University of Technology (XXXXX)

Department of Electronic Engineering

EcE Course Syllabuses (Six Year Plan)

CURRICULUM REVIEW

This curriculum review is externally, voluntarily & independently conducted for University of Technology (XXXX), Department of Electronic Engineering as per request of the Associate Professor of the University, Dr (XXXXX) for their further tasks on seeking the accreditation by Myanmar Engineering Council.

This review is solely based on the curriculum documents presented to me in the engineering education workshop session & it is just a preliminary task on preparation for accreditation.

The review is solely focussed on the curriculum, learning outcomes, contents coverages, credit points and general aspects of the curriculum.

For full accreditation, the educational establishment will need to present the comprehensive documents and records to Engineering Accreditation Committee in accordance with the guidelines set in the Accreditation Manual of Myanmar Engineering Council.

The electronic engineering related courses of University of Technology (XXXX) Department Electronic Engineering are mainly focussed on Electronic Engineering and it may fall in PE(Electronics) discipline.

The review report contains the following aspects:

1. OVER ALL REVIEW IN LINE WITH MYANMAR ENGINEERING COUNCIL'S ACCREDITATION MANUAL (Page 2 to 31)
2. COMMENTS ON DETAILS COURSE CONTENTS & DEVELOPMENTAL SUGGESTIONS (Page 32 to 42)
3. OVER ALL RECOMMENDATIONS Page 43
4. CONCULSION & OVERALL COMMENTS Page 44

This review is externally made by Dr Kyaw Naing on solely independent and voluntary basis.

MINISTRY OF SCIENCE AND TECHNOLOGY

Department of Technical and Vocational Education

(XXXXX)Technological University

CURRICULUM FOR B.E (6 YEARS)

CURRICULUM REVIEW PART (1)
OVER ALL REVIEW IN LINE WITH MYANMAR ENGINEERING COUNCIL'S ACCREDITATION MANUAL

	MYANMAR ENGINEERING COUNCIL REQUIREMENT	REVIEW OF CONTENTS OF THE SUBMISSION MADE BY TECHNOLOGICAL UNIVERSITY	SUGGESTIONS
1	4.0 Programme 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	**Department of Technical and Vocational Education** **(XXXXX)Technological University** CURRICULUM FOR B.E (6 YEARS) Includes list of the subjects ,	Provide the following • Professional competency that can be achieved after completion of the whole B Tech/ BE Program • Employment outcome such as Professional Engineer/ Engineering Technologists after completion of the whole course of the program • Please refer the following examples **http://www.highlightcomputer.com/objectives.htm** http://www.highlightcomputer.com/EngineeringJobCompetencies.pdf It needs to provide the brief expression that the program

Objectives and Learning Outcomes (Section 4.0); a process of ongoing 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.
	Third Year to Final Year (6th Year)
	
	Total Period = 186
	
	Academic Period = 44
	
	Core Period = 153
	
	<mark>Total Credit Points = 141</mark>
	
	In the overall credit points review, it can meet MEngC requirement but
	
	It does not
	  • Include program objective for each of the subjects.
	  • Brief description of the each subject
	
	The objective of the whole course needs to be expressed.
	
	Example
	(XXXXX) Technological University Electronic Engineering Department Six Year Bachelor of Engineering (Electronic) is designed to train the students to work as Engineering
		has been developed in line with the direction provided by Ministry of Science & Technology or to fulfil the requirements of professional associations (Name etc) for computer network- relevant network professional standards can be mentioned.

| | | Technologist /Professional Engineer in wide ranges of industries.

It is designed to provide the following competencies.

- To perform the reliable functioning of all electrical and electronic materials, components, sub-systems and technologies used; their integration to form a complete, sustainable and self-consistent system; and all interactions between the technical system and the context within which it functions. It includes understanding the requirements of clients, wide ranging stakeholders and of society as a whole; working to optimise social, environmental and economic outcomes over the full lifetime of the engineering product or program; interacting effectively with other disciplines, professions and people; and ensuring that | |

		the engineering contribution is properly integrated into the totality of the undertaking.	
		• To do interpreting technological possibilities related to electrical and electronic engineering to society, business and government; and for ensuring as far as possible that policy decisions are properly informed by such possibilities and consequences, and that costs, risks and limitations are properly understood as the desirable outcomes.	
		• To bring electronic engineering technical knowledge to bear from multiple sources to develop solutions to complex problems and issues, for ensuring that technical and non-technical considerations are properly integrated, and for managing risk as well as	

		sustainability issues. While the outcomes of engineering have physical forms, the work of	
		• To train the students to become predominantly intellectual in nature. In a technical sense concerning with the advancement of technologies and with the development of new technologies and their applications through innovation, creativity and change. To conduct research concerned with advancing the science of electronic engineering and with developing new principles and technologies within a broad engineering discipline.	
		• To contribute to continual improvement in the practice of electronic engineering, and in devising and updating the codes and standards that govern it.	

		• To take a particular responsibility for ensuring that all aspects of electrical and electronic projects are soundly based in theory and fundamental principle, and for understanding clearly how new developments relate to established practice and experience and to other disciplines with which they may interact.. The program is also designed to provide the skills required for the graduate electronic engineer to lead or manage teams appropriate to these activities, and may establish their own companies or move into senior management roles in engineering and related enterprises. Stake Holders involvement needs to be expressed in brief	
2	5.0 Learning Outcomes Learning 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	Learning outcome in the aspect of students' performance need to be highlighted	For example EcE-12011 Fundamental of Electronic Circuits I Objective of the subject

the skills, knowledge, and behaviour that
students acquire through the programme.

