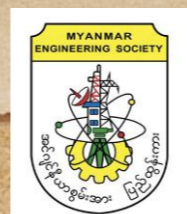# Steps Taken by Myanmar
To Achieve International Standard
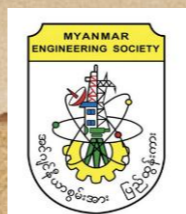# In Engineering Education

By

Engr. Aung Myint
President
Myanmar Engineering Society

Content

- Brief Historical Background

- Current Engineering Education System at YTU and MTU

- New Basic Education System of Myanmar

- Forming Professional Regulatory Authority

- Setting up Accreditation Systems.

- Apply provisional Signatory for International MRA.

Before & After 1964

- **Before 1964**

    - **Rangoon University Bill 1920**

    - **Department of Engineering in 1923**

    - **First Civil Engineering Program 1924**

    - **Matriculation + 2 Yr Intermediate Science + 4 Yr Engineering Specialization -> BSc (Engg)**
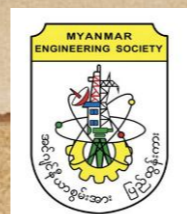
- **After 1964**

    - **Rangoon Institute of Technology (RIT) in 1964 -> Later YTU**

    - **6 Yr Bachelor of Engineering (B.E.) after Matriculation**

    - **Mandalay Institute of Technology (MIT) in 1991 -> Later MTU**
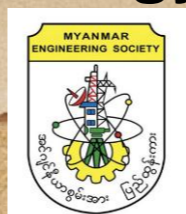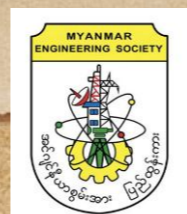
Technical Education 2000

- Student Riot in YTU -> Suspension of Undergrad Programs -> Only Postgrad Programs in YTU & MTU after 1996

- New Technical Education System after Hight School in 41 Technological Universities all over Myanmar in 2000

    - 2 Yr Technician Training (Diploma)

    - 2 Yr Technologist Education (Technology Bachelor)

    - 1 Yr Engineering Education (Engineering Bachelor)

    - 5 yr Education in Total

- Intention: All-round Engineer-cum-Technician -> Questionable Outcome of the System

Introduction of QA

- **Restart of Undergrad Programs in YTU & MTU in 2012**

    - **6 Yr Bachelor of Engineering**

    - **Center of Excellence (COE) for Technology**

    - **Introduction of Quality Assurance System**

- **Technical Education Program in other TUs**

    - **3 Steps 5 Yr Total -> 3 Steps 6 Yr Total (Adding 1 Yr to BE Program)**

    - **3 Septs 6 Yr Total -> 2 Steps 6 Yr Total (3 Yr Diploma + 3 Yr BE)**

    - **2 Steps 6 Yr Total -> 6 Yr BE (3 Yr Diploma in new Technical Colleges)**

- **Mandatory QA in all TUs**

UNDERGRADUATE ACADEMIC SYSTEM (For B.E. / B. Arch.)
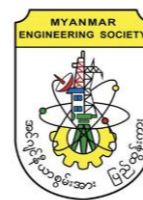
Graduation	**B.E./ B. Arch.**	
Capstone & Preparation for work	Engineering Final Semester I (Internship; Mini-thesis) Semester II (Mini-thesis; General Viva Voce)	Yr. 6
Advanced Engineering Subjects	Engineering Part II – Senior (2 semesters)	Yr. 5
	Engineering Part II – Junior (2 semesters)	Yr. 4
Engineering Fundamentals	Engineering Part I – Senior (2 semesters)	Yr. 3
	Engineering Part I – Junior (2 semesters)	Yr. 2
Foundation Course	Pre – Engineering (2 Semesters)	Yr. 1
	ENTRY	

* Practical training 4 weeks during holidays (Year 2 to Year 5)

* All requirements for each block must be fulfilled before proceeding to the next block
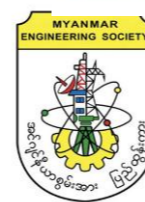
Transition to KG+12 System

