CEAB

CURRICULUM CONTENT ANALYSIS

and

DESIGN REQUIREMENTS

CURRICULUM CONTENT: Accreditation Units (AU)

- One hour Lecture: 1   AU
- One hour Lab/Tutorial: .... 0.5 AU

Example:

Course	Hours/Week		Average # of weeks per semester
	Lecture	Lab/Tutorial	
ELE 504 Electronic Circuits II	4	2	12.8

Total AU :   [4   + 2 (1/2)]   x 12.8 = 64 AU

CURRICULUM CONTENT: Content Categories

Category	Example
Mathematics (M)	MTH140, MTH 240 ...
Basic Science (BS)	PCS 125, CHY 102, ... in part: MEC 511, ELE 401 ...
Complementary Studies (CS)	Liberal Studies, ECN 801 ...
Engineering Sciences (ES)	????
Engineering Design (ED)	

CEAB accreditation criteria states the minimum number of AUs in each category. For example, the criteria for ES and ED categories is:

$$ES + ED \geq 900 \text{ AU} \quad \textbf{and}$$
$$ES \geq 225 \text{ AU} \quad \textbf{and}$$
$$ED \geq 225 \text{ AU}$$

CEAB also states: ***"Any category that only exceeds its minimum number of AUs by 10% or less is considered marginal.***

✻ **Therefore, it is essential that the total AUs in each category is at least 20% above the required minimum** (10% to avoid the marginal status and 10% just in case**).**

CURRICULUM CONTENT: Content Categories

Mathematics (M)	Obvious …
Basic Science (BS)	imparts an understanding of natural phenomena and relationships through the use of analytical and/or experimental techniques.
Engineering Sciences (ES)	• normally have their roots in mathematics and basic sciences, • carry knowledge further toward creative applications. • may involve the development of mathematical or numerical techniques, modelling, simulation and experimental procedures. • application to the identification and solution of practical engineering problems is stressed.
Engineering Design (ED)	integrates M, BS, ES and CS in developing elements, systems and processes to meet specific needs. It is a creative, iterative and often open-ended process.

CURRICULUM CONTENT: ES and ED

- Electrical (ELE) and computer (COE) engineering courses are mostly ES and ED with some M, BS and CS.

- Assignment of AUs to ES and ED categories varies greatly among courses and among similar engineering programs at different universities.

Example:

Course: Digital Signal Processing

	AUs		
	Total	**ES**	**ED**
University 1	42	21	21
		50 %	50%
University 2	44	27	39
		61 %	39 %
University 3	48	25	23
		52 %	48 %
RU: ELE 792	51	31	20
		60 %	40 %

TABLE 2C.4 – ELECTIVE COURSES AND MINIMUM PATH

PROGRAM: Electrical Engineering
OPTION: Regular

Average number of weeks per term of actual instruction for this program: 12.8
Proportionality Factor K = 51.2 AU/credit

1	2	Hours		5	Curriculum Components					
		3	4	AU = Lect + .5(lab/tut) or K x credits	6	7	8	9	10	11
Course Number and Title	Academic Credit	Lecture	Lab/Tut		Math	Basic Science	Comp. Studies	Eng'g Science	Eng'g Design	ES + ED
Four of the following 8 courses are required (Specified Electives)										
ELE 734 *Design of ICs and Semiconductor Devices*	**1**	**38.4**	**25.6**	**51.2**				36.6	**14.6**	**51.2**
ELE 735 *Data Communications*	**1**	**38.4**	**25.6**	**51.2**				36.6	**14.6**	**51.2**
ELE 744 *Electronics and Instrumentation*	**1**	**38.4**	**25.6**	**51.2**				**28.4**	22.8	**51.2**
ELE 745 *Digital Communication Systems*	**1**	**38.4**	**25.6**	**51.2**				36.6	**14.6**	**51.2**
ELE 746 *Power System I*	1	38.4	25.6	51.2				36.6	**14.6**	51.2
ELE 749 *State-Space Control Systems*	1	38.4	25.6	51.2				**36.6**	14.6	51.2
ELE 754 *Power Electronics*	1	38.4	25.6	51.2				**35.8**	15.4	51.2
ELE 792 *Digital Signal Processing*	1	38.4	25.6	51.2				**28.4**	22.8	51.2
SUB - TOTAL	4	153.6	102.4	204.8				129.2	58.4	204.8

CURRICULUM CONTENT: Engineering Design

- Most of the ED AUs are in the final year courses.

- Some 2nd and 3rd year courses also have ED components.

- Open ended problems / projects / lab work.

- ED component may result from:
  - Lectures
  - Assessment (quizzes, exams, assignments)
  - Project / Lab work

In determining the ED (or ES/BS/M) AUs, you should consider:

- What percentage of course hours (lecture, lab, project) is dedicated to ED as defined above?

- What percentage of total course assessment is based on ED work?

- **✳ For each course we** (as a Department and as course co-ordinators) **should be able to justify the AUs assigned to each category and back up this claim by samples of student work, copies of projects, assignments and exams.**