



ACADEMIC QUALITY ASSURANCE PROCESS: A CASE STUDY OF EXAMINATION PROCESS AT COLLEGE OF INFORMATION TECHNOLOGY, UNIVERSITI TENAGA NASIONAL (UNITEN)

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ABSTRACT

Quality assurance process in education is essential to ensure the quality of education especially at a higher learning institution. This paper will discuss the academic quality assurance process for examination processes at UNITEN. In UNITEN, the examination processes are using the ISO 9001: 2008 standard. A study was conducted for three consecutive semesters to investigate whether the academicians have successfully followed the standard operating procedure in preparing examination questions. Common mistakes were identified and investigated further for business process improvement such as cycle time and time completion in the examination processes. The outcome from this study will be used to improve the related processes and operating procedures.

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Keywords: Quality assurance, ISO standards, Examination process, standard operating procedure, Higher learning institution, Education.

1. INTRODUCTION

Academic quality assurance process is essential in ensuring all the processes involved in offering the academic programs have fulfilled the requirements of the university as well as the nation. In Malaysia, the universities can be divided into two categories, the private and public universities. The number of private universities in particular has increased, thus create a competitive environment in educational industries. One of the ways to create a distinctive competitiveness is have a standard in business operation and a certain accreditation for the academic programs. This is also has affected University Tenaga Nasional (UNITEN) as one of private universities in Malaysia. In UNITEN, several academic processes have undergone accreditation processes such as Malaysian Qualification Agency (MQA) ([Malaysian Qualification](#)

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Agency (MQA), 2013) that is compulsory to have in order for the programs to be recognized and certified in the nation. Apart from this, other accreditation or standard such as International Organization for Standardization (ISO) (ISO, 2014) also applied to fourteen academic processes such as examination, grading, and program review as part of ensuring and promising high quality academic programs to students. In this paper, the examination processes were chosen as a research subject where a study was conducted to investigate the effectiveness and efficiency in preparing examination papers. The objectives of this research are:

1. To identify the problem and issues in the examination processes
2. To identify the cause factors to the problem and issues in the examination processes
3. To identify the action plan for continuous improvement in the examination processes

In this research, data was collected from three consecutive semesters that involved four departments namely Information Systems, Systems and Networking, Graphics and Multimedia and Software Engineering at the College of Information Technology (COIT), UNITEN. The outcome from this research will be a recommendation on how to improve or to sustain the examination current policy and standard operating procedures as well as to identify the solutions to overcome the discrepancy and negligence in current practices.

2. OVERVIEW OF ACADEMIC QUALITY ASSURANCE PROCESS

Generally, academic quality assurance process is defined under the American National Standard ANSI/ASQC A8402-1994 (American National Standard, 2013). There are two terms that commonly used, *quality control* and *quality assurance*. Quality control refers to all planned and systematic activities to be implemented within the quality system. These activities are demonstrated as compulsory to provide adequate confidence that an entity will fulfil the quality requirements (Total Quality Assurance, 2012). American Society for Quality (ASQ) defines quality assurance as planned and systematic activities implemented in a quality system to ensure quality requirements for a product or service will be fulfilled (American Society for Quality (ASQ), 2012). From the above definitions, we can observe that quality guarantee or assurance is a set of procedures developed for the activities involved before the product or service is manufactured or delivered to the customers. Quality Assurance is also considered as a set of preventive activities, that focusing on processes whereas, quality control is detection activities that focus on detecting the defects once the product is produced.

