Ministry of Higher Education
& Scientific Research
Univesrsity of Anbar
College of Enginering
Department of Civil Engineering

**CONFIDENTIAL**

# Self-Assessment Report

**for the B.Sc. in**
**Civil Engineering Program**
**at the**
**Civil Engineering Department**
**University of Anbar**
**Ramadi, IRAQ**

**September 1st, 2021**

**E-mail: civil.engineering@uoanbar.edu.iq**

**Website:**
**https://www.uoanbar.edu.iq/EngineeringCollege/English/CMS.php?ID=135**

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# BACKGROUND INFORMATION

## 1.1 Contact Information

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## 1.2 Program History

The University of Anbar (UOA) was established in 1987 by Decree No. (51 dated 23/12/1987, located at Ramadi City, Centre of the Governorate of Al-Anbar. Civil Engineering Department (CED) was established as one of the departments of the Faculty of Engineering (FoE) in 1989. The study is lasting for four years to obtain a Bachelor degree in Civil Engineering. The first graduate student group was in 1992-1993. The idea of establishing the department as a scientific starting point and renaissance was based on transforming knowledge and science developments into qualified human resources for the localization, innovation and creativity of technology. The department has provided the local, Arab and international community with hundreds of graduates. The postgraduate studies were firstly introduced in the department in 1998 to award a Master degree in Civil Engineering, afterward this program has been expanded to include Master degree in geotechnical Engineering, Master degree in Highway Engineering and Phd degree in Civil Engineering.

Table 1: Type of Programs in CED

| No. | Name of Program | Type of Program | Year of Establishing |
|---|---|---|---|
| 1 | Bachelor degree in Civil Engineering | Undergraduate | 1989 |
| 2 | Master degree in Civil Engineering | Postgraduate | 1998 |
| 3 | PhD degree in Civil Engineering | Postgraduate | 2020 |
| 4 | Master degree in Geotechnical Engineering | Postgraduate | 2020 |
| 5 | Master degree in Highway Engineering | Postgraduate | 2020 |

## 1.3 Options

No options in the program

## 1.4 Program Delivery Modes

The BSc. Program is offered by the FOE day-time (8-3 pm) on the UOA main Campus on a full-time basis in lectures and laboratories. The UOA utilizes the credit-hour system, whereby most theoretical courses are assigned between 2 and 3 credits hours and laboratory courses are assigned as 1 credit hour.

Students are required to successfully complete the total number of credit hours in the program to graduate. The academic year at the UOA is composed of two regular semesters of 15 weeks,1st semester starts on September and ends on February, 2 weeks' semester break, then 2nd semester starts on February till June.

Table 2: Program Delivery Mode for BSc.

| Study Mode | Delivering Time | Delivery Location | Delivery Mode | Academic Year | Campus |
|---|---|---|---|---|---|
| Full Time | Day time (8 am – 3 pm) | Classrooms and Teaching Laboratories | Course – Based following Credit Hours System | Two Semesters (Fall + Spring) | One Campus (Main Campus UoA Campus) |
| First Semester | Day time (8 am – 3 pm) | Classrooms and Teaching Laboratories | Course – Based following Credit Hours System | One Semester (Fall) | One Campus (Main Campus UoA Campus) |
| Second Semester | Day time (8 am – 3 pm) | Classrooms and Teaching Laboratories | Course – Based following Half Credit Hours System | One Semester (Spring) | One Campus (Main Campus UoA Campus) |

## 1.5 Program Locations

The civil engineering Program is offered on the Main Campus of the University of Anbar. All courses and laboratory sessions are conducted in civil engineering Buildings (CIVIL1 –CIVIL 8) and the central laboratories. There is no plan to offer the civil engineering Program in other campuses.

## 1.6 Public Disclosure

https://www.uoanbar.edu.iq/EngineeringCollege/English/CMS.php?ID=135

## 1.7 Previous Evaluations and the Actions Taken (if applicable)

This will be the first evaluation by an ICAEE evaluation team.

# ACCREDIATION CRITERIA

## CRITERION 1: PROGRAM EDUCATIONAL OBJECTIVES

### 1.1 Strategic Planning

**University of Anbar**

**Vision**
The University of Anbar is searching for a pioneering position in higher education and scientific research and developing the academic programs for achieving the sustaining development.

**Mission**
To provide high quality of education to the students in civil engineering and train them adequately to tackle the main challenges might exist in their profession. Furthermore, to encourage them to have wide knowledge and experience to be able to deal with possible engineering problems in the future. This would lead to more success in their profession as a site engineer and offer more opportunities to continue with their studies and academic career (Poststudies). It would also enable them for effective contribution and motivation of teamwork spirit for better future of education and scientific research.

**Objectives**
The university is working to achieve its mission through the following goals:

1. To develop the ability of the staff members in such a way that train and qualify them to become leaders in the business and labour market to serve the whole society. This can be done through achieving different Engineering projects and developing new practical and theoretical research that significantly enhance the future development of the country.
2. To qualify engineers who are able to seriously take the entire responsibility in the field, by providing students with the required learning and training courses and widen their knowledge with the fundamental Engineering disciplines.
3. Learning the student, the professional ethics in order to avoid corruption and deviation behaviour that are definitely not convenient with the profession.

