

OBE Implementation and Design of Continual Quality Improvement (CQI) for Accreditation of Biomedical Engineering Program University of Malaya

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INTRODUCTION

Outcome-Based Education (OBE) is an approach that focuses on outcomes, where the achievements of students are measurable, proven and can be improved. This approach set by the MQA, following the Malaysian Qualification Framework (MQF) introduced by the Ministry of High Education Malaysia (MOHE). The planning process and assessment of OBE are reverse of that associated with traditional education (TE) planning [1]. It shifts from measuring input and process to include measuring the output (outcome). The OBE approach pursuing the design of curriculum and teaching process that focuses on producing graduates with capabilities to meet the expectations of the stakeholders [2]. By implementing OBE, students are expected to be able to do more challenging tasks other than memorize what was thought, such as able to manage project, analyzing the data and make decisions based on the results [1]. Under OBE approach, the graduates are completely prepared for the workforce after graduation with all of soft skills needed in jobs, such as technical skills, communication skill and human relationships skills. OBE approach has been introduced to the Biomedical Engineering department since 2005 and fully implemented in department after 2006, to fulfill the requirements of Engineering Accreditation Council (EAC).

EAC is the body delegated by the Board of Engineers Malaysia (BEM), The Institution of Engineers Malaysia (IEM), Malaysia Qualification Agency (MQA) and the public services department (JPA) for accreditation of engineering

degrees [2]. The objective of the accreditation is not only to ensure that the graduates of the accredited engineering programmes satisfy the minimum academic requirements for registration as a graduates engineer with the BEM and IEM, but may also serve as a tool to benchmark engineering programmes offered by Institute of Higher Learning (IHLs) in Malaysia. The accreditations have brought the culture of CQI in the IHLs to continuously improve the OBE.

The accreditation is necessary for recognition of programme and graduate students as professional engineers.

The professional engineers whose are accredited by EAC are possible to be employed by the signatory countries of Washington Accord (WA) as engineers without further examination [1,3]. The signatory contries of WA are Australia, Canada, Republic of Ireland, Hong Kong, Japan, New Zealand, Singapore, South Africa, South Korea, Taiwan, UK, USA, Malaysia, India, Germany, Russia and Sri Lanka [1]. This paper describes the strategies of OBE implementation in Department of Biomedical Engineering University of Malaya, CQI plan and assessment method as well as performance criteria.

OBE IMPLEMENTATION IN DEPARTMEN OF BIOMEDICAL ENGINEERING DESCRIPTIVE RULES

The implementation of OBE in the Department of Biomedical Engineering follows the 3 steps instructed by MQA, those are ; 1) set the target, 2) achieving the target, and 3) continuous improvement. The target is the programme Educational Objectives (PEOs), which to be achieved a few years after graduation. In order to achieve the PEO, the programmeOutcomes (PO) should be set and achieved at the time of graduation. The POs are divided to 3 categories, namelytechnical skills, soft skills and general knowledge.

In achieving this targets, there are only 3 main steps to be taken, which are 1) teach the student, 2) let the students practice what has been taught, and 3) evaluate whether the students have learned. These three steps should be continuously

revised and improved to be more effective in achieving the targets. Table 1 shows the PEO while table 2 shows the PO use for Biomedical Engineering Programme.

A. PEOs and POs Measurement Method

Generally the model measurement of outcomes in OBE approach is shown in the Figure 1. This model is implemented by most institutions in Malaysia including MMU [3], UNITEN [4], UPM [5], UM and others [6]. Figure 2 shows the model of measurement PO and PEO that implemented in the Department of Biomedical Engineering. Most of the IHLs evaluating the POs based on the Course Outcomes (COs). In this department, the POs evaluation is done based on the assessment of the SubPOs, while the COs are assessed separately according to the technical skills.

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