Quality assurance defines the standards to be followed in one organization to meet the customer requirements whereas quality control ensures that these defined standards are followed at every step. This is done by conducting audits and provided checklists. Based on these exercises, the quality control prepares regular reports that act as an input to the quality assurance department. The report will be reviewed and decides on the corrective and preventive actions required in the processes. Despite the differences in the definition of quality assurance and quality control, these terms are often used interchangeably (Total Quality Assurance, 2012). Besides ASQ, the European Higher education also applied the quality assurance involving polices and standard for ensuring the quality in higher education is well maintained (ENQA, 2005). Luckett (2006) conducts a study for South African higher education on how the quality of teaching and learning practice can be derived from quality assurance process. In Malaysia situation, quality is essential to ensure our end

products; the graduates are up to the expectation of Malaysian accreditation body (MQA) ([Malaysian Qualification Agency \(MQA\), 2013](#)) and the industries.

2.1. Academic Quality Assurance in Uniten

To ensure the academic quality assurance in UNITEN, the Quality Management System (QMS) is constructed. The objectives are to achieve excellence in the ISO 900:2008 ([ISO900, 2008](#)). Listed below are the targeted objectives:

1. Teaching and learning which prepares graduates for lifelong learning and equips them to make a positive contribution to society
2. Research development and consulting, particularly as a partner with government, commerce, industry, professional organizations, other institutions of learning and the community.
3. High-quality service to the community through excellence to perform of our core functions in learning and teaching, research, consulting and service to the professions and the community at large.
4. High quality management which supports our core operations of education and research as efficiently as possible.
5. Wide range of services and facilities to support the scholarly development of students and to facilitate their transition through academic life.
6. To ensure consistent implementation of Quality policies and practices based on the requirements of Quality System Standard ISO 9001: 2008 and MS 1900:2005.
7. To instill the concept of Total Quality Management (TQM) in University activities, products and system through continuous process improvements, information dissemination and training of employees.
8. To direct the efforts of every employee toward active contribution to the quality of product.

The QMS also was developed to ensure the items below are clearly defined for the execution purposes:

- 1) Formally document the policies, objectives and organization for quality to facilitate the direction, understanding, implementation, maintenance and improvement of the quality management system.
- 2) Clearly define the responsibilities, authorities and accountabilities on quality throughout the relevant department/college/centre.
- 3) Translate quality policies into a set of quality objectives covering all processes
- 4) Provide management direction to all departments/college/center
- 5) To guide how to review the organization of quality management system based on ISO 9001 and MS 1900, at planned intervals to ensure its continuing suitability, adequacy and effectiveness.
- 6) To provide means to determine, collect and analyze appropriate data to demonstrate the suitability and effectiveness of the Quality Management System where continual improvement can be made.

- 7) To provide guidance on how to conduct Internal Audits to determine whether the Quality Management System conforms to the planned arrangements and effectively implemented and maintained
- 8) To determine and implement effective customers communication with respect to services, information, inquiries, contracts handling, customer feedback and complaint

As stated above, the QMS in UNITEN comprises of all policies, procedures and work instructions. It starts from the marketing of academic programs, enrolment of students till their graduation, as well as, the operation of the overall support services of the University. In this research, we will concentrate on the examination processes only.

2.2. The Examination Process

In UNITEN, the preparation for examination will take place once in every semester. The process map for preparing the examination can be viewed in Appendix A. The objectives of the procedures are stated below (ISO900, 2008)

- To ensure standardization in the preparation of examination papers.
- To describe the processes required in preparing examination papers.
- To enhance the quality of examination papers.

The activities involved can be summarized in Table 1 below:

