Myanmar Engineering Council
Engineering Education Accreditation Committee

Myanmar Engineering Council
EEAC

Exit Statement

University	YTU	
Program	Bachelor of Engineering (Chemical)	
Convener		27.10.2015
	~~Signature~~	Date
Chair	Dr. Cho Win Maw	27.10.2015
	Signature	Date
Evaluator		27.10.2015 U Soe Thaung
	Signature	Date
Evaluator		27.10.2015
	Signature	Date

CONTROLLED

Criterion 1(a): Mission and Objectives

Programme Objectives are particular goals consistent with the mission and vision of the Technological Universities/Institutions, are responsive to the expressed interest of programme stakeholders, and describe the expected achievements of graduates in their career and professional life a few years after graduation.

An engineering programme seeking accreditation shall respond to the following requirements:

(i) Programme Objectives: The programme shall have published Programme Objectives.

(ii) Processes and Results: The programme shall have a clear linkage between Programme Objectives and Programme Outcomes ; a process of on¬going assessment and evaluation that demonstrates the achievement of Programme Objectives with documented results; and evaluation results that are used in the continual improvement of the programme.

(iii) Stakeholders Involvement: The Technological Universities/Institutions shall provide evidence of stakeholder involvement with regard to (i) and (ii) above.

Criterion 1(b): Programme Outcomes

Programme Outcomes are statements that describe what students are expected toknow and be able to perform or attain by the time of graduation. These relate to theskills, knowledge, and behaviour that students acquire through the programme.Students of an engineering programme are expected to attain the following:

(i) **Engineering Knowledge** - Apply knowledge of mathematics, science,engineering fundamentals and an engineering specialisation to the solution ofcomplex engineering problems;

(ii) **Problem Analysis** - Identify, formulate, research literature and analysecomplex engineering problems reaching substantiated conclusions using firstprinciples of mathematics, natural sciences and engineering sciences;

(iii) **Design/Development of Solutions** - Design solutions for complex engineeringproblems and design systems, components or processes that meet specifiedneeds with appropriate consideration for public

health and safety, cultural,societal, and environmental considerations;

(iv) **Investigation**- Conduct investigation into complex problems using researchbasedknowledge and research methods including design of experiments,analysis and interpretation of data, and synthesis of information to providevalid conclusions;

(v) **Modern Tool Usage** - Create, select and apply appropriate techniques,resources, and modern engineering and IT tools, including prediction andmodelling, to complex engineering activities, with an understanding of thelimitations;

(vi) **The Engineer and Society** - Apply reasoning informed by contextual knowledgeto assess societal, health, safety, legal and cultural issues and the consequentresponsibilities relevant to professional engineering practice;

(vii) **Environment and Sustainability** - Understand the impact of professionalengineering solutions in societal and environmental contexts and demonstrateknowledge of and need for sustainable development;

(viii)**Ethics** - Apply ethical principles and commit to professional ethics andresponsibilities and norms of engineering practice;

(ix) **Communication** - Communicate effectively on complex engineering activitieswith the engineering community and with society at large, such as being ableto comprehend and write effective reports and design documentation, makeeffective presentations, and give and receive clear instructions;

(x) **Individual and Team Work** - Function effectively as an individual, and as amember or leader in diverse teams and in multi-disciplinary settings;

(xi) **Life Long Learning** - Recognise the need for, and have the preparation andability to engage in independent and life-long learning in the broadest contextof technological change.

(xii) **Project Management and Finance** - Demonstrate knowledge andunderstanding of engineering and management principles and apply these toone's own work, as a member and leader in a team, to manage projects and inmultidisciplinary environments;

Criterion 1(c): Academic Curriculum

The academic curriculum and curricular design shall strongly reflect the philosophy and approach adopted in the programme structure, and the choice of the teaching-learning (delivery) and assessment methods. The curricular approach, the educational content and the teaching-learning and assessment methods shall be appropriate to, consistent with, and support the attainment or achievement of the Programmes Outcomes.

A balanced curriculum shall include all technical and non-technical attributes listed in the Programme Outcomes, and there shall be a balance between the essential elements forming the core of the programme and additional specialist or optional studies (electives). The curriculum shall integrate theory with practice through adequate exposure to laboratory work and professional engineering practice.