	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030
B.E. Year4	-	-	-	-	-	-	-	-	-	Δ	Δ	Δ	Δ
B.E. Year3	-	-	-	-	-	-	-	-	Δ	Δ	Δ	Δ	Δ
B.E.Year2	-	-	-	-	-	-	-	Δ	Δ	Δ	Δ	Δ	Δ
B.E. Year1	-	-	-	-	-	-	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Grade 12	x	x	x	x	x	✸	✸	✸	✸	✸	✸	✸	✸
Grade 11	x	x	x	x	✸	✸	✸	✸	✸	✸	✸	✸	✸
Grade 10	-	-	-	✸	✸	✸	✸	✸	✸	✸	✸	✸	✸
Grade 9	-	-	-	-	-	+	+	+	+	+	+	+	+
Grade 8	-	-	-	-	+	+	+	+	+	+	+	+	+
Grade 7	-	-	-	+	+	+	+	+	+	+	+	+	+
Grade 6	-	-	+	+	+	+	+	+	+	+	+	+	+
Grade 5	-	-	-	-	+	+	+	+	+	+	+	+	+
Grade 4	-	-	-	√	√	√	√	√	√	√	√	√	√
Grade 3	-	-	√	√	√	√	√	√	√	√	√	√	√
Grade 2	-	√	√	√	√	√	√	√	√	√	√	√	√
Grade 1	√	√	√	√	√	√	√	√	√	√	√	√	√

	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030
B.E. Year4	-	-	-	-	-	-	-	-	-	Δ	Δ	Δ	Δ
B.E. Year3	-	-	-	-	-	-	-	-	Δ	Δ	Δ	Δ	Δ
B.E.Year2	-	-	-	-	-	-	-	Δ	Δ	Δ	Δ	Δ	Δ
B.E. Year1	-	-	-	-	-	-	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Grade 12	x	x	x	x	x	✲	✲	✲	✲	✲	✲	✲	✲
Grade 11	x	x	x	x	✲	✲	✲	✲	✲	✲	✲	✲	✲
Grade 10	-	-	-	✲	✲	✲	✲	✲	✲	✲	✲	✲	✲
Grade 9	-	-	-	-	-	+	+	+	+	+	+	+	+
Grade 8	-	-	-	-	+	+	+	+	+	+	+	+	+
Grade 7	-	-	-	+	+	+	+	+	+	+	+	+	+
Grade 6	-	-	+	+	+	+	+	+	+	+	+	+	+
Grade 5	-	-	-	-	+	+	+	+	+	+	+	+	+
Grade 4	-	-	-	√	√	√	√	√	√	√	√	√	√
Grade 3	-	-	√	√	√	√	√	√	√	√	√	√	√
Grade 2	-	√	√	√	√	√	√	√	√	√	√	√	√
Grade 1	√	√	√	√	√	√	√	√	√	√	√	√	√

x = Grade 11 and Grade 12 not yet in place

- = Use of current curriculum

√ = Grade 1 to Grade 5 new curriculum

+ = Grade 6 to Grade 9 new curriculum

✲ = Grade 10 to Grade 12 new curriculum

Δ = B.E. Year 1 to Year 4 new curriculum

	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030
B.E. Year4	-	-	-	-	-	-	-	-	-	Δ	Δ	Δ	Δ
B.E. Year3	-	-	-	-	-	-	-	-	Δ	Δ	Δ	Δ	Δ
B.E.Year2	-	-	-	-	-	-	-	Δ	Δ	Δ	Δ	Δ	Δ
B.E. Year1	-	-	-	-	-	-	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Grade 12	x	x	x	x	x	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Grade 11	x	x	x	x	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Grade 10	-	-	-	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Grade 9	-	-	-	-	-	+	+	+	+	+	+	+	+
Grade 8	-	-	-	-	+	+	+	+	+	+	+	+	+
Grade 7	-	-	-	+	+	+	+	+	+	+	+	+	+
Grade 6	-	-	+	+	+	+	+	+	+	+	+	+	+
Grade 5	-	-	-	-	+	+	+	+	+	+	+	+	+
Grade 4	-	-	-	√	√	√	√	√	√	√	√	√	√
Grade 3	-	-	√	√	√	√	√	√	√	√	√	√	√
Grade 2	-	√	√	√	√	√	√	√	√	√	√	√	√
Grade 1	√	√	√	√	√	√	√	√	√	√	√	√	√

2017-18 (Grade 1 begins)

2019-20 (Grade 3 and 6 begins)

2020-21 (Grade 4, 7 and 10 begins)

2022-23 (First batch Grade 12 graduates)