An Engineering programme for which accreditation is sought must respond to the following:

(i)   **Learning Outcomes:** The Technological Institutions shall have published Learning

Outcomes that have been formulated.

(ii)   **Processes and Results:** The Various Learning Outcomes shall be considered in designing

the curriculum. In addition, a process of measuring, assessing and evaluating the degree of

achievement of the students shall be established. The results of this assessment process

shall be applied for continual improvement of the programme.

(iii)   **Stakeholders Involvement:** The Technological Institutions shall provide evidence of stakeholder involvement.

This subject covers determining correct operation of single source parallel and series-parallel circuits and providing solutions as they apply to various electronic work functions. It encompasses working safely, problem solving procedures, including the use of voltage, current and resistance measuring devices, providing solutions derived from measurements and calculations to predictable problems in multiple path circuit.

Outcome of the subject

After completion of this subject, the students will be able to

- Prepare to work on electronic circuits
- Solve electronic circuit problems
- Complete work and document problem solving activities

Detailed contents (Example)

Basic circuit configurations encompassing:

▪ circuit configurations are single source a.c. and d.c. circuits,

▪ series circuits,

▪ parallel circuits

▪ series-parallel circuits.

The relationship between variable parameter in electrical /electronic circuits

encompassing:

▪ Variables parameters –

▪ voltage,

▪ current,

▪ resistance

▪ impedance,

▪ inductance,

▪ capacitance

▪ reactance.

			Behaviour of electrical /electronic circuits for various values of voltage, current, resistance, impedance, inductance, capacitance and reactance and variable parameters encompassing: ▫ single source circuits, ▫ series circuit configurations, ▫ parallel circuit configurations ▫ series-parallel circuit configurations Types of voltage testers, multimeters, clamp meters, continuity testers and insulation resistance testers and their application. Features of testing/measuring devices - safety, user calibration and parameter and range settings. Connection of test/measuring devices into a circuit encompassing: ▫ safety procedures ▫ circuit arrangement of test/measuring devices Taking readings Storage, maintenance and care of test/measuring devices. Quality assurance requirements for test equipment calibration certification. Some practical performance aspects of the reference/ resources can be inserted as learning outcome aspect of students' performance. Similar competency related to do the tasks after completion of the particular subject should be inserted.
3	Individuals representing M.Eng.C. must not participate in any decision-making capacity if they have of have had a close and active association with a program or institution that is being	Not Applicable	Not Applicable

	considered for official action by M.Eng.C. Close and active association includes, but is not limited to: (i) Current or past employment as faculty, staff, of consultant by the institution or program; (ii) Current or past discussion or negotiation of employment with the institution or program; (iii) Attendance as a student at the institution; (iv) Receipt of an honorary degree from the institution; (v) Involvement of close family relative as a student or employee of the institution or program; (vi) An unpaid official relationship with an institution, e.g., membership on the institution's board of trustees or industry advisory board; or (vii) Any reason that prohibits individual from rendering an unbiased decision.		
4	1. A minimum of 120 credit hours of which 80 credit hours must be core engineering courses offered over a period of four years(It means 3rd,4th,5th,6th).	First Year 44 Pt Second Year 43 Pt Third Year 47 Pt Fourth Year 47 Pt Fifth Year 44 pt Final Year 28 Pt according to course outline. But First Year & Second Year are foundation & engineering courses commence from Third year. From third year to Final year, the following credit point arrangement is described.	From third year to sixth year total actual credit points are 166 pt. But in the program it was expressed as 138 pt by omitting the credit points for thesis. It should present two parts, Foundation- First & Second Year & Engineering development- Third to Six year. & that for thesis. Total credit points for Non Engineering subjects should be indicated.

	The ratio between credit point for non engineering subject & total points= 40/120 = 1:3	Third Year to Final Year (6th Year) Total Period = 186 Academic Period = 44 Core Period = 153 <mark>Total Credit Points = 141</mark> For non engineering subjects, the credit points are as follows EM-31005 Engineering Mathematics=5 pt E-310113.English =3.5 pt E-32011English=3.5 pt EM-32006 Engineering Mathematics= 5 pt E-41011 English=3.5 pt EM-41016 Engineering Mathematics= 5 pt E-42011 English=3.5 pt EM-42016 Engineering Mathematics= 5 pt E-51011English = 3.5 Pt E-52011English = 3.5 pt Total =41 pt It is about 1/3 of overall course credits	
5	2. Final year project (minimum 6 credit hours)	Final Year mini thesis 10 points	Points required for final year project can be OK.

