Myanmar Engineering Council
Engineering Education Accreditation Committee

Exit Statement

University	YTU	
Program	Bachelor of Engineering (Mechatronic)	
Convener	Signature	Date: 11-2-2016
Chair	Signature	Date: 11-2-2016
Evaluator	Signature	Date: 11-2-2016
Evaluator	Signature	Date: 11-02-2015

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 to know and be able to perform or attain by the time of graduation. These relate to the skills, 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 of complex engineering problems;

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

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

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

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

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

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

(vii) **Environment and Sustainability** - Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development;

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

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

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

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

(xii) **Project Management and Finance** - Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary 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
	- The accreditation team found that the curriculum has been developed by the cooperation of not only the academic staff but also JICA expert.

Area for Improvement:

Criterion	Statement
	- The existing curriculum is needed to revise and update in order to be more adaptable with the industrial requirements/demands. - The department is needed to provide the course outlines at the beginning of the academic year.

Observation:

Comment
- The total credit hours in the curriculum is needed to review and readjust. - Students may have insufficient time for co-curriculum activities because credit hours of core engineering courses exceed than the minimum requirement of 80 credit hours.

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.

Strength:

Criterion	Statement
	- Students have strong motivation in the engineering programme.

Observation:

Comment
- Students are desirable to have seminars concerning the job opportunity to strengthen their motivation.

Criterion 3: Academic and Support staff

A viable engineering programme is expected to have a minimum of 8 full-time academic staff relevant to the particular engineering discipline. Technological Institutions may engage part-time staff with acceptable professional qualifications in the related engineering fields. The fulltime equivalent 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
	- Academic staffs have strong academic qualification. - Academic staff usually use modern software such as MATLAB and Fluid SIM for effective teaching.

Area for Improvement:

Criterion	Statement
	- Teaching staffs are necessary to acquire an acceptable professional qualifications such as R.S.E, P.E, A.C.P.E, and ASEAN Engineer registered.

Observation:

Comment
- Teaching staffs should go study visit to industry by accompanying with students in order to gain wide industrial experiences and knowledge. - More lab technicians should be provided to the department. - It is necessary to provide the technical training for lab technicians.

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
	- Effective teaching and learning methods are being used.

Area for Improvement:

Criterion	Statement
	- Lack of insufficient lab technicians. - To develop E-Library system for the department. - According to the interview with mechatronic engineers students, it is necessary to upgrade Wi-Fi facility for the department. - Better library access system is needed.

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
	- Necessary documents are well prepared in accordance with the guideline of ISO9001.