inspector of Works (IoW) will be based on the major.
- 2.7.3. For programmes which are specialised in nature, the registration branch will be one of the four main branches which is closest to it. Hence if the major is not one of the four main branches of BEM, i.e. it is one of the subset branches, the branch for registration of graduates as Inspector of Works (IoW) will be based on the main branch related to the subset branch.

Examples:-

NAME OF PROGRAMME	BRANCH OF REGISTRATION	
Diploma of Civil Engineering Technology	Civil	
Diploma of Mechanical Engineering Technology	Mechanical	
Diploma of Electrical Engineering Technology	Electrical	
Diploma of Chemical Engineering Technology	Chemical	
Diploma of Mechatronics Engineering Technology	Mechanical	
Diploma of Civil Engineering Technology (Environment)	Civil	
Diploma of Mechanical Engineering Technology (Materials)	Mechanical	
Diploma of Computer Engineering Technology	Electrical	
Diploma of Computer Engineering Technology (Microelectronics)	Electrical	
Diploma of Engineering Technology	General (as approved by the Board as per Board Meeting 319, 27/6/2016)	

Chapter 3: ENGINEERING TECHNOLOGY PROGRAMMES AT SYDNEY ACCORD LEVEL

3. ENGINEERING TECHNOLOGY PROGRAMMES AT SYDNEY ACCORD LEVEL

3.1. Programmes with a single major

- 3.1.1. The format of the naming shall be :-
- Bachelor of "major" Engineering Technology with Honours.
- 3.1.2. At least 70% of engineering technology content is in the major, and
- 3.1.3. The major must be either a main branch **or** sub-set branch of registration.
- 3.1.4. Example: Bachelor of *Civil* Engineering Technology with Honours (Civil is a main branch of registration)
- 3.1.5. Example:

Bachelor of *Mechatronics* Engineering Technology with Honours

(Mechatronics is a sub-set branch of registration)

3.1.6. Not allowed:-

Bachelor of *Instrumentation* Engineering Technology with Honours, because "Instrumentation" is not a main or sub-set branch.

3.2. Programmes with a major with a specialisation.

- 3.2.1. The format of the naming shall be :-Bachelor of "major" Engineering Technology ("specialisation") with Honours.
- 3.2.2. A minimum of 70% of engineering technology content shall be within the major.
- 3.2.3. A range of 25-30% of engineering technology content shall be within the specialisation.
- 3.2.4. The major must be either a main branch or sub-set branch of registration.
- 3.2.5. The specialisation must be <u>either a sub-set branch of registration or any other sub-discipline not in the BEM-approved list but deemed appropriate by the IHL</u>. This "other sub-discipline" is normally a very new and/or specialised technology.
- 3.2.6. Example:

Bachelor of Civil Engineering Technology (Highway) with Honours

("Civil" is a main branch, and "Highway" is a sub-set branch)

3.2.7. Example:

Bachelor of *Highway* Engineering Technology (*Pavement*) with Honours

("Highway" is a sub-set branch, and "Pavement" is a specialised technology)

3.2.8. Example:

Bachelor of *Civil* Engineering Technology (*Pavement*) with Honours

("Civil" is a main branch, and "Pavement" is a very specialised technology)

3.2.9. Example:

Bachelor of *Petroleum* Engineering Technology (*Drilling*) with Honours

("Petroleum" is a sub-set branch, and "Drilling" is a very specialised technology)

3.2.10. The following example is not allowed:

Bachelor of *Structural* Engineering Technology (*Building*) with Honours, because both "*Structural*" and "*Building*" are sub-set branches.

3.3. Multi-disciplinary (general) programmes with no major but with a specialisation

3.3.1. The format of the naming shall be :-

Bachelor of Engineering Technology ("specialisation") with Honours.

- 3.3.2. A range of 25-30% of engineering technology content shall be in the specialisation.
- 3.3.3. The remainder range of 70-75% of engineering technology content is mixed such that it cannot be categorised under any of the main or sub-set branches.
- 3.3.4. The specialisation must be <u>either a sub-set branch of registration or any other sub-discipline not in the BEM-approved list but deemed appropriate by the IHL,</u> i.e. it cannot be a main branch.
- 3.3.5. Example:

Bachelor of Engineering Technology (Manufacturing) with Honour

("Manufacturing" is a sub-set branch)

3.3.6. Example:

Bachelor of Engineering Technology (Tool & Die) with Honours

("Tool & Die" is a very specialised sub-discipline)

3.3.7. The following is not allowed:

Bachelor of Engineering Technology (Mechanical) with Honours,

because "Mechanical" is a main branch.

3.4. Multi-disciplinary or general programmes with no major or specialisation.

3.4.1. The naming shall be:

Bachelor of Engineering Technology with Honours.