MYANMAR ENGINEERING SOCIETY
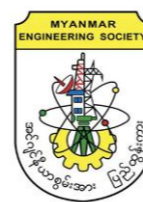
Towards International Standard In Engineering Education System
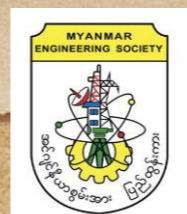
- **Basic Education: KG +10 system to KG+12**

- **Higher Education:**

  - **Traditional Education -> Outcome-Based Education**

  - **Introduction of Engineering Education Accreditation**
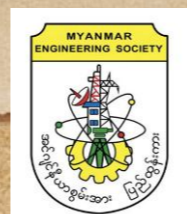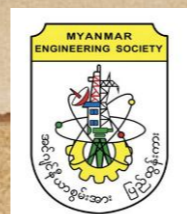
Introduction of Accreditation

- **Capacity Building by Myanmar Engineering Society, a professional body, since 2007**

- **Myanmar Engineering Council by Union Parliament Act 37/2013**

  - **Regulatory & Statutory Authority**

  - **Accreditation of Engineering Education Program**

  - **Engineering Education Accreditation Working Committee**

    - **Nation Building Status -> FEIAP Guidelines**

    - **Regional & International Accreditation -> WA, IEA**

Myanmar Engineering Council Objectives on Engineering Education

- **To ensure that Engineers hold the safety, health, integrity, honour, and dignity of the engineering profession by using their knowledge and skill for the enhancement of human welfare**

- **To develop the Engineering Education in Myanmar and maintain the internationally recognized standards of professional competence and ethics that govern the award and retention of professional titles**

- **To develop the Engineering Education to attain the ASEAN standard, FEIAP standard, and the constitution of Signatory status in Washington Accord**

Strategic`Plan 2030
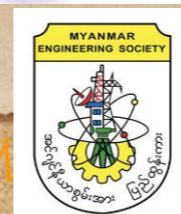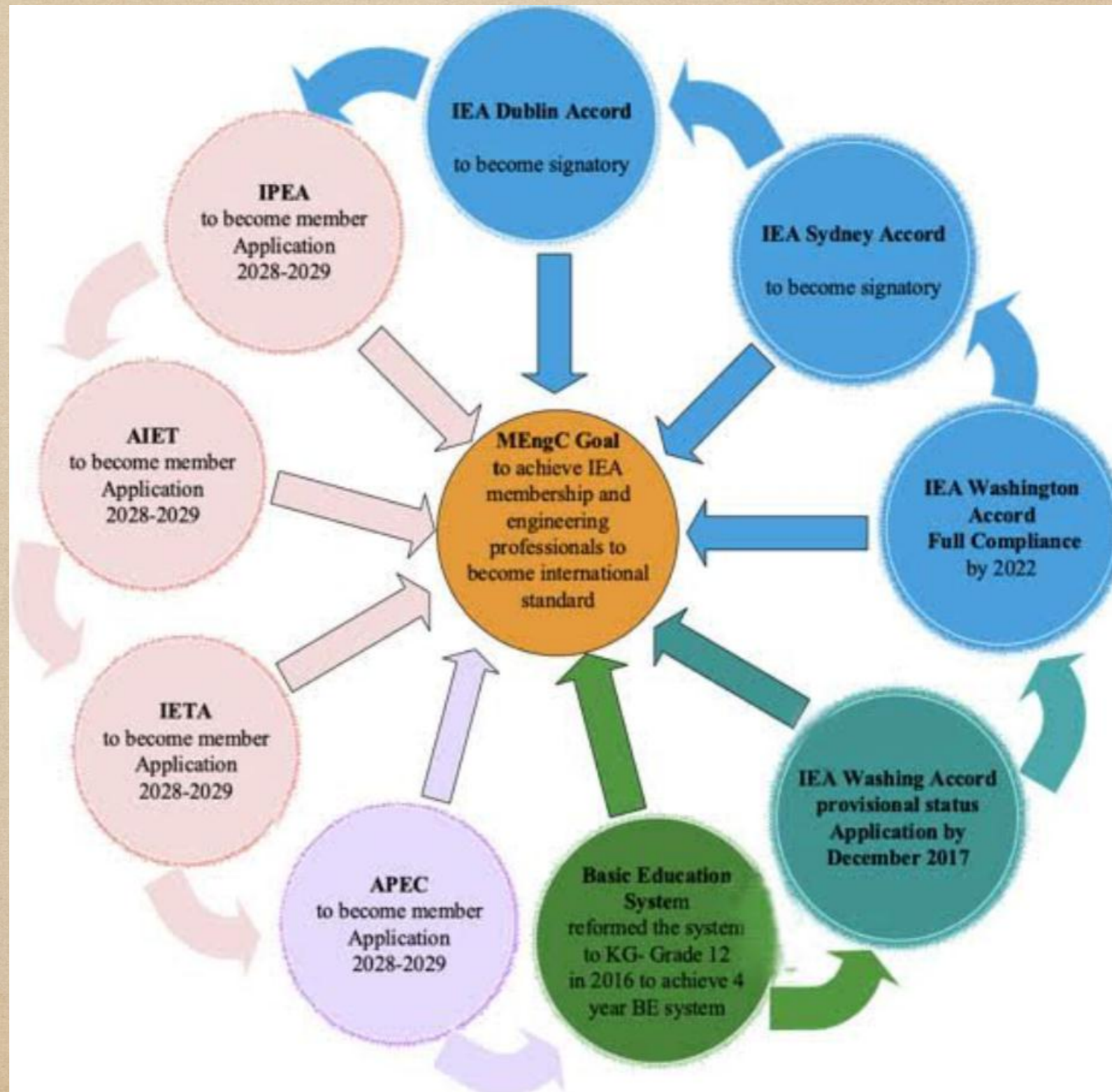
MEngC's Accreditation