Guidelines on academic programmes outlined in this Manual provide essential elements and features, which when combined will render a programme acceptable for accreditation by EEAC.

All engineering programmes need to cover the broad areas of their respective disciplines. Appropriate breadth and depth of the content shall be ensured for all courses. The course structure and sequence of content shall be appropriate. Adequate time shall be allocated for each component of the content/course. Evidence shall be present to show that the contents are being updated to keep up with scientific, technological and knowledge developments in the field, and to meet societal needs. Technological Institutions shall have mechanisms for regularly identifying topics of contemporary importance at local, national and global levels and topics that may not be adequately addressed in the curriculum.

Other contributing components to the curriculum such as a variety of teaching-learning (delivery) modes, assessment and evaluation methods shall be planned and incorporated within the curriculum to enable students to effectively develop the range of intellectual and practical skills, as well as positive attitudes as required in the Programme Outcomes. The assessment to evaluate the degree of the achievement of the Programme Outcomes by the students shall be done both at the programme as well as at course levels. The teaching-learning methods shall enable students to take full responsibility for their own learning and prepare them for life-long learning. The programme shall demonstrate the relationship between the courses and the Learning Outcomes.

The emphasis on particular elements or features of the programme must remain flexible, but it will be required in the accreditation process to confirm that minimum levels of understanding and standards of achievement are attained in the basic courses relevant to the fields of engineering.

If the academic programme includes credit system, the institution shall comply the following:

The academic programme component must consist of a minimum total of **120 credit hours**(not including credits for remedial courses) made up as follows:

(a) A **minimum of 80 credit hours** shall be **engineering courses** consisting of engineering sciences and engineering design/projects appropriate to the student's field of study.

(b) The **remaining credit hours** shall include sufficient content of **general education component** (such as mathematics, computing, languages, general studies, co- curriculum, management, law, accountancy, economics, social sciences, etc.) that complements the technical contents of the curriculum.

Strength:

Criterion	Statement
1(C).	1. The academic curricula have the depth and breadth of an engineering programme. 2. The program has provision to meet the desirable conditions as stipulated in the Myanmar Engineering Council Accreditation Manual 2015 October.

Area for Improvement:

Criterion	Statement
1(C).	1.The curriculum lacks following topics which should be included in fourth year and fifth year courses: a. experimental design and data analysis including error analysis b. modelling, simulation and optimization c. basic microbiology

	d. GLP, GMP and HACCP 2.The industrial training should be arranged according to the academic curricula and choice of student

Criterion 2: Students

The quality and performance of students, in relation to the Programme Outcomes is of utmost importance in the evaluation of an engineering programme.

Students intending to pursue engineering programmes shall have a good understanding of mathematics and physical sciences.

Technological Institutions shall ensure that students, who do not meet the above criteria, undertake suitable remedial programmes in order to attain the equivalent entry qualification. Technological Institutions must put in place the mechanism for credit transfer/credit exemption to allow alternative educational pathways who met the specify pathway.

The programme shall provide the necessary teaching-learning environment to support the achievement of the Programme Objectives and Programme Outcomes. The teaching-learning environment shall be conducive to ensure that students are always enthusiastic and motivated. The Technological Institutions shall provide necessary counselling/guardian services to students regarding academic, career, financial, and health matters.

Students shall not be over burdened with workload that may be beyond their ability to cope with. Adequate opportunities, such as involvement in co-curricular activities in student clubs, sports and campus activities, shall be provided for students to develop their character apart from academic development.

Area for Improvement:

Criterion	Statement
2.	1. 1.Student counseling 2. 2.Co-curricular and extra-curricular activities for students

Criterion 3: Academic and Support staff

A viable engineering programme is expected to have a minimum of 8 full-time academicstaff relevant to the particular engineering discipline. Technological Institutions may engage part-time staff with acceptable professional qualifications in the related engineering fields. The fulltimeequivalent of part-time staff shall not exceed 40%.

Academic staff shall have postgraduate degrees (Masters level or higher). However, a staff member with a good first degree and wide industrial/specialist experience with acceptable professional qualifications may be considered.