Table-1. The examination process

Process No	Activities description
6.1.1	College Examination Committee (CEC) analyse the Examination Work schedule (EWS) and list of courses from UEU.
6.1.2	CEC sets the deadline for papers preparation.
6.1.3	CEC informs Exam Setters the deadline for papers preparation and provides List of Moderators for each course
6.1.4	If there is more than one lecturer teaching the course, the Course Coordinator will coordinate the paper preparation. If there is one lecturer teaching the course, the lecturer automatically is the Course Coordinator and Exam setter.
6.1.5	The Course Coordinator/Exam Setter prepares Exam Set according to the guideline set in Final Examination Guideline according to respective colleagues and submits the Exam Set to the respective Moderator before the deadline.
6.1.6	Moderator follows the moderation guideline set in Exam Guideline when moderating the Exam Set and fills in the Moderation Form
6.1.7	If correction is needed, Course Coordinator/Exam Setter makes the correction and return to moderator for verification.
6.1.8	If satisfactory, Course Coordinator/Exam Setter inserts the moderated Exam Set (final version) of each paper into Sampul A , fills in the information on the cover and submits the Sampul A and Moderation Form
6.1.9	CEC (Head Of Department(HOD)) endorses the moderated papers by signing the front page of Sampul A. If inadequate, will redo para 6.1.7.
6.1.10	CEC (HOD) compiles Sampul A and sends for approval from the Dean.
6.1.11	The Dean approves Sampul A by signing the front page of Sampul A
6.1.12	CEC collects all Sampul A from the Dean Office and submits for printing to University Examination Unit (UEU).

3. DATA ANALYSIS AND RESULTS

For this study, we have collected data from the four departments that we have at College of Information Technology. The data were collected for three semesters, which are semester 3 2011/2012, semester 1 2012/2013 and semester 2 2012/2013. The reason for choosing these three semesters is to see the patterns of papers that have been accepted and rejected after the College Examination Committee (CEC) process (refer to process 6.1.9 in Table 1). At the college level, in preparing the examination paper, there are two main actors; the CEC and the Course Coordinator (lecturer in-charge) /the exam setter (ES). The role of CEC, which is represented by the Head of Department (HOD) and the Quality Manager are to acknowledge the course coordinators the deadline for exam papers preparation, monitor the moderation cycles and to endorse the moderated examination papers. The moderation process is carried out in two cycles. Each moderation cycle will take a week to be completed and in total it will be two weeks time allocated for moderation process. In this process, the Head of department will select the moderator. A checklist is provided as a guide to moderate the exam papers (refer to Appendix B). Any rejected papers based on the given checklist will need to go through the second moderation cycle (refer to 6.1.7 in Table 1). The moderator will be responsible to ensure and verify that the course coordinators have done all corrections. A meeting will be conducted among the CEC members to endorse the examination paper.

However, in the current practice, the CEC is required to moderate the exam papers again, after going through with two moderations processes. Supposedly, the exam paper should be camera ready and free from any errors after the two cycles of moderation. Nevertheless, the data showed that there are still a number of papers were rejected, hence the process indirectly need to go back to process 6.1.7 which showed that the moderation parts were not taken effectively and the CEC were end up repeating the moderation process and not doing what they are supposed to do.

To show there is inefficiency in the moderation process, we presented our findings based on data collected after the CEC process at the COIT. Table 2 presented number of subjects offered in each department for 3 semesters while Table 3 and Figure 1 showed the percentage of rejected papers from each department in these three consecutive semesters. From Figure 1, we can see that department of Software Engineering, and System and Networking showed the percentage of rejected papers for semester 2, 2012/2013 has increased compared to the previous semesters. Meanwhile, for Information Systems department, the number of rejected papers has decreased in semester 2 2012/2013 and as for the Graphic and Multimedia department, for three consecutive semesters, there are consistently 40 per cent of papers had been rejected.

Based on the analysis, it shows that almost 90 per cent papers that had been rejected at the CEC (based on all 4 departments) are because of the formatting issues. One of the moderator's roles is to ensure that the examination papers meet the ISO formatting standard as stated in the moderation form and checklist. A proper formatting is required to produce a good and standardize examination questions. At the college level, an examination guideline with sample of questions is provided to all lecturers. Therefore, when majority of examination papers still got rejected at the