- Non-governmental, legally Incorporated, uncontested accreditation agency

  - Statutory and professionally recognized authority to accredit programs satisfying academic requirements for admission to practicing status

  - Accredit programs at institutions that have legal authority to confer higher education degrees qualifications

- Policies to set, approve, evaluate and execute accreditation criteria and procedures

  - Independent of the educational providers delivering accredited programs

  - Autonomous to make accreditation decisions independent of stakeholder influence

Accreditation Principles

- Criteria and procedures to be documented, publicized, and applied in accordance with set policies

- A system to accredit programs with Programme assessors from academic and peer reviewers from industry

  - A programme assessors trining mechanism & documentation

  - Program evaluation with a self-evaluation and site visit;

  - Individual program evaluation & periodic re-evaluation to maintain accreditation

  - Publishing of a list of accredited programs

- Mechanisms for addressing conflict of interest at all stages of the process

  - An appeal process

Accreditation Criteria

- Program outcomes consistent with the purpose of the program

- A curriculum providing a broad basis for engineering practice

- A suitable environment to deliver the program

- Adequate leadership for the program

- Suitably qualified engineering practitioners teaching in the program

- Appropriate entry and progression standards

- Adequate human, physical and financial resources for the program
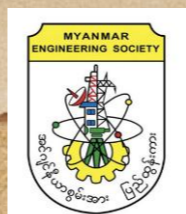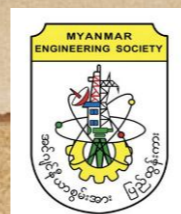
Accreditation Policies, Procedures, Guidelines & Manual