4. Developing the academic career and qualifying new academic staff in all departments of the college.
5. Developing novel scientific research which mainly contribute to solve different problems that face the society in general.
6. Undertaking an engineering consultancy throughout the Engineering Consultancy Bureau to meet the essential requirements of the community and develop the country's infrastructures.

The UoA vision, mission and objectives statements are published on web site: https://www.uoanbar.edu.iq/EngineeringCollege/English/CMS.php?ID=110

**1.2 Statement of PEOs**

The program educational objectives of Civil Engineering Department are:

**Vision**

To be a national leader in education and research in the field of Civilengineering recognized for world-class graduates.

**Mission**

To provide quality education by integrating the principles of science and engineering with technical, innovative, and communication skill, and to conduct applied research that investigate pioneer solutions to the challenges of Civilengineering.

**Objectives**

**PEO-1: Professional Presence**

As a result, within a few years, the graduate has established an Internet presence, either through professional organizations, social networking and/or other activities which demonstrate an appreciation and use of modern technological capabilities.

**PEO-2: Workforce Skilled in Integrating Engineering, Design, and modern Technology**

As a result, graduates will identify opportunities to contribute to society from a variety of positions, ranging from water management engineering, design and construction of hydraulic structures and engage professionally in private and governmental sectors such as consulting firms, contracting companies, marketing and real-estate investments. The graduate may also pursue further education in the form of graduate and professional degrees.

**PEO-3: Leadership in Research, Innovation and Design**
As a result, within a few years of graduation, the graduate will have made significant or meaningful contributions in his or her chosen field, either thorough research publications and/or presentations, the development of a new design or construction process, obtaining patents, or other evidence of contributing to the advancement of knowledge, particularly in the fields of hydraulic structures and water resources engineering.

**PEO-4: Ethical Reasoning, Behaviour and Professionalism**
As a result, within a few years of graduation, the graduate will demonstrate adherence to the professional codes of conduct appropriate to his or her field of study and/or practice, as well as exhibit behaviour consistent with accepted standards of fiduciary responsibility, risk/benefit analysis and professional accountability.

**PEO-5: Communication**
As a result, graduates will have outstanding communication skills as evidenced by their professional presentations, and in their productive interactions with co-workers. The graduates may also use their communication skills to foster collaborative effort among co-workers and/or may represent his or her company, institution and/or laboratory to other interested parties.

**PEO-6: Personal Engagement**
As a result, within a few years, the graduate will be working independently and in multidisciplinary teams to effectively and efficiently achieve personal and organizational goals, engage in community or public service, create a product or construction that fills a social need, and/or participate in educating individuals about an issue of societal concern.

The civil engineering vision, mission and objectives statements are published on the web site:

https://www.uoanbar.edu.iq/EngineeringCollege/English/CMS.php?ID=110

**1.3 PEOs Consistency with the Mission Statement**
The Educational Objectives (PEOs) of the CIVIL ENGINEERING Program contribute directly to fulfilling the mission of the College of Engineering, which is “to offer a creative and encouraging environment for education and research”. The civil engineering Program also directly contributes to the college mission to deliver "graduates with analytical thinking, advanced knowledge, and skills". The civil engineering Program, with its technical and non-technical components, and experiences that students go through during their school years promote their "proficiency in their specific specialization fields".

On the departmental level, the mission statement which is “To provide students with quality education and carry out basic and applied research”, can be divided into three categories: 1- quality education and 2- basic and applied research. The six PEO’s contribute directly to fulfilling the mission because quality of education can be insured by achieving Workforce Skilled in Integrating Engineering, Design, and modern Technology (PEO-2), Ethical Reasoning, Behaviour and Professionalism (PEO-4), Communication (PEO-5) and Personal engagement (PEO-6). While the second branch of the mission will be demonstrated by Professional presence (PEO-1), Leadership in Research, Innovation and Design (PEO-3), Communication (PEO-5) and Personal engagement (PEO-6).

## 1.4 Program Constituencies

The main constituencies of the Civil Engineering program are:

**1- Students:**
Students have a clear interest in having a broad knowledge of the program related principles, tools, and theories as this prepares them for their careers and helps them secure jobs locally and internationally. The importance of student engagement is reiterated in student forums discussions, the course surveys, and the alumni surveys. All students were participated in the evaluation. All years through assessments and final year through exit survey.

**2-Faculty:**
Faculty members in the department and those in the university who teach/support teaching of non-civil engineering courses to our students. Many other staff members contribute to the support of the Civilengineering department; these include all laboratory technicians and staff from other departments, IT unit personnel, and others.
All faculty were participated in the evaluation through a specially intended questionnaire in September and through assessments.

**3- Alumni:**
Alumni are clearly influenced by the department reputation, as this would help them advance their careers. They frequently contact faculty for recruitment purposes. They want to make sure the program adequately prepares them for advancement in the careers. The alumni were participated in the evaluation through alumni survey.

**4- Employers:**

Employers or industry partners have indicated that they have a clear interest in having students prepared upon entering the workforce. Clearly, the technical and personal preparation of the students is instrumental.
The Civil Engineering Department has an Industrial Advisory Board (IAB). The IAB, which is currently composed form leaders of various sectors in the field of Engineering, meets once a year and have played an important role on curriculum changes and continuous improvement of the CIVIL ENGINEERING Program based on the current and future needs of industry. The IAB contributes by both bi-annual meetings and yearly surveys.

