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 High 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.)

- **Capstone & Preparation for work**
- **Advanced Engineering Subjects**
- **Engineering Fundamentals**
- **Foundation Course**

**ENTRY**

- **Pre - Engineering (2 Semesters)**
  - Yr. 1

- **Engineering Part I - Senior (2 semesters)**
  - Yr. 2
  - Yr. 3

- **Engineering Part I - Junior (2 semesters)**
  - Yr. 4
  - Yr. 5

- **Engineering Part II - Senior (2 semesters)**
  - Yr. 5

- **Engineering Part II - Junior (2 semesters)**
  - Yr. 6

* 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
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- = 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

x = Grade 11 and Grade 12 not yet in place
### Transition to KG+12 System

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- **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)**
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
  - Regulatory & Statutory Authority
  - Accreditation of Engineering Education Program
    - 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

IEA Dublin Accord to become signatory
IEA Sydney Accord to become signatory
IEA Washington Accord Full Compliance by 2022
IEA Washing Accord provisional status Application by December 2017

MEngC Goal to achieve IEA membership and engineering professionals to become international standard

IPEA to become member Application 2028-2029
AICT to become member Application 2028-2029
IETA to become member Application 2028-2029
APEC to become member Application 2028-2029

Basic Education System reformed the system to KG-Grade 12 in 2016 to achieve 4 year BE system
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 training 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
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<td>National Building</td>
<td>Assessments of registered engineers such as National Professional Engineer</td>
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<td>Second Step</td>
<td>ASEAN level</td>
<td>ASEAN Chartered Professional Engineer (ACPE)</td>
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<td>Third Step</td>
<td>FEIAP level</td>
<td>International Professional Engineers Agreement (IPEA)</td>
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<td>Fourth Step</td>
<td>Step up to the constitution of Full Signatory status in Washington, Sydney and Dublin Accords</td>
<td>APEC Engineer Agreement</td>
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Accreditation Policies, Procedures, Guidelines & Manual

Asia-Pacific Level

Passed

Accreditation Visit by FEIAP Reviewers

Check by External Examiner (Bench Marking)

Provisionally Accredited Programmes

December 2017

Nation Building

Passed

Accreditation Visit by EEAC

After Graduation (2018)
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. Eliathamby Ambikairajah, 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)
- 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)


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


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)
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>1.2.2018</td>
<td>Curriculum Design for Engineering Degree (2 Days) (Irn. Prof. Academican Dato’ Dr. Chuah Hean Teik, FEIAP)</td>
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<td>10.3.2018</td>
<td>Outcome-Based Education Awareness Training at YTU (2 Days) (Prof. Dr. Charlie Than)</td>
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<td>16.3.2018</td>
<td>Discussion on Engineering Education Programmed Accreditation (Prof. Liang-Jenq LEU, IEET)</td>
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<td>25.4.2018</td>
<td>Accreditation Training Workshop at TU Hmawbi (2 Days)</td>
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<td>3.5.2018</td>
<td>Accreditation Training Workshop at UT YCC (2 Days)</td>
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<td>31.5.2018</td>
<td>Accreditation Training Workshop at YTU</td>
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<td>14.6.2018</td>
<td>Accreditation Training Workshop at WYNU</td>
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</table>
- 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

<table>
<thead>
<tr>
<th>No.</th>
<th>University</th>
<th>Engineering Programme</th>
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<tbody>
<tr>
<td>1.</td>
<td>Yangon Technological University</td>
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<tr>
<td>2.</td>
<td>Mandalay Technological University</td>
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<td>3.</td>
<td>Technological University (Thanlyin)</td>
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<td>4.</td>
<td>Technological University (Kyaukse)</td>
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<td>Event</td>
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<td>------------</td>
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<tr>
<td>2017 Dec</td>
<td>Accreditation policies and procedures Published</td>
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<tr>
<td>2018 Jan</td>
<td>Orientation for Institutional Representatives Presidents and Deans</td>
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<tr>
<td></td>
<td>Forums</td>
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<tr>
<td>2018 Feb</td>
<td>Deadline for Request for Accreditation</td>
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<tr>
<td>2018 May</td>
<td>Program Evaluators workshop</td>
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<tr>
<td>2018 May</td>
<td>Capstone course workshop</td>
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<tr>
<td>2018 July 31</td>
<td>Deadline for Self-Assessment Report, interim review report, and annual continuous improvement report</td>
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<td>2018 Sept</td>
<td>Conveners, Team Chairs meetings</td>
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<td>2018 Oct</td>
<td>On-site visit</td>
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<td>2018 Nov</td>
<td>Editors Meeting</td>
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<td>2018 Dec</td>
<td>Accreditation Decision Meeting</td>
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<td>2019 Jan</td>
<td>EEAC General Assembly, Accreditation certificate conferment ceremony for 2017-18 accreditation cycle.</td>
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</table>
Competency Assessment
Pathway to Professional Engineer

BE

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

Interview

2 years

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

EDP
EAWE
EECR
ELI

1 year

R.S.E

BE – 15 years

PDP
PAWE
PECR
PI

A.E.C

4 years

R.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
<table>
<thead>
<tr>
<th>No.</th>
<th>Year</th>
<th>No. of Trainings</th>
<th>Hours</th>
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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