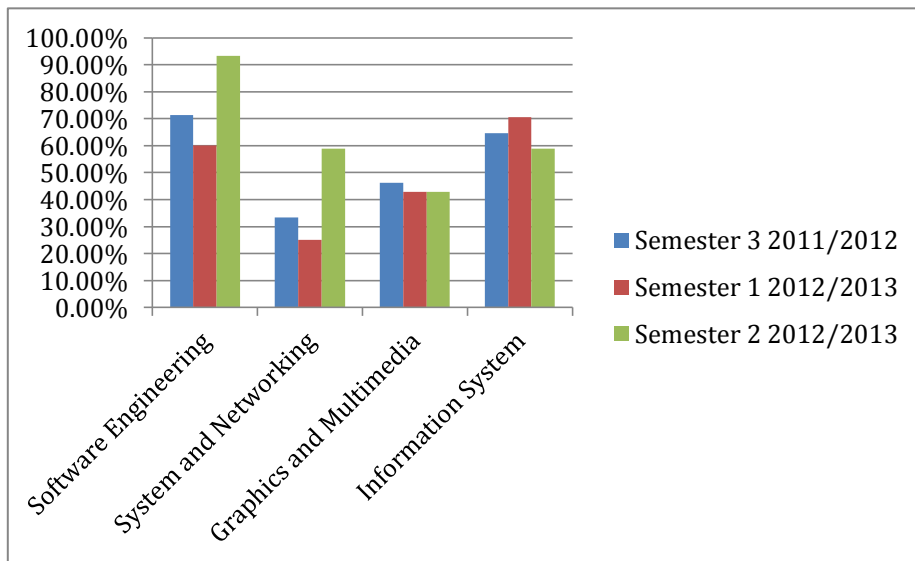
Table-2. Number of subjects offered in each department in 3 semesters

Department	Semester 3	Semester 1	Semester 2
	2011/2012	2012/2013	2012/2013
Software Engineering	14	15	15
System and Networking	15	16	17
Graphics and Multimedia	13	14	14
Information System	17	17	17

Table-3. Number of papers rejected after the CEC meeting (in percentage)

Department	Semester 3	Semester 1	Semester 2
	2011/2012	2012/2013	2012/2013
Software Engineering	71.43%	60.00%	93.33%
System and Networking	33.33%	25.00%	58.82%
Graphics and Multimedia	46.15%	42.85%	42.86%
Information System	64.71%	70.59%	58.82%

Figure-1. Percentage of papers rejected after the CEC meeting



CEC level it shows that the ISO practices for examination process have not yet become a common practice among the lecturers who are also moderators for selected subjects.

Another factor that may contribute to this problem could be the time frame. Based on the ISO standard at UNITEN, the key performance indicator (KPI) for first and second moderations is only one week each. For instance, the due date for first moderation is from 16 March till 23rd March (1 weeks time), and the exam setter (ES) submits the papers to be moderated on 15 March. The moderators will then need to moderate the contents and the format of the exam papers in less than a week, as before 23rd of March, he /she needs to return the papers to the exam setter for any corrections to be done. The exam setter then needs to make necessary corrections and resubmit the

paper again as soon as possible since the second moderation will start as soon as the first one is done. Due to the time constraint, as a subject matter expert, the moderator are focusing more on the contents of the exam paper rather than the format since the content of the examination paper would be more important to be moderated rather than the formatting part which is the responsibility of the exam setter . Through the observation also, we identify another factor that contribute to time constraints during the moderation process is that some exam setters failed to follow the deadline given

4. RECOMMENDATION

After analysing the reason of the papers being rejected and the comments given at the CEC level, we would like to propose a solution to this problem, which is to create a document template for the examination papers. This template should follow the ISO standards which the margins, font type and size are predetermined. We believe this solution could assist the exam setters in preparing the exam papers and the moderation process. It is hoped that it could help to reduce the numbers of papers being rejected at the CEC level. This will also help to speed up the CEC process, where there is no more moderation involved at this level. At the same time, the template will also save the time for the exam setters to concentrate on producing good and quality examination questions rather than exam paper formatting. As for the moderators, with the standaradize template, the moderator can carry out their task much easier and concentrate more in moderated the questions rather than looking at the formatting. A blind review for moderation process is also recommended in this study to enforce the exam setters to follow the deadline given, and to ensure the current process is carried out according to the ISO standards. It is hoped the recommendations given through this study can help to improve the process and imposed a good and quality ISO practices.