**1.5 PEOs Review Process**

The CIVIL ENGINEERING at the University of Anbar has established a program that continues to meet the educational objectives and outcomes as evidenced by the success of graduates, program reputation with employers, and the demand for the program. Table 2-1 summarizes the process to review the PEOs of the CIVIL ENGINEERING program.

**Table 2.1:** Summary of the process to review the PEOs

| Step # | Issue | Trigger/Action/Outcome |
|---|---|---|
| 1. | Review the PEOs regularly to ensure that they are directly linked to the undergraduate educational missions of the College and University. | Review of the University and College undergraduate educational missions and strategic plans and consider their impact on the PEOs. |
| 2. | Ensure that the PEOs are consistent with published PEOs of other similar programs, noting that the PEOs should be specific to our | The Department Accreditation Committee reviews published PEOs of various similar programs offered locally, regionally and internationally, including those of ABET-accredited civil engineering programs. As a result, valuable data are collected for guidance, comparison and benchmarking purposes. |

| | | |
|---|---|---|
| | program. | |
| 3. | Ensure that the PEOs reflect the hopes and needs of our constituents and convey the reality and unique qualities of our program. | In reviewing the PEOs, the Department Accreditation Committee tries to answer the following questions:<br>**a.** What do our constituents expect our students to be doing a few years after graduation.<br>**b.** What are our alumni actually doing now as well as a few years after graduation; and<br>**c.** How can we convey and express the hopes/expectations of our constituents and the actual achievements of our graduates in few short statements. The answers to these questions provided the basis to review the PEOs. |
| 4. | Formally assess the adequacy, relevance, and achievement of the PEOs. | Conduct formal surveys to achieve the following:<br>**a.** Consult the program constituents on the adequacy and relevance of the PEOs Assess the level of achievement of the PEOs; and<br>**b.** Collect relevant data about the achievement of the PEOs. |

The CIVIL ENGINEERING Department continuously seeks feedback from its constituencies on the validity of its PEOs. The following tools were used in the assessment of the PEOs:

a. Alumni Survey
b. Employers Survey
c. Exit Survey
d. Internship/Training
e. Department Advisory Board Survey

## CRITERION 2: GRADUATE OUTCOMES

**1 Adopted Graduate Outcomes**

Students of the CivilEngineering program will attain (by the time of graduation):

**i)** An ability to distinguish, identify, define, formulate, and solve engineering problems by applying principles of engineering, science and mathematics.

**ii)** An ability to produce engineering designs that meet desired needs within certain constraints by applying both analysis and synthesis in the design process.

**iii)** An ability to create and carry out proper measurement and tests with quality assurance, analyze and interpret results, and utilize engineering judgment to make inferences.

**iv)** An ability to skillfully communicate orally with a gathering of people and in writing with various managerial levels.

**v)** An ability to perceive ethical and professional responsibilities in engineering cases and make brilliant judgments taking into account the consequences in worldwide financial, ecological and societal considerations.

**vi)** An ability to perceive the continual necessity for professional knowledge growth and how to find, assess, assemble and apply it properly.

**vii)** An ability to work adequately on teams and to set up objectives, plan activities, meet due dates, and manage risk and uncertainty.

The program started in 2010 with a-k graduate outcomes (ABET graduate outcomes), these were changed in 2018 to the 7 more generalized ones. In 2019, the Iraqi Accreditation Council graduate outcomes (NGOs) where also adopted to fulfill the National Accreditation Criteria.

It has been carefully reviewed whether the Graduate Outcomes are properly linked to our Program Educational Objectives and whether our students would be well prepared to achieve the Program Educational Objectives in future practice if they attain the Graduate Outcomes by the time of graduation. Through the ongoing review and assessment process, no need for additional outcomes has been identified. However, the Graduate Outcomes were lined also to ABET student outcomes to facilitate the procedure of attaining both ABET and National Accreditation.

**2.2 Relating GOs to PEOs**

The achievement of the Graduate Outcomes ensures that our graduates are well equipped to achieve the Program Educational Objectives in actual practice following graduation. The linkage between the individual Program Educational Objective (PEOs) and the Graduate Outcomes (GOs) in addition to ABET SOs are shown below in Fig. 2.1 and Table 2.2.