- Abstract from Myanmar Engineering Council Law, Rules & Regulations

- Accreditation Manual & Guidelines for Accreditation

- Policies, Procedures and Code of Ethics for Accreditation of Programs

- Procedures for Nomination of Accreditation Team Members

- Timeline for Accreditation & Accreditation Fee Schedule

- Policies and Procedures for Appeal

- Credentials of Evaluators & Guidelines on Drafting the Exit Statement

- On-Site Visit Schedule
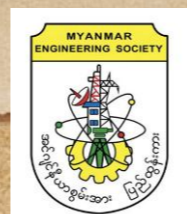
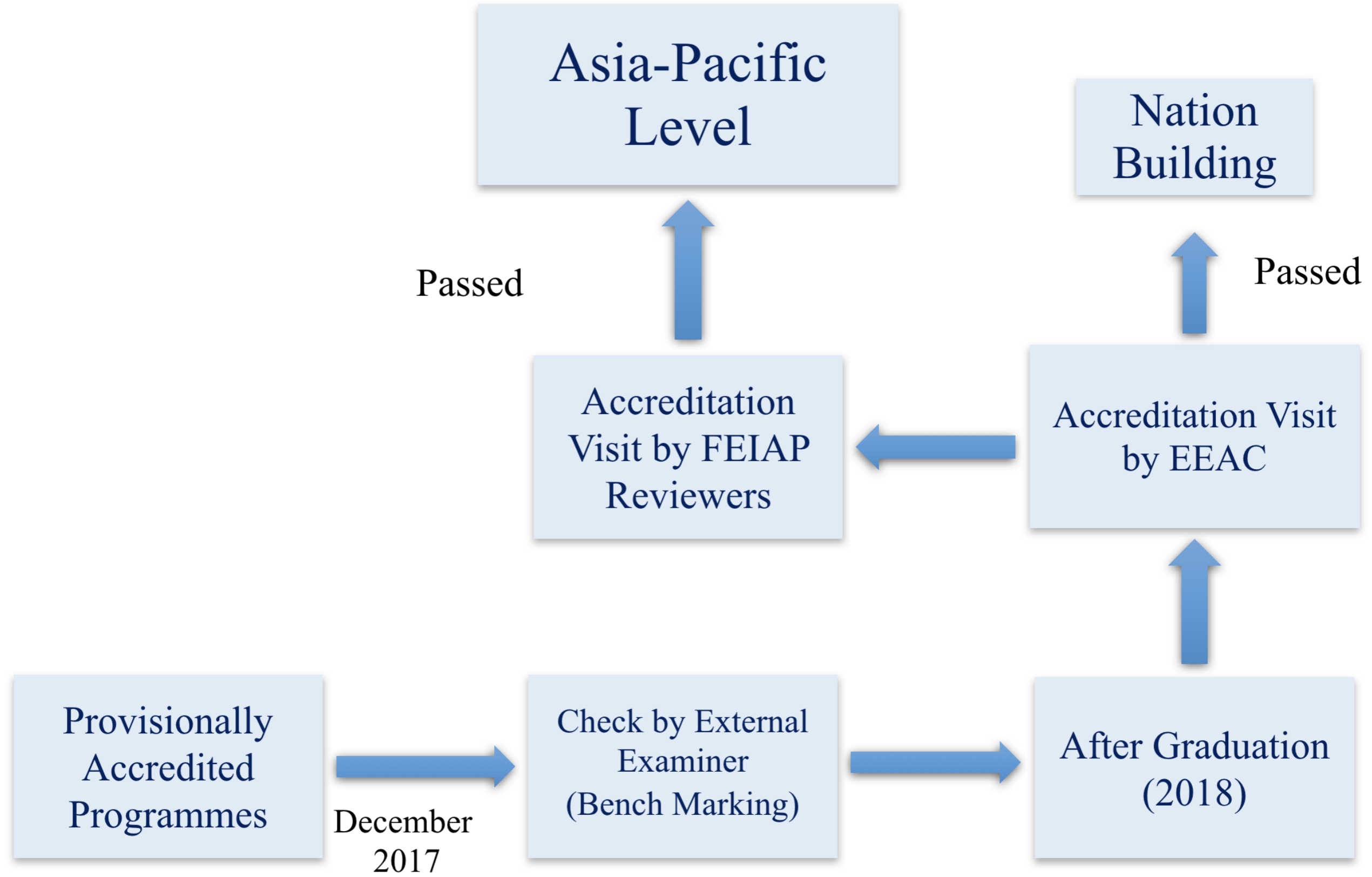# Accreditation Vision

First Step	National Building	Assessments of registered engineers such as National Professional Engineer
Second Step	ASEAN level	ASEAN Chartered Professional Engineer (ACPE)
Third Step	FEIAP level	International Professional Engineers Agreement (IPEA)
Fourth Step	Step up to the constitution of Full Signatory status in Washington, Sydney and Dublin Accords	APEC Engineer Agreement

Asia-Pacific
Level

Nation
Building

Passed

Passed

Accreditation
Visit by FEIAP
Reviewers

Accreditation Visit
by EEAC

Provisionally
Accredited
Programmes

Check by External
Examiner
(Bench Marking)

After Graduation
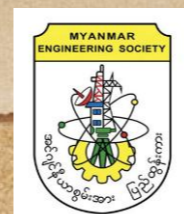(2018)

December
2017

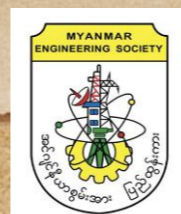# 3 Training & Workshops in 2015

❖ 28.3.2015   Program Evaluators Training Workshop

                   (Prof. Liang-Jenq LEU, IEET)

❖ 3.10.2015   Program Evaluators Training Workshop

                   (Ir. Prof. Academician Dato' Dr. Chuah Hean Teik, FEIAP)