The overall competence of the academic staff may be judged by such factors as education, diversity of background, engineering experience, teaching experience, ability to communicate, enthusiasm for developing more effective programmes, level of scholarship, participation in professional societies and attainment of Professional Engineer status or as Corporate Members of Learned Bodies. The Technological Institutions should ensure its staff gain the necessary industrial experience required to achieve professional status.

The full-time equivalent academic staff to student ratio shall ideally be 1:20 or better to ensure effective teaching, student-staff interaction, student advising and counselling, Technological Institutions service and research activities, professional development and interaction with industries.

There shall also be sufficient, qualified and experienced technical and administrative staff to provide adequate support to the educational programme. It is recommended that each technical staff shall be in charge of not more than two laboratories.

Strength:

Criterion	Statement
3.	1. The majority of academic staffs have high academic qualification. 2. The relationship between staff members and students is warm and close. 3. The leadership has the strong commitment to ensure the quality and sustainability of the programme.

Area for Improvement:

Criterion	Statement
3.	1. Registration at the Myanmar Engineering Council for PE and RSE assessment 2. The journal publication by the staffs 3. The training of supporting staffs

Criterion 4: Facilities

The quality of the environment in which the programme is delivered is regarded as key to providing the educational experience necessary to accomplish the Learning Outcomes. There must be adequate teaching and learning facilities such as classrooms, learning-support facilities, study areas, information resources (library), laboratories and workshops, and associate equipment to cater for multi-delivery modes.

Technological Institutions must ensure that all facilities are maintained and adhered to best practices in safety, health and environment where appropriate.

Support facilities such as hostels, sport and recreational centres, health centres, student centres, and transport must be adequate to facilitate students' life on campus and to enhance character building.

Strength:

Criterion	Statement
4.	1. The teaching and learning facilities are adequate to provide conducive learning environment. 2. Although the annual budget allocation is limited, the institution has access to the other funding sources, so the department is financially sound. 3. Campus environment provide spaces conducive to learning.

Area for Improvement:

Criterion	Statement
4.	1. The library facility such as main references, additional references, international publication and access to online database. 2. Sports and first aid facilities 3. Laboratory instruments and equipment 4. Maintenance services

Criterion 5: Quality Management Systems

The Technological Institutions must ensure that there exists a quality management system to oversee and monitor the overall achievement of the programme objectives. These include the controlling, managing, directing, organising and supervising of the overall management system of the Technological Institutions. It must have adequate arrangements for planning, development, delivery and review of engineering programmes together with the academic and professional development of its staff.

Strength:

Criterion	Statement
5.	1. The management system of the Yangon Technological University has been audited and certified by Bureau Veritas Certification Holding SAS-UK Branch in accordance with the requirement of ISO 9001:2008.

Area for Improvement:

Criterion	Statement
5.	1.Laboratory safety

Observation: Criterion 4: Facilities

Comment
Food safety at the food stall cannot be assured.

Observation: Criterion 5: Quality Management Systems

Comment
1. Liquid waste management system should be improved 2. Solid waste management system should be introduced 3. Energy conservation system including utilization of renewable energy should be implemented.

NB:

Strength: Anything with a **'wow factor'** of **'very outstanding nature'** far beyond just satisfying the minimum requirements.

Area for Improvement or Opportunities for Improvement (OFI): 'Good to have' or 'desirables' recommendations made by the Evaluation Team for programme Continual Quality Improvement (CQI)

Observation: A comment or suggestion that does not relate directly to the accreditation action but is offered to assist the institution in its continuing efforts to improve its programs.

Concern: Statement that a program currently satisfies a criterion, policy, or procedure, but the potential exists for the situation to change such that the criterion, policy, or procedure may not be satisfied.

Weakness: Statement that a program lacks strength of compliance with a criterion, policy, or procedure to ensure that the quality of the program will not be compromised. Remedial action is required to strengthen compliance with the criterion, policy, or procedure prior to the next review.

Deficiency: Statement that a criterion, policy, or procedure is not satisfied. The program is not in compliance with the criterion, policy, or procedure.