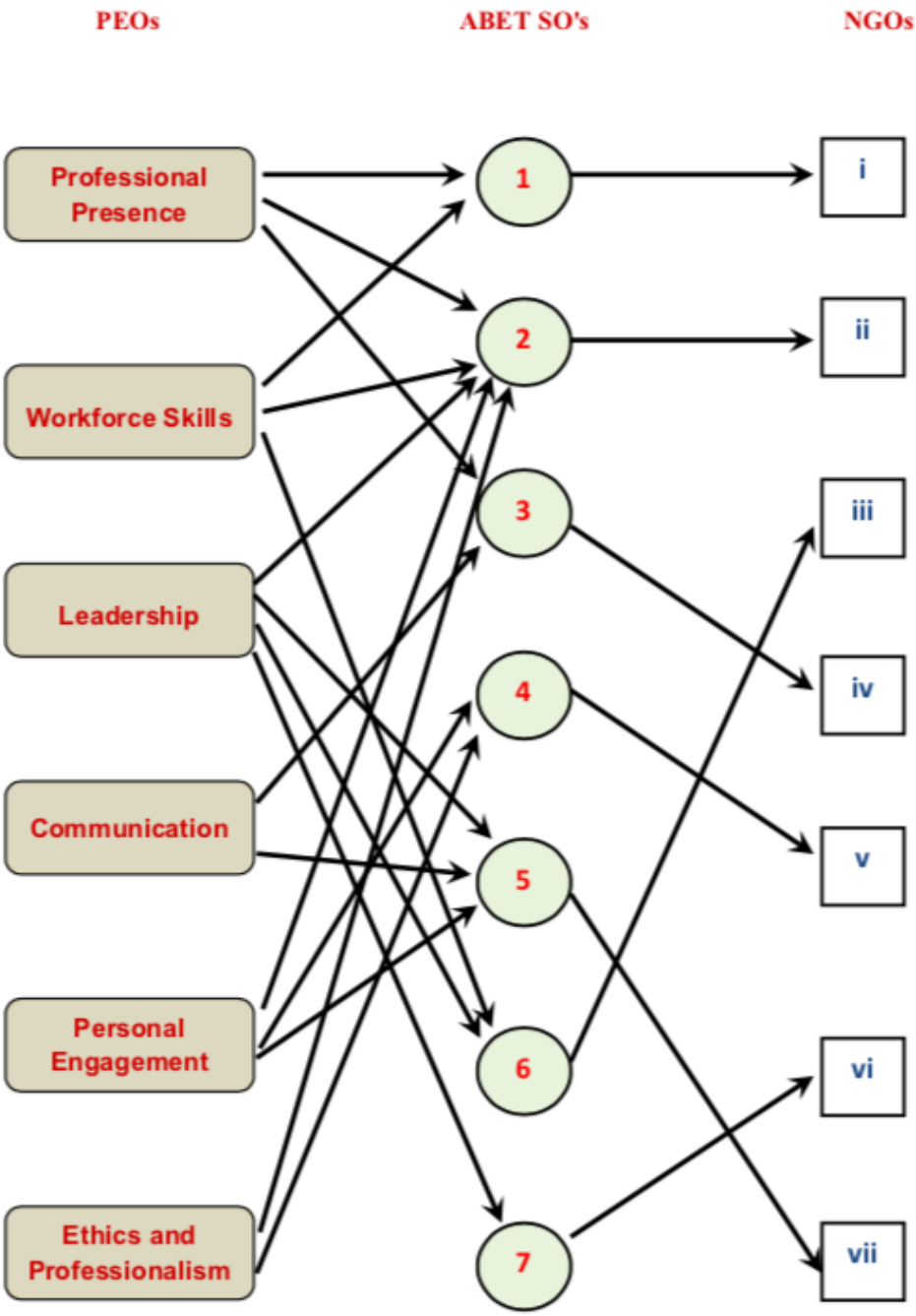


**Fig. 2.1:** The Relation between College PEO's, NGO's and ABET SO's

**Table 2.2:** Mapping of Program Educational Objectives to Graduate Outcomes

| PEOS | Graduate Outcomes (GOs) | | | | | | |
|---|---|---|---|---|---|---|---|
| | I | II | III | IV | V | VI | VII |
| PEO-1 | X | | | X | | | |
| PEO-2 | X | X | X | | | | |
| PEO-3 | | X | X | | | X | X |
| PEO-4 | | | | X | | | X |
| PEO-5 | | X | | | X | | X |
| PEO-6 | | X | | | X | | |

# CRITERION 3: CURRICULUM

## 3.1 Program Structure and Content

### 3.1.1 Study Plan

Table 3.1 describes the plan of study for students in this program including information on course offerings in the form of a recommended schedule by year and term along with maximum section enrollments for all courses in the program for the last two terms the course was taught.