❖ 16.10.2015   Program Evaluators Training Workshop on Operating Environment,

                   Quality Systems and Program Design

                   (Prof. Eliathamby Ambikairajah, UNSW)

# 8 Training & Workshops in 2016

- ❖ 18.1.2016   Engineering Education Evaluators' Training
    (Prof. EliathambyAmbikairajah, UNSW)
- ❖ 4.3.2016   Program Evaluators Training Workshop
    (Ir. Prof. Academician Dato' Dr. Chuah Hean Teik, FEIAP)
- ❖ 29.3.2016   Program Evaluators' Training Workshop
    (Prof. Liang-Jenq LEU, IEET)
- ❖ 13.8.2016   Rectors' and Principals' Forum on Engineering Education Accreditation Workshop
    (Prof. Liang-Jenq LEU, IEET)
- ❖ 22.9.2016   Outcome-Based Education Training , YTU
- ❖ 8.10.2016   Outcome-Based Education Training
    (Ir. Prof. Academician Dato' Dr. Chuah Hean Teik, FEIAP)
- ❖ 15.11.2016   Post Accreditation Workshop at YTU (2 Days)
- ❖ 3.12.2016   Workshop on Accreditation of Engineering and Architectural Education
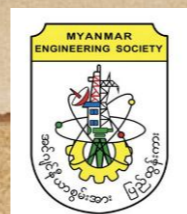   (Prof. Liang-Jenq LEU, IEET & Prof. Eliathamby Ambikairajah, UNSW)

16 Training & Workshops in 2017

- ❖ 12.1.2017.   OBE Training at TU Thanlyin (Prof. Chuah Hean Teik, FEIAP)

- ❖ 13.1.2017   OBE Training at WYTU (Prof. Chuah Hean Teik, FRIAP)

- ❖ 13.1.2017   Workshop on Professionalism & Code of Conduct and Route to Professional Engineer at MES

      (Prof. Tan Yean Chin)

- ❖ 16.2.2017   Workshop on Higher Education Quality Assurance and Opportunity for Foreign Students in

      Taiwan (Prof. Chuah, IEET)

- ❖ 22.2.2017   Accreditation Board for Engineering and Technology (Sayar Gyi Dr. San Hla Aung)
- ❖ 2.7.2017   2017 Taiwan-Myanmar Higher Education Presidents' Forum, Yangon
- ❖ 24.7.2017   Engineering Accreditation and Self Assessment Report Training, TU Thanlyin
- ❖ 16.8.2017   Engineering Accreditation and Self Assessment Report Training WYTU
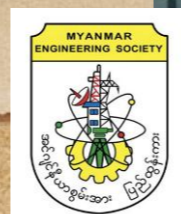
- ❖ 28.8.2017 Workshop on Preparation of Engineering Education Accreditation at MTU
  (Prof. Liang-Jenq LEU, IEET)
- ❖ 30.8.2017 Workshop on Preparation of Engineering Education Accreditation at YTU
  (Prof. Liang-Jenq LEU, IEET)
- ❖ 21.9.2017 Engineering Accreditation and Self Assessment Report Training, TU Kyaukse
- ❖ 2.10.2017 Engineering Accreditation and Self Assessment Report Training, TU Hmawbi
- ❖ 11.11.2017 MEngC National Workshop on the Engineering Education for Engineering Technologists & Technicians
- ❖ 16.12.2017 Dialogue Session on Engineering Curriculum Design
  (Ir. Prof. Academician Dato' Dr. Chuah Hean Teik, FEIAP)
- ❖ 21.12.2017 How to Prepare for Washington Accord Outcomes-based Accreditation
  (Prof. Er. LOCK Kai Sang)
- ❖ 22.12.2017 Evidence-Based Onsite Assessment During Accreditation Visit
  (Prof. Er. LOCK Kai Sang)

13 & still counting 2018

- ❖ 1.2.2018 Curriculum Design for Engineering Degree (2 Days)

     (Ir. Prof. Academician Dato' Dr. Chuah Hean Teik, FEIAP)

- ❖ 10.3.2018 Outcome-Based Education Awareness Training at YTU (2 Days)

     (Prof. Dr. Charlie Than)

- ❖ 16.3.2018 Discussion on Engineering Education Programmed Accreditation

     (Prof. Liang-Jenq LEU, IEET)

- ❖ 25.4.2018 Accreditation Training Workshop at TU Hmawbi (2 Days)