- 3.4.2. The engineering technology content is mixed which cannot be categorised under any of the main or sub-set branches.
- 3.4.3. The engineering technology content nevertheless meets the minimum engineering technology core credits as per ETAC Standard and hence deserves accreditation (upon meeting other stipulated criteria).
- 3.4.4. It is recognised that IHLs should have the flexibility and freedom to innovate new engineering technology programmes which address pioneering frontier areas of engineering technology knowledge outside the current scope of registration branch recognised by the Board. This provision allows for such flexibility and freedom.

3.5. Engineering Technology programmes with additional non-engineering technology major

- 3.5.1. For additional non-engineering technology **major** such as Law, Business or IT, the additional components must be over and above minimum required total ETAC credits.
- 3.5.2. Example 5: Bachelor of Civil Engineering Technology and Law with Honours

(Law discipline contents should meet the relevant standards for the law profession, over and above the minimum required total ETAC credits. Engineering technology contents must meet the preceding provisions).

3.6. Determination of Branch for Registration of Graduate Engineering Technologist with BEM

3.6.1. The branch for registration of Graduate Engineering Technologist with BEM is recommended to be based on the major in the name of the programme.

Examples:-

NAME OF PROGRAMME	BRANCH OF REGISTRATION	
Bachelor of Civil Engineering Technology with Honours	Civil	
Bachelor of Mechanical Engineering Technology with Honours	Mechanical	
Bachelor of Electrical Engineering Technology with Honours	Electrical	
Bachelor of Chemical Engineering Technology with Honours	Chemical	
Bachelor of Mechatronics Engineering Technology with Honours	Mechatronics	
Bachelor of Civil Engineering Technology (Environment) with Honours	Civil	
Bachelor of Mechanical Engineering Technology (Materials) with Honours	Mechanical	
Bachelor of Computer Engineering Technology with Honours	Computer	
Bachelor of Computer Engineering Technology (Microelectronics) with Honours	Computer	
Bachelor of Engineering Technology with Honours	General	
Bachelor of Engineering Technology (Computer) with Honours	(as <u>approved by</u> the Board as per Board Meeting	
Bachelor of Engineering Technology (Pavement) with Honours	319, 27/6/2016)	
Bachelor of Engineering Technology (Tool&Die) with Honours		

Chapter 4: ENGINEERING PROGRAMMES AT WASHINGTON ACCORD LEVEL

4. ENGINEERING PROGRAMMES AT WASHINGTON ACCORD LEVEL

4.1. Programmes with a single major

4.1.1. The format of the naming shall be :-

Bachelor of "major" Engineering with Honours,

- 4.1.2. At least 70% of engineering content is in the major, and
- 4.1.3. The major must be either a main branch **or** sub-set branch of registration.
- 4.1.4. Example 1: Bachelor of Civil Engineering with Honours

(Civil is a main branch of registration.

4.1.5. Example 2: Bachelor of *Mechatronics* Engineering with Honours

(Mechatronics is a sub-set branch of registration.)

4.2. Programmes with a major with a specialisation.

4.2.1. The format of the naming shall be :-

Bachelor of "major" Engineering ("specialisation") with Honours.

- 4.2.2. A minimum of 70% of engineering content shall be within the major.
- 4.2.3. A range of 25-30% of engineering content shall be within the specialisation.
- 4.2.4. The major must be a main branch of registration.
- 4.2.5. The specialisation must be a sub-set branch of registration.
- 4.2.6. Example 3: Bachelor of *Civil* Engineering (*Building*) with Honours

("Civil" is a main branch, and "Building" is a sub-set branch.)

4.2.7. The following example is not allowed;

Bachelor of *Structural* Engineering (*Building*) with Honours, because both "*Structural*" and "*Building*" are sub-set branches.

4.3. Multi-disciplinary (general) programmes with no major but with a specialisation

4.3.1. The format of the naming shall be :-

Bachelor of Engineering ("specialisation") with Honours.

- 4.3.2. A range of 25-30% of engineering content shall be in the specialisation.
- 4.3.3. The remainder range of 70-75% of engineering content is mixed such that it cannot be categorised under any of the main or sub-set branches.
- 4.3.4. The specialisation must be one of the sub-set branches of registration, i.e. it cannot be a main branch.
- 4.3.5. Example 4: Bachelor of Engineering (*Manufacturing*) with Honours

("Manufacturing" is a sub-set branch.)

4.3.6. The following example is not allowed,

Bachelor of Engineering (*Mechanical*) with Honours, because "*Mechanical*" is a main branch.

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4.4. Multi-disciplinary or general programmes with no major or specialisation.

4.4.1. The naming shall be :-

Bachelor of Engineering with Honours.

- 4.4.2. The engineering content is mixed which cannot be categorised under any of the main or sub-set branches.
- 4.4.3. The engineering content nevertheless meets the minimum 90 SLT credits as per EAC Manual and hence deserves accreditation (upon meeting other stipulated criteria).
- 4.4.4. It is recognised that IHLs should have the flexibility and freedom to innovate new engineering programmes which address pioneering frontier areas of engineering knowledge outside the current scope of registrationbranch recognised by the Board. This provision allows for such flexibility and freedom.