6	3. Industrial training (minimum of 8 weeks)	First Year After Second Semester Examination, Industrial Training (Visit) under the supervision of teachers Second Year Remark: After Second Semester Examination, Industrial Attachment : Four weeks during the vacation Third Year Remark: After Second Semester Examination, Industrial Attachment: Four weeks during the vacation Fourth Year Remark: After Second Semester Examination, Industrial Attachment: Four	Industrial attachments are allocated after second semester examinations of first to fourth year. Total time is 16 weeks. As real engineering subjects are taught from third year, it is suggested that Industrial training / attachments should be arranged at third year and fourth year totalling 8 weeks. For first & second year, excursion to industries should be arranged.

		weeks during the vacation	
7	4. Full-time academic staff (minimum of 8)		Staff record can be separately submitted
8	5. Staff: student ratio 1: 20 or better		Total staff number & students should be presented.
9	6. External examiner's report (minimum of two reports over five years)		External examiners report especially for final year/ Fifth & Sixth years subjects should be presented.
10	7. Programme Objectives		Please see 1
11	8. Learning Outcomes		Please see 2
12	8.1 Criterion 1: 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 Learning Outcomes.		Teaching / Learning & Assessment strategies should be included For example This subject also contributes specifically to the development of the following course intended learning outcomes: • Identify and apply relevant problem solving methodologies [EA Stage 1 Competency:1.1, 2.1, 2.2, 2.3] (B.1) • Design components, systems and/or processes to meet required specifications [EA Stage 1 Competency: 1.3, 1.6, 2.1, 2.2, 2.3] (B.2) • Synthesise alternative/innovative solutions, concepts and procedures [EA Stage 1 Competency: 1.1, 3.3] (B.3) • Implement and test solutions [EA Stage 1

| | | Competency: 2.2, 2.3,] (B.5) |
| | | • Apply abstraction, mathematics and/or discipline fundamentals to analysis, design and operation [EA Stage 1 Competency:1.1, 1.2, 2.1, 2.2] (C.1) |

Teaching and learning strategies

The material will be presented in four hours each week: **two hours of a lecture**, and **two hours of combined tutorial and laboratory class**.

In lectures, topics from the recommended texts are covered, with additional material from other sources being introduced where necessary. Questions in lectures are allowed and encouraged, but the size of the lecture audience will mean that sometimes a full and detailed answer may not be possible. Also sometimes the student may have to wait till the end of the lecture if the question being asked is not going to benefit the entire class or is off topic. Usually, students should ask questions in lectures when:

- if something is not immediately clarified they are likely to have trouble understanding the rest of the lecture. Questions driven by natural curiosity are welcome, but they should be asked at the end of the lecture, or at tutorials, or online discussion forums on UTS Online.

Tutorial sessions are used to support the lectures with

			illustrative examples and practice exercises. Tutorials are also an extra opportunity for students to ask questions.
			Laboratory sessions provide practical experience in programming, further reinforcing the material originally presented in lectures.
			Please note students are expected to put in some additional study time outside of class time. The university regards a 6 credit point subject as requiring **9-12 hours of study per week**, including class time.
			The same things should be inserted for all subjects.
			Please see the example BE curriculum in DVD PPT + Dip Engg Ed for training (Two Weeks Training DVD1for Group)/ IQY Technical College Examples/ BECurriculum.pdf Page 22 to 74+ Page 110 to 134
13	A balanced curriculum shall include all technical and non-technical attributes listed in the Learning 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.	Time allocation for lecture/ tutorial/technical/ non technical units are expressed	This aspect can be OK.
14	Guidelines on academic programmes outlined in this Manual provide essential elements and features, which when combined will render a programme acceptable for accreditation by EAC.		**Essential elements** It should provide the table

		Mathematics
		Electrical
		Science
		Electrical
		Electrical
		Electronics
		Electrical Design
		Renewable Energy
		Project Management
		Engineering Ethics
		Material Science
		Telecommunication
		Power Electronics
		Electronic Control &
		Other engineering disciplines group
		etc and the subjects are listed under those groups
		Please refer
		DVD PPT + Dip Engg Ed for training (Two Weeks Training DVD1for Group)/ IQY Technical College Examples/ OverallProgramGeneral.pdf
		Page 2, 14,15,20.21,28 to 30
		Features
		Technician/Technologist/ Electronic Engineer/ Communication Engineer/ ICT Engineer aspects should be included.
		Please refer
		http://www.highlightcomputer.com/InformationTechnologyJobCompetencies.pdf

15	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.	The curriculum needs to include the description & contents as per example in Row 1 & 2	Although it is not required in course outline, but in detailed program delivery, the time allocations for each Topic should be included & the appropriate test/ assessment schedule needs to be included.
16	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.		in detailed program delivery, the time allocations for each Topic should be included & the appropriate test/ assessment schedule needs to be included.
17	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 Learning Outcomes.		For each topic, the teaching methodology such as face to face lecture, self learning, practical demonstration , E-Learning, Web research etc should be mentioned.
18	The assessment to evaluate the degree of the achievement of the Learning 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.		Please see the following sample assessment tasks • Application of Methodology • Correctness of design/ implementation • Functionality of design

			• Functionality and correctness of design
19	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.		The units should be indicated with Technician/ Technologist/Professional etc
20	The academic programme component must consist of a minimum total of **120 credit hours** (not including credits for remedial courses) made up as follows:		Please see 4
21	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		Please see 4
22	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.		Please see 4
23	The essential elements and features are identified for convenience under several headings, without implying that each is to be treated as a separate or isolated component. In general, the syllabus and curriculum content must be adequate in quality and quantity in terms of coverage and depth.		The following assessments methods should be allocated & weighting factors should include For example Assignment 20%