5. CONCLUSION

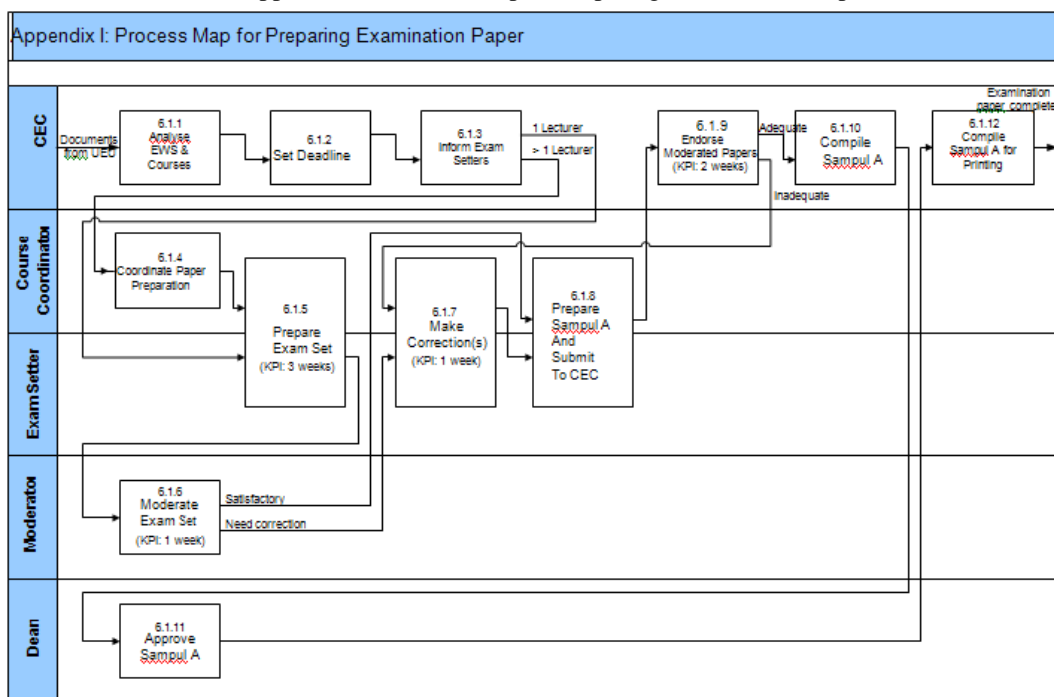
Examination process is one of the crucial processes at any higher institution and this includes in producing good and quality examination papers. Nevertheless, a good process required a good tool and timely implementation to ensure all the documented processes and procedures are followed accordingly. In this paper, we presented a case study of examination process and tabled our findings based on data collected during the moderation process for three consecutive semesters. The main cause of exam papers were rejected is due to the formatting issues wherey by the papers were not following the ISO standard. A few factors were identified namely, i) time constraints during the moderation process, ii) moderators are focusing more on content, iii) the exam setter may have difficulty to follow the given format given in the guidelines iv) the exam setter does not follow the deadline given. To solve the problem above, we propose two solutions i) to create a live document template that can assist both the exam setter and the moderator during exam paper preparation and moderation process; ii) a blind review for moderation process. This will help to save the cycle time in examination process, eliminate any redundancy of process at other level, and to ensure the ISO process can become a common and good practices among the lecturers in their job routines. It is hoped the solution can make the examination process more effective and efficient, and a good and quality exam paper can be produced in the given time.