| List all courses in the program by term starting with the first term of the first year and ending with the last term of the final year. | | | Indicate Whether Course is Required, Elective or a Selected Elective by an R, an E or an SE.[1] | Subject Area (Credit Hours) | | | | Last Two Terms the Course was Offered: Year and Semester | Maximum Section Enrollment for the Last Two Terms the Course was Offered |
|---|---|---|---|---|---|---|---|---|---|
| Course | | | | Math and Basic Sciences | Engineering Topics. Check if Contains Significant Design (√) | General Education | Other | | |
| Dep. | code | Title | | | | | | | |
| Civil | CE1201 | Calculus I | R | 3 | | | | AU(2017-2018) | 66 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Civil** | CE1203 | Physics I | R | 4 | | | | AU(2017-2018) | 66 |
| **Civil** | CE1205 | Chemistry | R | 4 | | | | AU(2017-2018) | 66 |
| **Civil** | CE2310 | Fundamentals of Electrical Engineering | R | | 3 | | | SP(2017-2018) | 66 |
| **Civil** | CE1206 | Computer Science | R | | | | 3 | AU(2017-2018) | 66 |
| **Civil** | CE1103 | English Language I | R | | | | 3 | SP(2017-2018) | 66 |
| **Civil** | CE1104 | English Language II | R | | | | **3** | AU(2017-2018) | 66 |
| **Civil** | CE1102 | Human Rights | R | | | | **1** | SP(2017-2018) | 66 |
| **Civil** | CE1202 | Calculus II | R | 3 | | | | SP(2017-2018) | 66 |
| **Civil** | CE1204 | Physics II | R | 4 | | | | SP(2017-2018) | 66 |
| **Civil** | CE1302 | Engineering Mechanics (Static) | R | | **3** | | | SP(2017-2018) | 66 |
| **Civil** | CE2303 | Construction Materials | R | | 4 | | | AU(2017-2018) | 66 |
| **Civil** | CE1207 | Engineering Drawing | R | | 4 | | | SP(2017-2018) | 66 |
| **Civil** | CE1101 | Arabic Language | R | | | | 3 | AU(2017-2018) | 66 |
| **Civil** | CE2105 | Democracy | R | | | | 1 | SP(2017-2018) | 66 |
| Civil | CE2208 | Calculus III | R | 3 | | | | AU(2017-2018) | 65 |
| Civil | CE2308 | Engineering Surveying | R | | **4** | | | AU(2017-2018) | 65 |
| Civil | CE2306 | Strength of Materials | R | | **4** | | | SP(2017-2018) | 65 |
| Civil | CE2311 | Concrete Properties | R | | 4 | | | SP(2017-2018) | 65 |
| Civil | CE2305 | Dynamics | R | | 3 | | | AU(2017-2018) | 65 |
| Civil | CE2209 | Calculus IV | R | 3 | | | | SP(2017-2018) | 65 |
| Civil | CE3315 | Building Construction | R | | 3 | | | AU(2017-2018) | 65 |
| Civil | CE1301 | Engineering Geology | R | 3 | | | | AU(2017-2018) | 65 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Civil | CE3313 | Fluid Mechanics | R | | **4** | | | AU(2017-2018) | 65 |
| Civil | CE3317 | Structure I | R | | 3 | | | AU(2017-2018) | 31 |
| Civil | CE3319 | Reinforced Concrete I | R | | **3(√)** | | | AU(2017-2018) | 31 |
| Civil | CE3323 | Construction Management | R | | 3 | | | AU(2017-2018) | 31 |
| Civil | CE3321 | Soil Mechanics | R | | **4** | | | SP(2017-2018) | 31 |
| Civil | CE3316 | Hydrology | R | | **3** | | | SP(2017-2018) | 31 |
| Civil | CE2210 | Engineering Statistics | R | 3 | | | | SP(2017-2018) | 31 |
| Civil | CE3318 | Structure II | R | | **3** | | | SP(2017-2018) | 31 |
| Civil | CE3320 | Reinforced Concrete II | R | | (√)3 | | | SP(2017-2018) | 31 |
| Civil | CE3212 | Engineering Economy | R | | **3** | | | SP(2017-2018) | 31 |
| Civil | CE3211 | Engineering Numerical Methods | R | 3 | | | | AU(2017-2018) | 31 |
| Civil | CE4326 | Traffic Engineering | R | | **3(√)** | | | AU(2017-2018) | 31 |

1. **Required** courses are required of all students in the program, **elective** courses (often referred to as open or free electives) are optional for students, and **selected elective** courses are those for which students must take one or more courses from a specified group.
2. For courses that include multiple elements (lecture, laboratory, recitation, etc.), indicate the maximum enrollment in each element. For selected elective courses, indicate the maximum enrollment for each option.

Instructional materials and student work verifying compliance with ICAEE criteria for the categories indicated above will be required during the campus visit.

### 3.1.2 Alignment with PEOs

The linkage between the Program Educational Objectives (PEOs) and the Graduate Outcomes (GOs) is shown in Table 3-2. The achievement of the Graduate Outcomes (GOs) ensures that our graduates are well equipped to

achieve the Program Educational Objectives in actual practice 3-5 years following graduation.

**CIVIL ENGINEERING Program Educational Objectives are as follows:**

**PEO-1: Professional Presence**
As a result, within a few years, the graduate has established an Internet presence, either through professional organizations, social networking and/or other activities which demonstrate an appreciation and use of modern technological capabilities.

**PEO-2: Workforce Skilled in Integrating Engineering, Design, and modern Technology**
As a result, graduates will identify opportunities to contribute to society from a variety of positions, ranging from water management engineering, design and construction of hydraulic structures and engage professionally in private and governmental sectors such as consulting firms, contracting companies, marketing and real-estate investments. The graduate may also pursue further education in the form of graduate and professional degrees.

**PEO-3: Leadership in Research, Innovation and Design**
As a result, within a few years of graduation, the graduate will have made significant or meaningful contributions in his or her chosen field, either thorough research publications and/or presentations, the development of a new design or construction process, obtaining patents, or other evidence of contributing to the advancement of knowledge, particularly in the fields of hydraulic structures and water resources engineering.

**PEO-4: Ethical Reasoning, Behaviour and Professionalism**
As a result, within a few years of graduation, the graduate will demonstrate adherence to the professional codes of conduct appropriate to his or her field of study and/or practice, as well as exhibit behaviour consistent with accepted standards of fiduciary responsibility, risk/benefit analysis and professional accountability.

**PEO-5: Communication**
As a result, graduates will have outstanding communication skills as evidenced by their professional presentations, and in their productive interactions with co-workers. The graduates may also use their communication skills to foster collaborative effort among co-workers and/or may represent his or her company, institution and/or laboratory to other interested parties.

**PEO-6: Personal Engagement**
As a result, within a few years, the graduate will be working independently and in multidisciplinary teams to effectively and efficiently achieve personal and organizational goals, engage in community or public service, create a product or construction that fills a social need, and/or participate in educating individuals about an issue of societal concern.