- ❖ 3.5.2018 Accreditation Training Workshop at UT YCC (2 Days)

- ❖ 31.5.2018 Accreditation Training Workshop at YTU

- ❖ 14.6.2018 Accreditation Training Workshop at WYTU
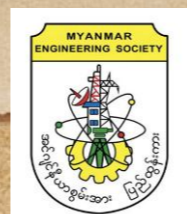
❖ 18.6.2018   Accreditation Training Workshop at TU (Hinthada) (2 Days)

❖ 21.6.2018   Accreditation Training Workshop at MEngC

❖ 18.7.2018   Engineering Education in Philippines

                   (Engr. Federico A. Monsada, President, PTC)

❖ 27.7.2018   Thailand Scope of Engineering Work

                   (Dr. Krai Tungsanga, Chairman, APEC Engineer and ACPE Coordination Committee)

❖ 23.8.2018   OBE Assessment and CQI

                   (Ir. Prof. Academician Dato' Dr. Chuah Hean Teik, FEIAP)

❖ 10.8.2018   Designing Engineers for Myanmar's Future (3 Days)

                   (4 Professors from UNSW, UTS and RMIT University)
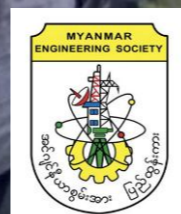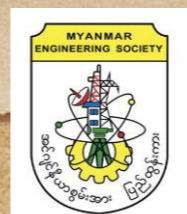
Provisionally Accredited Program List

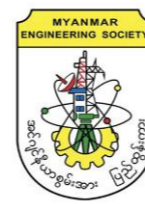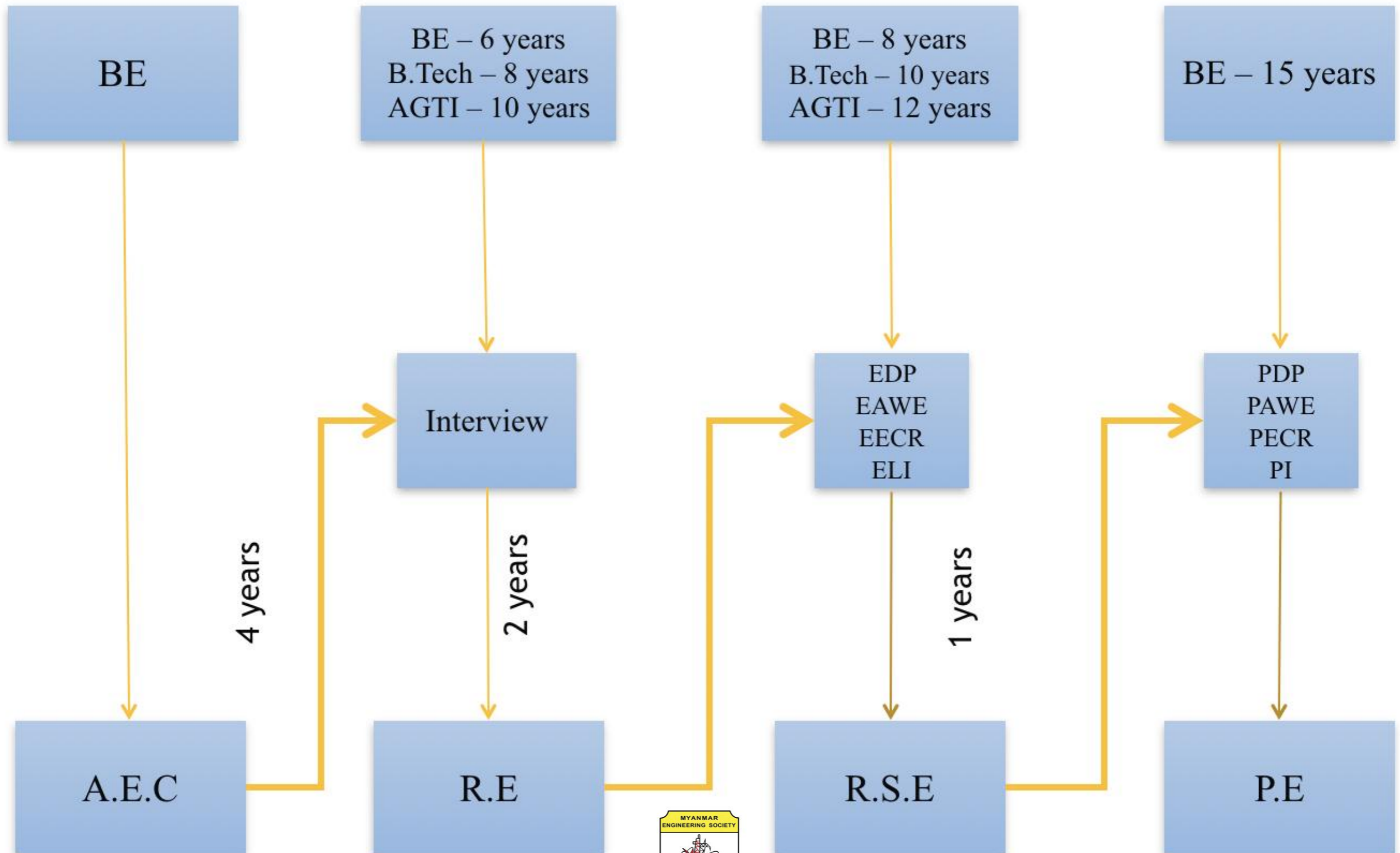| No.	University	Engineering Programme
1.	Yangon Technological University	11
2.	Mandalay Technological University	7
3.	Technological University (Thanlyin)	3
4.	Technological University (Kyaukse)	6
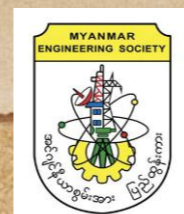
Accreditation Calendar