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Appendix

Appendix A: Process Map of Preparing Examination Paper



Appendix B: Exam Paper Moderation form and checklist

ACA-750-002-QR-02



UNIVERSITI TENAGA NASIONAL
SEMESTER SESSION /

Examination Moderation Form

College : _____
Department : _____
Course : _____ **Course Code :** _____

Programme : _____ **Year :** _____
Examiner : 1. _____ **2.** _____
3. _____ **4.** _____

No.	Checklist	Remarks
1	Time allocated for the paper should be within 2-3 hours	
2	Font size used 12 or more in both text and figures	(Refer to No.7 in COIT/CEC Form)
3	The questions are typed at 1.5 line spacing or double spacing	(Refer to No.7 in COIT/CEC Form)
4	Page numbers are shown clearly at the bottom center of each page, including the cover page	(Refer to No.9 in COIT/CEC Form)
5	Marks for each question and sub-question are indicated at the end of each question	(Refer to No.5 in COIT/CEC Form)
6	Total marks allocated for all the required questions are 100	
7	Level and standard of the questions are appropriate for the subject	(Refer to No. 2&3 in COIT/CEC Form)
8	Course objectives are met	
9	Answer Scheme for the questions are submitted with the paper	
10	Questions adequately cover the subject syllabus and not only part of it	

Additional comments: Please include these in a separate sheet attached to this report. (Refer to COIT/CEC Form)

Name of Moderator/Coordinator: _____

Signature: _____ Date: _____

COIT/CEC/2012

CHECK LIST OF THE FINAL EXAM PAPER

No.	Item	Yes/No	Remark
1.	(a) The previous 2 semesters' exam papers are attached. (b) The course syllabus is attached.		
2.	(a) Questions do not include more than 25% of PAST YEARS' questions (repeated questions). (b) Repeated questions of part (a) are not exactly similar to PAST YEARS' questions (in terms of the approach or the required solutions).		
3.	Question styles: Questions must be a mix of various styles such as objective (Multiple-choice, True/False, Matching), short answers, essays, diagrams, programming, and etc. (a) The question paper is not wholly in objective style. (b) Objective style is not more than 30% (foundation & degree level) and 40% (diploma level). (c) The questions emphasize more on problem solving. (d) The question paper shall have at least 2 different sections.		
4.	Question numbering (only for subjective questions; refer to the note below): Main Questions: Question 1, Question 2 , etc. Sub-questions: (a), (b), (c), etc. Sub-sub-questions: (i), (ii), (iii), etc. Note: Use the question numbering 1., 2., 3., and etc. for objective and fill-in the blanks questions.		
5.	(a) Marks are indicated for each question. (b) Marks are placed at the end of the question (Align Right), e.g.: Question 1 (a) Describe the difference between a private and a protected data member. [4 marks]		
6.	Page setup : A4 page (Refer to page 4, section 2.6 of the Guidelines) Top margin : 1 in / 2.54 cm Left margin : 1.25 in / 3.17 cm Right margin : 1.25 in / 3.17 cm Bottom margin : 1 in / 2.54 cm		
7.	(a) Spacing: 1.5 line spacing throughout the text (Justify). 1.5 line of space (a blank line) between questions/sub-questions 3 lines of space (2 blank lines) between subsections New section must be on a fresh page (b) Font: Times New Roman (c) Font size: 12 pt. (d) Diagrams shall be numbered incrementally, e.g. Figure 1 Figure 2 Figure 3		

-
8. Programming questions: the program/
program segment or source codes must be:-
(a) Inside a box (within the margin)
(b) Single spacing
(c) Font: Courier New
(d) Font size : 11
-
9. Footers are laid out as below:
Page 2 of 10
(Times New Roman – 12 Font)
- Semester I 2006/2007* *Title of Paper*
(Times New Roman – 10 Font, italics) *(Without code)*
-
10. The Cover Page follows the standard cover set by the committee (as attached) and it follows the format of the latest cover version.
-

Comments/Suggestions

	Signature	Date
First Moderation	_____	_____
Second Moderation	_____	_____

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