**Table 3.2:** Mapping of Program Educational Objectives to Graduate Outcomes

| PEOS | Graduate Outcomes (GOs) | | | | | | |
|---|---|---|---|---|---|---|---|
| | I | II | III | IV | V | VI | VII |
| PEO-1 | X | | | X | | | |
| PEO-2 | X | X | X | | | | |
| PEO-3 | | X | X | | | X | X |
| PEO-4 | | | | X | | | X |
| PEO-5 | | X | | | X | | X |
| PEO-6 | | X | | | X | | |

**CIVIL ENGINEERING Graduation Outcomes are derived from the National Accreditation Criterion as follows:**

**i)** An ability to distinguish, identify, define, formulate, and solve engineering problems by applying principles of engineering, science and mathematics.

**ii)** An ability to produce engineering designs that meet desired needs within certain constraints by applying both analysis and synthesis in the design process.

**iii)** An ability to create and carry out proper measurement and tests with quality assurance, analyze and interpret results, and utilize engineering judgment to make inferences.

**iv)** An ability to skillfully communicate orally with a gathering of people and in writing with various managerial levels.

**v)** An ability to perceive ethical and professional responsibilities in engineering cases and make brilliant judgments taking into account the consequences in worldwide financial, ecological and societal considerations.

**vi)** An ability to perceive the continual necessity for professional knowledge growth and how to find, assess, assemble and apply it properly.

**vii)** An ability to work adequately on teams and to set up objectives, plan activities, meet due dates, and manage risk and uncertainty.

### 3.1.3 Attainment of GOs

To assure that our graduates achieved the Graduate Outcomes (GOs), the curriculum must contribute for achievement of each Graduate Outcome collectively. As all the Graduate outcomes are addressed within the core curriculum; students of the CivilEngineering Department will be educated and trained to achieve the Graduate Outcomes throughout the coursework. Our courses range between course that teach design, courses that use math, science to analyze and solve engineering problems, never mentioning the lab courses in addition to courses for general education. To help achieving the graduate outcomes, many faculty members are using Problem Based Learning method. In this method, the faculty use many tools related to graduate outcomes like teamwork, communication (seminars and writing reports) and critical thinking taking into considerations the material and social constrains in addition to the global and environmental aspects. Many workshops were organized in the department to explain how to apply modern instructional strategy in teaching and explain the performance indicators with rubrics for each graduate outcome. The teaching in the workshops were supervised by faculty members trained/studied in the US in addition to workshops held by experts from US universities. The ICAEE syllabi for the required courses describe a correlation of the course to the Graduate Outcomes as presented in Table 3-3.

### 2.3.1.4 Prerequisite Structure

The following chart shows the prerequisite structure of the CIVIL ENGINEERING curriculum. This path is applied for second, third and fourth years only.

#### 3.1.5 Subject Areas Requirements

The Civil Engineering program produces graduates who are prepared to enter the practice of water Resources engineering utilizing three major components of the program: (1) foundation in the mathematical and basic sciences, (2) engineering topics in both Analysis and design applications, and (3) general education in the humanities, languages, and ethics.

### 3.1.6 Major Design Experience

In the few last years, students take Senior Capstone Design, which is the final major design course. In this course, students learn how to apply the basic engineering science and design principles to formulate a design problem, and then follow recommended process to complete the design project. Students are required to demonstrate their ability to use the knowledge of math, basic science, and Engineering design courses for the whole undergraduate curriculum. Some professional components if not taught in other courses, such as life- long learning to keep knowledge up to date, are covered in this course. A poster presentation is required by the end of each course.

For the capstone design experience, the students are typically in teams of 2-4 people. The evaluation includes the project evaluation in three parts (overall technical content, presentation, and response to questions), assessment of the related Graduate Outcomes and comment. The CIVIL ENGINEERING department designed a special following up system to choose the projects, assign it to the students and follow their performance along with their supervisor. A Capstone project handbook is specifically written for this purpose.

### 3.1.7 Teaching and Learning Strategies

Teaching strategies varies from course subject to another. The traditional form of teaching in CIVIL ENGINEERING program often involves lectures being given to large groups of students, accompanied by tutorials and workshops, with some independent study. However, there are several other modes of delivery that can also be very effective such as the flipped classroom and problem-based learning.

For the required courses, only, teaching materials (textbook, the regular course syllabus, course outlines, and list of assignments, etc.), and student work samples of all the assignments (homework, quizzes, exams, lab reports, and design projects, etc.) will be available for review at the time of visit.

## 3.2 Relating Courses Learning Outcomes to GOs

In CIVIL ENGINEERING program, there is a special form to be updated on yearly basis by the instructor. This form is called CS and it must be submitted by the start of the academic year. The form describes every aspect of the course including the course learning outcomes (CLOs) and these are linked to the GOs by the instructor him/her-self. Then it is checked by the scientific committee and the Scientific Department Handbook is updated accordingly.

Table 3.3 illustrates the linking map between the courses and the GOs.