	Emphasis on the curriculum shall be placed on the understanding and acquisition of basic principles and skills of a discipline, rather than memorisation of details and facts.		Practical 20% Informal Tests 2% Final Exam 50% etc It also include the variety ways of assessments such as • Application of Methodology • Correctness of design/ implementation • Functionality of design • Functionality and correctness of Design
24	The curriculum shall also provide students with ample opportunities for analytical, critical, constructive, and creative thinking, and evidence-based decision making. The curriculum shall include sufficient elements for training students in rational thinking and research methods.		The weighting of course work/ project, practical task, group task and exam should provide those requirements.
25	The curriculum content should cover the following: (i) Engineering mathematics, science, engineering principles, skills and tools (computing, experimentation) appropriate to the discipline of study	The curriculum contains those aspects	It should be OK for those aspects
26	(ii) Engineering applications – projects	The curriculum contains those aspects	It should be OK for those aspects
27	(iii) Integrated exposure to professional engineering	The curriculum contains those	It should be OK for those aspects

	practice, including management	aspects	
28	(iv) Laboratory work to complement the science, computing and engineering theory;	The curriculum contains laboratory hours.	It should be OK for those aspects
29	v) Industrial training -exposure to professional engineering practice in an engineering-practice environment;		It needs to allocate the arrangement for industrial training
30	(vi) Exposure to engineering practice;		It needs to allocate the arrangement for industrial training
31	(vii) Relevant tutorial classes to complement the lectures; and	The curriculum contains those aspects	It should be OK for those aspects
32	(viii) Final year project	The curriculum contains those aspects	It should be OK for those aspects
33	For a 16-week semester (not including examination or mid-term break), one credit hour is defined as:	It should be re-arranged as 1 hour/ lecture	
34	One hour per week of lecture (additional independent study of two hours is assumed to have been included).	The curriculum contains those aspects	It should be OK for those aspects
35	Two hours per week of laboratory or workshop lecture (additional independent learning time of one hour is assumed to have been included).	The curriculum contains those aspects	It should be OK for those aspects
36	Two hours per week of supervised and compulsory tutorial session (additional independent learning time of one hour is assumed to have been included), subject to a maximum of one credit hour for each course in that semester.	The curriculum contains those aspects	It should be OK for those aspects
37	Three hours per week of facilitated activities involving other modes of delivery such as problem-based learning, e-learning modules, site visits, discovery learning, integrated design and coursework projects.		It needs to arrange site visit/ excursion etc.

38	Three hours per week of activities involving final year project inclusive of meeting with supervisor.	The curriculum contains those aspects as indicated Independent Learning IL	It should be OK for those aspects
39	For industrial training, the following guideline shall be followed: Industrial training shall be for a minimum of 8 weeks of continuous training. **One** credit hour is allocated for every two weeks of training subject to a maximum of **six** credit hours. The training shall be adequately structured, supervised and recorded in log books/report. The industrial training must be conducted before the final semester.	The curriculum contains those aspects	It should be OK for those aspects
35	For a final year project, the following guideline shall be followed: A final year project is subject to a minimum of six credit hours and a maximum of twelve credit hours. Technological Institutions may use their version of the credit hours; however they must provide the equivalency according to the EAC's definition of credit hours.	The curriculum contains those aspects	It should be OK for those aspects
36	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.	The entry to the program depends on Year 10 marks.	At this stage, the entry is based on good marks in Maths/ Science at Year 10. This issue should not be problem.
37	8.3 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	Staffing issue	No comment on this review Please see ISO Audit Preparation

	acceptable professional qualifications in the related engineering fields. The full-time 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.		
38	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.	Staffing issue	No comment on this review Please see ISO Audit Preparation
39	8.4 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.	Facilities issue	No comment on this review
40	8.5 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		Please see the attached Quality Assurance http://www.highlightcomputer.com/QualityAssurance.htm Quality Assurance Record

	arrangements for planning, development, delivery and review of engineering programmes together with the academic and professional development of its staff.		http://www.highlightcomputer.com/QualityAssuranceRecords.htm Assessment Validation Records & Assessment Evidences www.highlightcomputer.com/assessmentvalidation.htm Similar documents for the subjects taught at the university should be prepared as per practice taken in two weeks training session 3s.
41	8.5.1 Institutional Support, Operating Environment, and Financial Resources	Administrative Issues	No comment on this review Please see ISO Audit Preparation
42	8.5.2 Programme Quality Management and Planning The Technological Institutions' processes for programme planning, curriculum development, and regular curriculum and content review must involve all academic staff.		Please see 40
43	8.5.3 External Assessment and Advisory System The Technological Institutions shall have an external examiner for programme to independently review the overall academic standard.		This review can serve as external review Please see ISO Audit Preparation
44	The external examiner's **report** and feedback from industry advisors shall be used for continuous quality improvement.		Based on my recommendation, which recommendation can be accepted & how to implement, which can not be utilized & the reason record should be prepared & present it to the accreditation committee in audit sessions.
45	8.5.4 Quality Assurance ISO 9001 Quality Management System		All above documents should satisfy this aspect
46	(a) Student admission		All above documents should satisfy this aspect
47	(b) Teaching and learning		All above documents should satisfy this aspect