4.5. Engineering programmes with additional non-engineering major

- 4.5.1. For additional non-engineering **major** such as Law, Business or IT, the additional components must be over and above minimum of 135 SLT credits.
- 4.5.2. Example 5: Bachelor of Civil Engineering and Law with Honours

(Law discipline contents should meet the relevant standards for the law profession, over and above the minimum 135 SLT credits. Engineering contents must meet the preceding provisions.)

4.6. Determination of Branch for Registration of Graduate Engineers with BEM

4.6.1. The branch for registration of Graduate Engineers with BEM is recommended to be based on the major in the name of the programme.

Examples:-

<u>'</u>		
Name of Programme	Branch of Registration	
Bachelor of Civil Engineering with Honours	Civil Engineering	
Bachelor of Mechanical Engineering with Honours	Mechanical Engineering	
Bachelor of Electrical Engineering with Honours	Electrical Engineering	
Bachelor of Chemical Engineering with Honours	Chemical Engineering	
Bachelor of Mechatronics Engineering with Honours	Mechatronics Engineering	
Bachelor of Civil Engineering (Environment) with Honours	Civil Engineering	
Bachelor of Mechanical Engineering (Materials) with Honours	Mechanical Engineering	
Bachelor of Computer Engineering with Honours	Computer Engineering	
Bachelor of Engineering (Computer) with Honours	General Engineering, or a new branch category to be approved by the Board	
Bachelor of Engineering with Honours	General (as approved by the Board as per Board Meeting 319, 27/6/2016)	

The registration branch of <u>"General"</u> has been <u>approved by the Board as per Board Meeting No.319, 27/6/2016), item 6.0</u>

This is to replace the original "Others" category for programmes that meet the minimum engineering content but does not fit into any of the main or sub-set branches in the table above.

Thiis will also address the following issues:-

- 1. Some IEA jurisdictions have among their IHLs programmes under the general branch category, and a number of their graduates are Malaysians who have problems applying for registration because the category "Others" had been removed from the BEM list.
- 2. Some Malaysian IHLs may commence engineering programmes which are either very specialised or very novel such that the engineering content, though meeting the minimum engineering credit requirement, do not fit into any of the 36 existing categories.

Appendix 1

Main and Sub-Branches for BEM Registration

Main and Sub-Branches for BEM Registration as Approved in 347th Board Meeting on 13th October 2021 (BEM may review this classifications from time to time – refer to BEM's website for the latest updates)

Main Branch	CIVIL	MECHANICAL	ELECTRICAL	CHEMICAL
1	Building	Aerospace • Aeronautical • Avionics	Computer	Environmental
2	Construction	Agricultural	Electronics Robotics Instrumentation & Control Mechatronics Biomedical	Petroleum • Natural Gas
3	EnvironmentalMunicipalWater resources	Automotive	Communication Information Systems Radio Telecommunication	Process • Fuel • Energy • Thermal
4	Geotechnical • Geological	Building Services		Nuclear
5	Mining	Manufacturing • Production • Industrial •		
6	Structural	Marine		
7	Transportation Traffic Highway	Material		
8	,	Mechatronics • Robotics • Electromechanical • Biomedical		
9		Metallurgy		
10		Mining • Mineral Processing		
11 12		Naval Architecture Nuclear		

Explanation:

- i The table is the result of mapping of the original list of branches, sub branches & sub-sub branches before the Awana branch restructuring in 2014 to the existing branch and sub-branches revised in May 2020.
- ii The branches and the sub branches are shown in bold (as of 19.5.2020)
- iii The sub-sub branches shown in italics are collapsed and merged into the sub-branches stated above.
- iv The sub-branches marked with (*) show the sub-branches listed under two main branches.
- v Mechatronics and Biomedical (*& <u>underline</u>) are placed as sub-branches in either Mechanical or Electrical based on the program content.
- vi Robotics marked with (**) may be placed in sub-branch Manufacturing, Mechatronics or Electronics based on program content.

Appendix 2

Working Group Members

- 1. Dato' Prof. Ir. Dr. Hassan Basri Chairman
- 2. Datuk Prof Ir Dr Chuah Hean Teik
- 3. Ir. Prof. Abdul Aziz Omar
- 4. Ir. Prof. Dr. Ramesh Singh
- 5. Ir. Prof. Megat Johari Megat Mohd Noor
- 6. Prof. Dr. Shahrin bin Mohammad
- 7. Ir. Prof. Dr. Siti Hawa Hamzah
- 8. Ir. Prof. Adnan Zulkiple
- 9. Prof. Dr. Ahmad Yasir Md. Said
- 10. Noor Azizan Itam

Approved in 319th Board Meeting held on 27th June 2016.

(Presented in EAC No. 5/2018-2019 on 25th September 2019 & ETAC No. 5/-2018-2019 on 30th September 2019) V2- Approved in 341st Board Meeting held on 19th May 2020. (Revised Classification of Engineering Branch and Sub- Branch -Approved in 347th Board Meeting on 13th October 2021).