# CRITERION 4: CONTINUOUS IMPROVEMENT

A Continuous Improvement Cycle is an ongoing process of PA with the purpose of assessing the academic program, improving its components, and making decisions about its future continuity and sustainability.
The Department of CivilEngineering at University of Anbar is committed to deliver high quality engineering education. Continuous improvement is essential to maintain and improve the institutional quality. In order to achieve the institutional effectiveness vision, the College of Engineering adopted ABET criteria for its academic accreditation. The goal of the program is also to fulfil the Iraqi National Accreditation Criteria (INAC) developed by the Iraqi Accreditation Council (ICAEE). The program regularly uses appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained. The results of these evaluations are systematically utilized as input for the continuous improvement of the program. Other available information may also be used to assist in the continuous improvement of the program. Effective assessment uses relevant direct, indirect, quantitative, and qualitative measures as appropriate to the outcome being measured. Appropriate sampling methods are also used as part of an assessment process.

## 4.1 Achievement of Graduate outcomes

### 4.2.1 Assessment Processes

Assessment is one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes. Effective assessment uses relevant direct, indirect, quantitative, and qualitative measures as appropriate to the outcome being measured. Appropriate sampling methods may be used as part of an assessment process. Evaluation on the other hand is one or more processes for interpreting the data and evidence accumulated through assessment processes. Evaluation determines the extent to which student outcomes are being attained. Evaluation results in decisions and actions regarding program improvement.
The Bachelor of Science in CivilEngineering Program employs several tools to assess the achievement of the graduate Outcomes (GOs). The system used to assess the achievement of the student outcomes relies on obtaining feedback from the program constituents using a variety of tools. This system consists of two assessment levels:

1. Course-level assessment
2. Program-level assessment

The elements of the course and program assessment are summarized in Table 4.1 and Table 4.2, respectively.

**Table 4.1:** Elements of the Course Level Assessment

| Direct Course Level Assessment | |
|---|---|
| Objectives | Assess the achievement of the course learning outcomes (CLOs) |
| Person in Charge | Course Instructor and Course Coordinator |
| Coordination | Instructor/Coordinator>>>Assessment Coordinator in Department >>> Chairman/Accreditation Committee >>> Department Council of Faculty Members. |
| Assessment tools/indicators | Level of achievement of course learning outcomes from instructor point of view.<br>Level of achievement of course learning outcomes from students' point of view.<br>Degree of coverage of course contents from instructor point of view.<br>Relation of individual assessment questions/items to course learning outcomes.<br>Achievement of course learning outcomes based on students' grades on assessment items.<br>Identification of issues of requiring improvement.<br>Proposals for improvements based on assessment results.<br>Students' evaluation of courses and instructors. |
| Frequency | Every time the course is taught. |
| Outcome | Course Learning Outcomes Assessment Report. |

**Table 4.2:** Elements of the Program Level Assessment

| Program Level Assessment | |
|---|---|
| Objectives | Assess the achievement of the student outcomes (SOs). |
| Person in charge | Assessment Coordinator in Department/Accreditation Committee/ Department Chairman |
| Coordination | Assessment Coordinator in Department Chairman/Accreditation Committee/Department Council of Faculty members |
| Assessment tools | 1. Coverage of program learning outcomes based on course learning outcomes.<br>2. Achievement of program learning outcomes based on course learning outcomes assessment results.<br>3. Alumni survey.<br>4. Employers' survey.<br>5. Exit survey of graduating students.<br>6. Feedback from visiting/invited experts, including reports of visiting accreditation teams. |

| | |
|---|---|
| | 7. Feedback from department advisory board.<br>8. Students' internship/training survey by employers. |
| Frequency | Varies from every year (i.e., Exit Surveys) to every few years (i.e., Employer Survey). |
| Outcome | Assessment Reports as Appropriate |

The following sub-sections provide the details of the direct and indirect assessment processes

**1. Graduate Outcomes Assessment Based on Direct Assessment**

Direct assessment results, based on students' grades on the various assessment items, are described in this section. The courses that were used in the summative assessment were designated by the Scientific Committee of the CIVIL ENGINEERING, as presented in Table 4.3. Rubrics were used to assess direct student work, as presented in Appendix B-1.

**Table 4.3:** Assessment plan of Graduate Outcomes

| Student Outcome | Performance Indicator | Course/ Assessment Tool | Performance Threshold* |
|---|---|---|---|
| **i) An ability to distinguish, identify, define, formulate, and solve engineering problems by applying principles of engineering, science and mathematics.** | Formulate the problem and identify key issues/variables | 1. CIVIL ENGINEERING3319 (Reinforced concrete 1) Exam/HW/Quiz question (**science** emphasis)<br>2- CIVIL ENGINEERING2307 (Strength of Materials) Exam/HW/Quiz question *(**math** emphasis)* | 80% |
| | Applies appropriate solution method using math/science/ engineering principles | | 70% |
| | Generates a problem solution | | 60% |
| | Evaluates alternative solutions | | 60% |
| **ii) An ability to produce engineering designs that meet desired needs within certain constraints by applying both analysis and synthesis in the design process.** | Formulate the problem (identify the "need") and analyze constraints | 1. CIVIL ENGINEERING4310 (Senior Design II) Grading rubric Item<br>2. CIVIL ENGINEERING4302 (Foundation design 1) Exam/HW/Quiz question, Project | 80% |
| | Establish "fitness" criteria for evaluating potential solutions and tradeoffs | | 70% |
| | Generate alternative solutions | | 60% |
| | Build a prototype and analyze performance | | 80% |
| | Improve prototype | | 80% |
| **iii) An ability to create and carry out proper measurement and tests with quality assurance, analyze and interpret results, and utilize engineering judgment to make inferences.** | Design an Experiment Plan (How to answer the Driving Question?) | 1. CIVIL ENGINEERING2312 (Concrete Technology)<br>a. Experimental plan for compressive strength<br>b. Lab testing / data collection / analysis<br>2. CIVIL ENGINEERING3312 (concrete properties)<br>a. Experimental plan for Measurement of | 80% |
| | Acquire data on appropriate variables | | 70% |
| | Interpret experimental data and results with respect to appropriate theoretical models | | 70% |
| | Explain observed differences between model and experiment (bad model, bad measurements, noise, etc.) and draw conclusions | | 60% |