48	(c) Assessment and evaluation which include: i. examination regulations and criteria for pass/fail		All above documents should satisfy this aspect
49	ii. preparation and moderation processes		Examiner report/ Assessor evaluation sheets should be prepared & the records should be kept
50	iii. level of assessment		Assessment level Introductory or Intermediate or Advanced/ Professional Level should be clearly defined for each exam paper, assessment tasks.
51	iv. assessment processes including final year project/industrial training		Final year Project assessment records should be kept
52	9.0 Accreditation Documents		All above documents should satisfy this aspect
53	i. Self-Assessment Report		
54	ii. Supporting Material Document (as noted in Section 9.3 of this Manual) – Digital format including details of the syllabus		All above documents should satisfy this aspect
55	iii. Appendix (Checklist of Documents for Accreditation/Approval of New Programme and Relevant Information)		All above documents should satisfy this aspect
56	9.2.1 General Information		All above documents should satisfy this aspect
57	i. Provide general information on the Technological Institutions and the specific programme.		All above documents should satisfy this aspect
58	ii. Provide detailed information on programme history of accreditation (year of accreditation, conditions imposed and actions taken).		Not applicable at this stage. But once, accreditation is started, it should be recorded.
59	iii. Describe any self-initiated changes made to the programme and state the year the changes were		Any change in curriculum, courses should be recorded.

	introduced.		
60	9.2.2 Programme Objectives		Please see 4
61	i. State the vision and mission of the Technological Institutions		The whole vision & mission of University of Technology (XXXX) should be included.
62	ii. Describe the Programme Objectives and state where they are published		Please see 4
63	iii. Describe how the Programme Objectives are consistent with the vision and mission of the Technological Institutions and stakeholder requirements		The program should address the whole vision & mission of University of(XXXX)
64	iv. Describe the processes used to establish and review the Programme Objectives, and the extent to which the programme's various stakeholders are involved in these processes.		Any review of objective should be recorded. Please see ISO Audit Preparation
65	v. Describe how the Technological Institutions ensures achievement of the Programme Objectives.		All above documents should satisfy this aspect but provide the brief note on it.
66	vi. Describe the ongoing evaluation of the level of achievement of these objectives, and the extent to which the programme's various stakeholders are involved in these processes.		Provide industry consultation record/ meeting records Please see ISO Audit Preparation
67	vii. Describe how the results obtained from evaluation are being used to improve the effectiveness of the programme.		If any recommendation are made and the program is modified, it should be recorded.
68	9.2.3 Learning Outcomes i. List down the Learning Outcomes and state where are they published		Please see 4
69	ii. Describe how the Learning Outcomes relate to the		Please see the Page 16 to 20 of attached "Overall

	Programme Objectives.		Program-General.pdf " and prepare the similar table for the program at the university
70	iii. Describe the processes used to establish and review the Learning Outcomes, and the extent to which the programme's various stakeholders are involved in these processes.		If learning outcome review process is applied, then it should be recorded.
71	iv. Describe the data gathered and explain the results of the assessment.		Examination results assessment should be record, Students performance, contents coverage, difficult level, pass/ fail rates should be prepared by chief examination offer or head of department
72	v. Explain how the assessment results are applied to further develop and improve the programme		The recommendations should be made. Please see ISO Audit Preparation
73	vi. Describe the materials, including student work and other tangible materials that demonstrate achievement of the Learning Outcomes.		Students exam papers & works should be taken digital photos & the digital records should be kept with individual students folder.
74	9.2.4 Academic Curriculum i. Discuss the programme structure and course contents to show how they are appropriate to, consistent with, and support the development of the range of intellectual and practical skills and attainment or achievement of the Learning Outcomes.		Please see 4
75	ii. Discuss the programme delivery and assessment methods and how these are appropriate to, consistent with, and support the development of the range of intellectual and practical skills and attainment or achievement of the Learning Outcomes.		All above documents should satisfy this aspect
76	iii. The information required in items (i) and (ii) should include but is not limited to the following: A matrix linking courses to Learning Outcomes to		Please see the Page 16 to 20 of attached "Overall Program-General.pdf " and prepare the similar table for

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	identify and track the contribution of each course to the Learning Outcomes.		the program at the university
77	Distribution of the engineering courses according to areas specific to each programme.		All above documents should satisfy this aspect
78	Distribution of the related non-engineering (general education) courses.		All above documents should satisfy this aspect
79	9.2.5 Students i. Discuss students' performance in relation to Learning Outcomes		Please see 71+72
80	ii. Discuss the requirement and process for admission of students to the programme		
81	iii. Discuss students' workload.		Please see 71+72
82	iv. Discuss students' activities and involvement in student organisations that provide experience in management and governance, representation in education and related matters and social activities.	Administrative Issues	No comment on this review Please see ISO Audit Preparation
83	9.2.6 Academic and Support Staff	Administrative Issues	No comment on this review Please see ISO Audit Preparation
84	9.2.7 Facilities	Administrative Issues	No comment on this review
85	9.2.8 Quality Management System		Quality Management documents for the subjects taught at the university should be prepared as per practice taken in two weeks training session 3s.
86	i. Outline the organisational structure of the Technological Institutions as well as the structure within the faculty/department/programme.	Administrative Issues	No comment on this review Please see ISO Audit Preparation
87	Discuss the level and adequacy of institutional support,	Administrative Issues	No comment on this review Please see ISO Audit Preparation
88	ii. Discuss the mechanism for the following: programme planning; curriculum development;		Please see 40

	curriculum , course review and course monitoring; internal audit; management review meeting; ; responding to feedback and inputs from stakeholders including industry advisors, students , alumni		
89	tracking the contribution of individual courses to the Learning Outcomes; tracking outcomes of performance through assessment; responding to External Examiners comments;		Please see 40
90	Programme Objectives and Learning Outcomes; and continual quality improvement		Please see 40
91	iii. Summarise responses to the external examiner's report.		Please see 71+72
92	iv. Discuss how the quality management system of the Technological Institutions provides quality assurance and benchmarking		Please see 40
93	Evidence on the participation of academic staff, support staff and students in the continual quality improvement process		Please see 40
94	Evidence on the development of academic staff through opportunities in further education, industrial exposure, as well as research and development		Please see 40
95	9.2.9 Other Relevant Information Include additional information which supports the continuing progress and visibility of the programme, such as major research accomplishments.		
96	9.3 Supporting Material Document – Digital Format 9.3.1 Supporting Information Provide additional information on the Technological Institutions, faculty/school/department, and programme not provided in the Self-Assessment Report.		All documents should be digitized & present them in relevant folder

