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Code of Conduct of Final Year Projects in Engineering Disciplines

Abstract-*The importance of the management and implementation of graduation projects lies in the fact that this activity constitutes one of the main pillars of the undergraduate academic curricula in most scientific or literary disciplines. In engineering studies, for example, the weight of the graduation project within the curriculum is estimated at 25% for the year of graduation and about 8% of the total weight of the first university degree in most universities in the developed countries. In this context, this paper suggests specific steps for conducting this work and the allocation of responsibilities in the management of this scientific activity. The paper also suggests a number of recommendations, to be included within the curricula of undergraduate engineering disciplines in the public and private engineering colleges.*

Keywords- *Engineering curriculum, Final year project, Roles and responsibilities.*

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1. Introduction

The final year project is, by all means, one of the important aspects of the engineering degree curriculum. To find out why, let us look at the definition of engineering science given by the Institute of Electrical and Electronics Engineers, IEEE, "Engineering is the profession in which mathematical, mathematical and natural sciences are acquired through study, experience and practice and are applied rigorously to develop economic efficiency for the use of matter, energy and information for the benefit of humanity" [1].

Thus, the final year project in engineering disciplines is one of the basic mechanisms used by the college to provide you with the opportunity to gain experience in the practical, effective, efficient, and useful application of what you have studied over the last few years. Some universities evaluate the outcomes of their programs via the assessments of the final year projects [2]. Of course, you will continue to gain engineering experience after graduation but a final year project will be your first exposure to the full rigor of engineering practice. It is necessary to learn from this exposure and practice all the engineering methodologies involved. It is especially important that you learn not only to apply what you know but also to apply it by virtue of it and with the ability to assess what you do and criticize. There is another reason why your final year project is very important: it will inevitably be used as a distinct to decide how well you are as an engineering student. If you end up evaluating your testimony on the borderline between one level and another, the members of the examiners' committee will consider how you have implemented your graduation project and then will determine at what grade you should be assigned [3].

The graduation project aims at ensuring that the student is able to apply the skills and knowledge obtained during the university studies under the guidance of the supervisor of graduation projects. Each student must submit an independent project report unless the project committee considers that it is sufficient for a small group of students to submit only one project.

In general, the objectives of the graduation project can be summarized as follows:

- Ensure that the graduate student is able to use his knowledge in writing, research and organizational abilities.
- Give the student an opportunity to practice what he has learned and to implement it on the ground [4].
- Giving the student an opportunity to apply and practice the profession's ethics before he or she actually joins the labor market.

There have been many attempts recently from a number of researchers at the Iraqi Higher Education Institutes to highlight some of the problems facing the implementation of this important task. Such research has clearly confirmed the lack of a well-defined roadmap for

government and private colleges in this vital field and for engineering disciplines in particular [5-8]. The following sections of this paper will discuss the responsibilities and roles of key players in the management and implementation of the roadmap for the work of the Code of Practice. The list of these players includes the scientific section of the educational institution, the academic supervisor on the research project and the student. The paper concludes with a number of recommendations, which in turn contribute to drawing a clear road map for the advancement of this important engineering activity.

2. The Responsibilities of the Academic Institution

The department responsibilities in the institution include the provision of the following facilities and resources to support the final year students to carry out their final year research projects satisfactorily [7-9]:

- Assign an appropriately qualified academic supervisor, who will agree to a research topic in a scientific field close to the student's choice.
- The provision of an alternate supervisor if the principal supervisor is absent for a long period of time during the project implementation period.
- Provide clear information and guidance on the administrative regulations to carry out the project and the final evaluation process of the project work report.
- Ensure that adequate facilities are available to carry out research and related training skills.
- Communicate with the College Library to ensure that sufficient resources are available to carry out the project.
- Develop a complaints procedure that the applicant can resort to if he or she is not satisfied with any aspect of his supervision.
- Establish clear procedures to change the supervisor if the relationship between the student and the supervisor reached a dead end.
- Provide advice on the approval of an appointment for the supervisor and the dates of submission of the project outline and the final report of the project.

3. The Supervisor Responsibilities

Each student or group of no more than three students shall be assigned a supervisor at the beginning of the final year for the implementation of the graduation year project. This supervisor is assigned by the department to perform the following tasks:

- Advise the student on the selection of an appropriate research topic.
- Give the student the necessary guidance on the nature of the research, the expected standard, planning the research project, the literature, the relevant sources, research techniques, analysis, and the ethical considerations.
- Arrange regular meetings with the students and allocate enough time to discuss the progress of the project.
- Help the students to consider the ethical implications of their work and help them apply for approval from the department or external ethics team if necessary.
- Propose adequate arrangements to supervise the student in the case of a long-term leave or absence leave, and this should be done in consultation with the student and the department.
- Issue a timely warning to the students of insufficient work progress.
- Provide advice on the preparation of the research report and comment clearly on parts of the report. It is not expected that the supervisor will edit or revise the work project. In the end, the student must be made to be fully responsible for his work, and the supervisor's responsibility is limited to providing overall guidance for the implementation of the project's steps.