|	
2017 Dec	Accreditation policies and procedures Published
2018 Jan	Orientation for Institutional Representatives Presidents and Deans Forums
2018 Feb	Deadline for Request for Accreditation
2018 May	Program Evaluators workshop
2018 May	Capstone course workshop
2018 July 31	Deadline for Self-Assessment Report, interim review report, and annual continuous improvement report
2018 Sept	Conveners, Team Chairs meetings
2018 Oct	On-site visit
2018 Nov	Editors Meeting
2018 Dec	Accreditation Decision Meeting
2019 Jan	EEAC General Assembly, Accreditation certificate conferment ceremony for 2017-18 accreditation cycle.

Competency Assessment
Pathway to Professional Engineer

BE

BE – 6 years
B.Tech – 8 years
AGTI – 10 years

BE – 8 years
B.Tech – 10 years
AGTI – 12 years

BE – 15 years

Interview

EDP
EAWE
EECR
ELI

PDP
PAWE
PECR
PI

4 years

2 years

1 years

A.E.C

R.E

R.S.E

P.E

Engineering Professional Development Program

- 30 Hours Professional Development Program (after 7 years practice of which 2 years must be in relative industry)

  - Engineering Management

  - Safety

  - Ethics

  - Fundamentals of Engineering

  - Rules, Regulations, Standards & Specification

- Engineering Assessment Written Examination

  - Part I 4 Hour: Breadth, Part II 4 hour: Depth

  - Morning 2 hours: Multiple Choice Examination

  - Afternoon 2 hours: Problem Solving
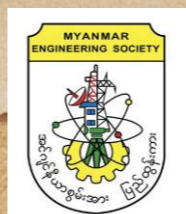
# Continuous Professional Development Working Committee

- To develop proficiency and expertise of engineers for the application of theoretical knowledge to practical employments and to advance innovative explications to real life problems while obeying to professional ethics and accretion of a broader understanding of their responsibility and commitment to society

- 20 Hours per year

    - Formal Education and Training Activities

    - Informal Learning Activities (OJT)

    - Informal Learning Activities (Self Study)

    - Conference and Meeting

    - Presentation and Papers

    - Service Activities
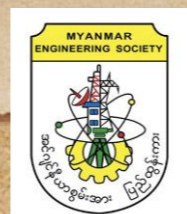
CPD Activities

No.	Year	No. of Trainings	Hours
1	2014	25	212
2	2015	98	691.45
3	2016	165	1310
4	2017	222	2168.05
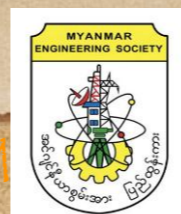
Conclusion

- A critical re-commitment with past and current status of engineering education practices

- Development within knowledge society of academicians/professional but also as development of the country economy

- 3 I/C Proper approach

  - Integrity & Competence

  - Integration & Communications

  - Internationalisation & Cooperation

THANK YOU *for* Kind Attention