97	9.3.2 Academic and Laboratory Support Staff Provide personal file and certificate for each staff member.	Administrative Issues	No comment on this review Please see ISO Audit Preparation
98	9.3.3 Programme Structure and Contents Provide evidence of the use of tutorials and non-conventional delivery methods such as Problem Based Learning (PBL) techniques alongside traditional lectures. Provide a summary of industrial training schemes, and list of companies involved. Provide evidence of activities relevant to industry exposure.		All above documents should satisfy this aspect
99	9.3.4 Equipment, Software and Titles of Books and Journals Provide a list of all equipment and software used by the programme including recent additions and planned additions, as well as the titles of books, and journals for the programme.		All documents should be digitized & present them in relevant folder
100	9.3.5 External Examiner and Advisory Board Provide the external examiner's reports and reports/minutes from advisory board meetings.		Please see 71+72
101	9.4 Institutional Documents and Additional Documentation to be Made Available during the Visit The following items, which constitute evidence to support the information requested in Sections 9.2 and 9.3 shall be made available during the visit:		All documents should be digitized & present them in relevant folder
102	9.4.1 Technological Institutions Documents Provide the Handbook, Calendar supplement, or other official publications relating to the		All documents should be digitized & present them in relevant folder

	faculty/school/department, and containing the statement of programme details; Technological Institutions brochure and any other documents that relate to the faculty/school/department, and programme.		
103	9.4.2 Documents Related to Programme Objectives and Outcomes Provide all relevant documents and evidence related to Programme Objectives and Learning Outcomes (one copy) as follows: i. Course files – for every course offered by the programme, provide the course information to include the targeted course learning outcomes, course synopsis/syllabus, and a list of references		All documents should be digitized & present them in relevant folder.
104	Final examination papers complete with answer scheme and graded examination papers with low, medium and high grades are also to be provided.		All documents should be digitized & present them in relevant folder
105	Any information with regard to other learning activities and assessment measures such as projects, quizzes, tutorial questions, assignments, class projects, copies of the course notes (optional), and any other materials used for the course are also to be included. For laboratory courses, provide a copy of the syllabus, experiment instruction sheets, as well as supporting information.		All documents should be digitized & present them in relevant folder
106	ii. Objectives and outcomes assessment instruments – supporting documentation for objectives and outcomes assessment including sample questionnaires, portfolios, survey forms, video recordings, etc		All documents should be digitized & present them in relevant folder
107	iii. All evidence related to Continual Quality Improvement of the programme.		All documents should be digitized & present them in relevant folder

	iv. Other relevant documents (if any).		
108	**9.4.3 Final Project Reports** For a sample of students, provide a copy of the final project report, instruction sheets, and grade sheets or other means of evaluation for the project. Provide the listing of final project titles for the past few years.		Final project report & Industrial Training Reports should be kept, digitized and presented them as necessary.
109	**9.4.4 Industrial Training Reports** For a sample of students, provide a copy of the training reports, guidelines for the training, and reviews by the industry sponsors as well as the faculty mentors.		Final project report & Industrial Training Reports should be kept, digitized and presented them as necessary.
110	**9.4.5 Laboratory Reports** For a sample of students, provide a copy of the laboratory reports, instruction sheets, and grade sheets or other means of evaluation for the project laboratory report.		Laboratory report & Industrial Training Reports should be kept, digitized and presented them as necessary.
111	**9.4.6 Quality Assurance Records** Provide minutes and records of action and improvement of meetings of the programme teaching team, Industry Advisory Committee, and staff-student consultation forums.		Please see 40
112	**9.4.7 Other Documentation** Provide any other documentation that might help the Evaluation Panel in the assessment of the Programme.		All documents should be digitized & present them in relevant folder
113	ATTACHMENTS		All documents should be digitized & present them in relevant folder

CURRICULUM REVIEW PART (2)
COMMENTS ON DETAILS COURSE CONTENTS & DEVELOPMENTAL SUGGESTIONS

To develop the detailed learning outcomes, unit objectives and detailed contents, the following resources in the table can be referred.