4. The Student Responsibilities

The final year students who undertake the project are assigned to conduct the following tasks:

- Choose an appropriate topic after reviewing the literature.
- Agree to work on the subject with the supervisor.
- Discuss with the supervisor the type of guidance most useful for project implementation.
- Arrange with the supervisor on a schedule of meetings, attend such meetings, and inform the supervisor about how to contact him.
- The student must be very serious in producing the work according to an agreed schedule with the supervisor.
- The student has the ability to take the initiative in raising problems or difficulties.
- At the beginning of the project, the student must identify the management's instructions on the progress of the project and submit it to the final evaluation.
- The student must conduct his research in accordance with the ethical principles and guidelines set by the administration.
- Conduct his research regarding good health and safety practices as detailed in the University's law for students working in practical work.

- Students should note that they are responsible for their work and that the supervisor's role is to provide guidance and advice.

5. Recommendations

As a conclusion, this paper puts forward the following recommendations for general discussion:

1. Reinsertion of a course entitled "Writing Scientific Reports" within the curriculum of the second and third stages as was previously applied with notable success in a number of engineering colleges.
2. Add a mandatory subject entitled (Management of the Graduation Project) within the courses of teaching methods delivered to the newly recruited faculty members. Its goal is to ensure the identification of the optimal methods of supervision in the implementation of these projects by the student.
3. Distribute project evaluation grades through the various stages of implementation and throughout the two semesters of the school year and ensuring that the student is informed of its content. It is preferable to separate the assessment of the two semesters separately (Project 1 and Project 2) to ensure that the academic effort is distributed evenly over the two semesters.
4. The announcement of project titles to students at the beginning of the academic year or better still at the beginning of summer vacation after the third stage, if possible. Also, consider the adoption of a number of projects proposed by the students themselves in the list of projects.
5. Continuing to spread awareness of the dangers of plagiarism in writing reports, research and even laboratory assignments on faculty members and students alike. This should preferably be done in the earlier stages of the study plan to ensure that this method is firmly anchored in the scientific literature [10].
6. Publication of a booklet on the College Website for a clear work plan for the implementation of the projects and the responsibilities assigned to the supervisor, the student, and the department.
7. To enrich the College Website with information regarding the progress of the projects and to oblige supervisors and students to follow them as part of the project implementation stages.
8. Encourage supervisors to submit projects of a practical or community-related nature and consider this when evaluating the project grades from the discussion committee.
9. Supervisors must ensure that the student does not resort to the bureaus that provide project implementation services under different names for financial gains, which are widely spread in Iraq or through the Internet. This can only be done by careful and continuous follow up by the supervisors and the projects committee in the department and the implementation of deterrent measures when the students resort to such unlawful means.
10. Review the instructions to write paragraphs of the basic graduation projects and ensure that they are understood and work accurately by supervisors and students alike, and the emphasis on correct referring to scientific references according to the standard instructions strictly followed in scientific writings [11, 12].
11. The commitment of the supervisors and the students for periodic meetings to follow the stages of the project implementation within the weekly schedule.
12. Direct the students for the continuous documentation of information in the stages of project implementation in a project Log Book assigned to this task. This Log Book should be maintained by handwriting and by each student separately and the supervisor must follow it periodically to avoid reliance on the direct copies of the Internet without full comprehension of this information (Copy and Paste).
13. Review the distribution of the grades and weights of the project evaluation to avoid exaggeration in giving the final project grades, which is often the current formula used in most colleges [13].
14. Instruct the student to benefit from research and scientific investigation through the Internet correctly to access the information required for the work of the project. This is done by holding seminars on request by the professors at the beginning of the academic year.
15. Encouraging the work within the research teams to train the students to work in groups, which is very serious in their lives later after graduation.
16. The need to invite external examiner from outside the higher education institution for the general evaluation of the graduation projects in the department.
17. Motivate students to participate in scientific activities and events, and to hold annual competitions and award prizes for outstanding projects.
18. The assignment of supervisors of graduation projects and research in light of strict selection criteria, so that this task is only carried out by qualified personals.

19. The need for a degree of cooperation and common understanding among all participants in the process of supervision and follow-up, and identify responsibilities and distribute them to achieve the desired goals.
20. Persuade the department to conduct a questionnaire for the student at the end of the academic year to determine the success of the implementation of the plan of action of this activity. Many benefits can be derived from the results of the questionnaire to modify some tracks for the implementation of the project for the subsequent years [11].
21. Support the participation of universities with practical research problems. The students work to find solutions through their graduation projects, which deepens the relationship between the student, the educational institution and the community and provides job opportunities for the student after graduation [14].

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