MINISTRY OF SCIENCE AND TECHNOLOGY

Department of Technical and Vocational Education

CURRICULUM FOR B.E (6 YEARS)

FIRST YEAR (First Semester)

Sr.No	Code	Course	AUSTRALIAN CURRICULUM REFERENCE
			Please refer Training Package+RE DVD2 for Group)/Australian Training Packages/ UEE11[1].pdf & ICT10_R3.0.pdf Link- http://www.filefactory.com/file/2t32mejgr10b/UEE11%5B1%5D.pdf
1	M-11011	Myanmar I	
2	E-11011	English I	
3	EM-11001	Engineeing Mathematics	UEE11[1].pdf- Page 7 UEENEEE126 / UEENEEE127 by clicking, the detailed curriculum contents can be

			accessed
4	E.Ch.-11011	Engineering Chemistry I	
5	E.Ph.-11011	Engineering Physics I	UEE11[1].pdf- Page 7 UEENEEE082
6	ME-11011	Basic Engineering Drawing I	UEE11[1].pdf- Page 7 UEENEEE107
7	EcE-11011	Fundamental of Electronic Circuits I	UEE11[1].pdf- Page 7 UEENEEE125+ Page 10 UEENEEH112+UEENEEH114+Page 11 UEENEEH169
		Total	

FIRST YEAR (Second Semester)

Sr. No	Code	Course	
1	M-12011	Myanmar II	
2	E-12011	English II	
3	EM-12002	Engineering Mathematics	UEE11[1].pdf- Page 7 UEENEEE126 / UEENEEE127 by clicking, the detailed curriculum contents can be accessed
4	E.Ch.-12011	Engineering Chemistry II	
5	E.Ph.-12011	Engineering Physics II	UEE11[1].pdf- Page 7 UEENEEE082 . By clicking, the detailed curriculum contents can be accessed

6	ME-12011	Basic Engineering Drawing II	UEE11[1].pdf- Page 7 UEENEEE107 . By clicking, the detailed curriculum contents can be accessed
7	EcE-12011	Fundamental of Electronic Circuits II	UEE11[1].pdf- Page 7 UEENEEE125+ Page 10 UEENEEH113+UEENEEH114+Page 11 UEENEEH169 select appropriate topics. . By clicking, the detailed curriculum contents can be accessed
		Total	

Remark: After Second Semester Examination, Industrial Training (Visit) under the supervision of teacher

SECOND YEAR (First Semester)

Sr. No	Code	Course	
1	E-21011	English	
2	EM-21003	Engineering Mathematics	UEE11[1].pdf- Page 7 UEENEEE126 / UEENEEE127 by clicking, the detailed curriculum contents can be accessed
3	EcE-21002	Communication Principles I	UEE11[1].pdf- Page 8 UEENEEF101 to UEENEEF115 select appropriate topics . By clicking, the detailed curriculum contents can be accessed
4	EcE-21001	Electronic Engineering Circuit I	UEE11[1].pdf- Page 7 UEENEEE125+ Page 10 UEENEEH113+UEENEEH114+Page 11 UEENEEH169 select appropriate topics. . By clicking, the detailed curriculum contents can be accessed
5	EcE-21021	Digital Electronics I	Page 10 UEENEEH112. By clicking, the detailed curriculum contents can be accessed
6	EcE-21011	Microelectronics I	Page 11 UEENEEI116 By clicking, the detailed curriculum contents can be accessed

7	EcE-21014	Technical Programming I	Page 13 UEENEEI154 By clicking, the detailed curriculum contents can be accessed
		Total	

SECOND YEAR (Second Semester)

Sr. No	Code	Course	
1	E-22011	English	
2	EM-22004	Engineering Mathematics	UEE11[1].pdf- Page 7 UEENEEE126 / UEENEEE127 by clicking, the detailed curriculum contents can be accessed
3	EcE-22002	Communication Principles II	UEE11[1].pdf- Page 8 UEENEEF101 to UEENEEF115 select appropriate topics . By clicking, the detailed curriculum contents can be accessed
4	EcE-22001	Electronic Engineering Circuit II	UEE11[1].pdf- Page 7 UEENEEE125+ Page 10 UEENEEH113+UEENEEH114+Page 11 UEENEEH169 select appropriate topics. . By clicking, the detailed curriculum contents can be accessed
5	EcE-22021	Digital Electronics II	UEE11[1].pdf Page 10 UEENEEH112. By clicking, the detailed curriculum contents can be accessed
6	EcE-22011	Microelectronics II	UEE11[1].pdf Page 11 UEENEEI116 By clicking, the detailed curriculum contents can be accessed

7	EcE-22014	Technical Programming II	UEE11[1].pdf Page 13 UEENEEI154 By clicking, the detailed curriculum contents can be accessed
		Total	

Remark: After Second Semester Examination, Industrial Attachment : Four weeks during the vacation

THIRD YEAR (First Semester)

Sr. No	Code	Course	
1	E-31011	English	
2	EM-31005	Engineering Mathematics	BE Curriculum BAE401+BAE402
3	EcE-31001	Engineering Circuit Analysis I	BE Curriculum BAE405
4	EcE-31002	Computer Communication I	BE Curriculum BAE601
5	EcE-31011	Engineering Electromagnetic I	BE Curriculum BAE406+BAE407
6	EcE-31021	Integrated Electronics I	BE Curriculum BAE408

7	EcE-31003	Modeling and Control I	BE Curriculum BAE502+BAE503
		Total	

THIRD YEAR (Second Semester)

Sr. No	Code	Course	
1	E-32011	English	
2	EM-32006	<mark>Engineering Mathematics</mark>	BE Curriculum BAE401+BAE402
3	EcE-32001	Engineering Circuit Analysis II	BE Curriculum BAE405
4	EcE-32002	Computer Communication II	BE Curriculum BAE602
5	EcE-32011	Engineering Electromagnetic II	BE Curriculum BAE406+BAE407
6	EcE-32021	Integrated Electronics II	BE Curriculum BAE408
7	EcE-32003	Modeling and Control II	BE Curriculum BAE502+BAE503
		Total	

Remark: After Second Semester Examination, Industrial Attachment: Four weeks during the vacation

FOURTH YEAR (First Semester)

Sr. No	Code	Course	
1	E-41011	English	
2	EM-41016	Engineering Mathematics	BE Curriculum BAE401+BAE402
3	EcE-41002	Digital Communication I	BE Curriculum BAE 602
4	EcE-41021	Digital Design with HDL I	
5	EcE-41003	Modern Control System I	BE Curriculum BAE502+BAE503
6	EP-41043	Electrical Machines I	BE Curriculum BAE406+507
7	EcE-41031	Industrial Electronic & Control I	UEE11[1].pdf Page 12 UEENEEI101 to 137

			select appropriate topics. . By clicking, the detailed curriculum contents can be accessed
	Total		

FOURTH YEAR (Second Semester)

Sr. No	Code	Course	
1	E-42011	English	
2	EM-42016	Engineering Mathematics	BE Curriculum BAE401+BAE402
3	EcE-42002	Digital Communication II	UEE11[1].pdf Page 11 UEENEEH172+179+180 By clicking, the detailed curriculum contents can be accessed
4	EcE-42021	Digital Design with HDL II	UEE11[1].pdf Page 11 UEENEEH181+185+188 By clicking, the detailed curriculum contents can be accessed
5	EcE-42003	Modern Control System II	BE Curriculum BAE502+BAE503
6	EP-42043	Electrical Machines II	BE Curriculum BAE406+507

7	EcE-42031	Industrial Electronic & Control II	UEE11[1].pdf Page 12 UEENEEI101 to 137
			select appropriate topics. . By clicking, the detailed curriculum contents can be accessed
	Total		

Remark: After Second Semester Examination, Industrial Attachment: Four weeks during the vacation

FIFTH YEAR (First Semester)

Sr. No	Code	Course	
1	E-51011	English	
2	EcE-51001	Advanced Electronics	UEE11[1].pdf Page 12 UEENEEH145+H148+H160+H167 select appropriate topics. . By clicking, the detailed curriculum contents can be accessed
3	EcE-51003	Digital Control System	UEE11[1].pdf Page 12 UEENEEI141 to 157 select appropriate topics. . By clicking, the detailed curriculum contents can be accessed
4	EcE-51013	Microwave Engineering	BE Curriculum BAE 607
	Total		

FIFTH YEAR (Second Semester)

Sr. No	Code	Course	
1	E-52011	English	
2	EcE-52004	Microprocessor Systems	UEE11[1].pdf Page 12 UEENEEI150 to 157+ UEENEED152 By clicking, the detailed curriculum contents can be accessed
3	EcE-52005	Digital Signal Processing	UEE11[1].pdf Page 11 UEENEEH184+185 By clicking, the detailed curriculum contents can be accessed
4	EcE-52012	Wireless and Mobile Communications	BE Curriculum BAE 604
		Total	

Remark: After Second Semester Examination, it is necessary to carry out project.

FINAL YEAR (First Semester)

Sr. No	Code	Course	
1	E-61011	English	
2	EcE-61016	Industrial Management	BE Curriclum BAE 508+605
3	EcE-61015	Network Planning and Management (project)	Please refer ICT10_R3.0.pdf & Page 6-UEE11[1].pdf UEENEED113 to 151 select appropriate topics. . By clicking, the detailed curriculum contents can be accessed
4	EcE-61001	Software Tools for Electronic Design (project)	Please refer Page 6 of UEE11[1].pdf All UEENEED101 to 112 By clicking, the detailed curriculum contents can be accessed
5	EcE-61012	Modern Electronic Communication Systems I	BE Curriculum BAE 604

6	EcE-61003	PLC and SCADA Control System (project)	UEE11[1].pdf Page 12 UEENEEI101 to 137 select appropriate topics. . By clicking, the detailed curriculum contents can be accessed
		Total	

CURRICULUM REVIEW PART (3)
LIST OF TEXTBOOKS

Advice 8

Recommended texts

www.highlightcomputer.com/onlineteaching1.htm

From this site, reference textbooks, Video Lessons, Power points can be downloaded. The list of textbooks used at Leading Australian Universities will be sent separately in near future.

CURRICULUM REVIEW PART (4)
OVER ALL RECOMMENDATIONS

- Engineering Fundamental is the main aspect of Myanmar Engineering Council's PE (Professional Engineer) Assessment. The relevant Engineering Fundamental subject and contents may need to be added to Year 1/2/3 Programs. Liaise with Myanmar Engineering Council & Myanmar Engineering Society to include Engineering Fundamental in the ICT Engineering Courses.

- Arrange overall course learning outcome & those for each subject in line with Engineering Technologist & Professional Engineer Stage 1 Competency Standards.

- Apply various ways of assessments as examples of the assessments methods being used at Australian Technological Universities in addition to final examination.

- Insert the subject that provides the overview of the whole program at the early stage.

- Modify the current courses by referring the Australian curriculum as provided in comparison table.

- In course development, acquire the textbooks from the given list

CONCULSION & OVERALL COMMENT

University of Technology (XXXXXX) Department of Electronic Engineering

Electronic Engineering Course Syllabuses (Six Year Plan) needs to include overall learning outcomes, outcomes for each subject and detailed contents for each subject to comply with the accreditation standards set by Myanmar Engineering Council .

Reviewed & Reported by

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