| | | | |
|---|---|---|---|
| | | Optimum Coagulant Dose by Jar Test<br>b. Lab testing / data collection / analysis | |
| **iv) An ability to skillfully communicate orally with a gathering of people and in writing with various managerial levels.** | Organize the material | 1. CIVIL ENGINEERING3305 (Ground Water Hydrology) project/seminar<br>2. CIVIL ENGINEERING4304 (English Language-4) Project/Seminar/ Essay Assignment | 80% |
| | Present content in own words to demonstrate comprehension | | 60% |
| | Provide data to support claims or inform audience | | 80% |
| | Demonstrate proper use of English | | 60% |
| | Deliver an oral presentation | | 80% |
| **v) An ability to perceive ethical and professional responsibilities in engineering cases and make brilliant judgments taking into account the consequences in worldwide financial, ecological and societal considerations.** | Identify the global, economic, environmental, and societal context of an engineering situation | 1. CIVIL ENGINEERING4333 (Construction management) Exam/HW/Quiz question, Essay Assignment<br>2. CIVIL ENGINEERING4309 (Method of Construction and Estimation) Exam | 70% |
| | Describe ethical and professional responsibilities related to an engineering project | | 70% |
| | Explain the impact of engineering decisions in a global, economic, environmental, and societal context. | | 70% |
| **vi) An ability to perceive the continual necessity for professional knowledge growth and how to find, assess, assemble and apply it properly.** | Identify necessary techniques, skills and tools for a new situation (research) | 1. CIVIL ENGINEERING2309 (Engineering Surveying II) Field (Lab) exercise using a Total Station<br>2. CIVIL ENGINEERING3308 (Engineering Numerical Methods) Project using advanced software | 80% |
| | Explain the use of the new techniques, skills and tools (acquisition) | | 75% |
| | Apply the new techniques, skills and tools to the given situation | | 80% |
| **vii) An ability to work adequately on teams and to set up objectives, plan activities, meet due dates, and manage risk and uncertainty.** | Establish a collaborative and inclusive environment (Teamwork) | 1. CIVIL ENGINEERING3311(Foundations Engineering) Seminar- Grading rubric Item<br>2. CIVIL ENGINEERING4311 (Seminar Design I) Grading rubric Item | 80% |
| | Fulfil individual responsibilities and contribute to the team's success. (Individual accountability) | | 80% |
| | Define team goals and deadlines, plan tasks, organize & facilitate effective team meetings. (Project management) | | 70% |

## 2. Graduate Outcomes Assessment Based on Indirect Methods

The following assessment methods were used for indirect assessment of the graduate outcomes

1- Achievement of GOs based on students' evaluation of CLOs. The indicated results are based on a students' survey that is conducted at the end of the semester to determine

the level of achievement of course learning outcomes from the students' point of view. An example of Course Assessment by student is presented in Appendix B-2.

2- **Level of achievement of GOs from the faculty point of view:** The Faculty Survey Form is presented in Appendix B-3.
3- **Level of achievement of GOs from alumni point of view:** The form of Alumni Feedback is presented in Appendix B-4. However, the survey was not distributed due to the COVID 19 restrictions during the past year.
4- **Level of achievement of GOs from the employer point of view**: The form of Employer Feedback is presented in Appendix B-5. However, the survey was not distributed due to the COVID 19 restrictions during the past year.
5- **Level of achievement of GOs from Senior Exit Survey:** The form of Senior Exit Survey is presented in Appendix B-6.

### 4.2.2 Frequency of Assessment Processes

Currently, the assessments are being carried out every academic year. However, it is expected to carry out the assessments based on 3 -year cycle when the resources and the processes are well established in the program.

### 4.2.3 Expected Levels of Attainment

The Expected Levels of Attainment (Performance Threshold) have been designated by the Scientific Committee of the CIVIL ENGINEERING, as presented in Table 4.3. Specifically, threshold is the expected percentage of students who meet "Satisfactory" or "Exemplary, according to the rubrics. Different levels of threshold have been assigned for the performance indicators for each outcome. These levels were based on the difficulty to achieve each performance indicator. The performance measure can be calculating as the following.

$$\text{Performance Indictor Measu} = \frac{\text{Number of Students who met Satisfactory or Exemplary}}{Total\ numer\ of\ students}$$

## 4.3 Assessment Results, Evaluation, and Actions for Continuous Improvement

The achievement percentage for each GO are presented in this section. The results are obtained from the direct and indirect measures of the achievement of the GOs based on the various assessment items in the course.
The values of the level of achievement for each GO from indirect assessment are as shown in Figures 4.1.

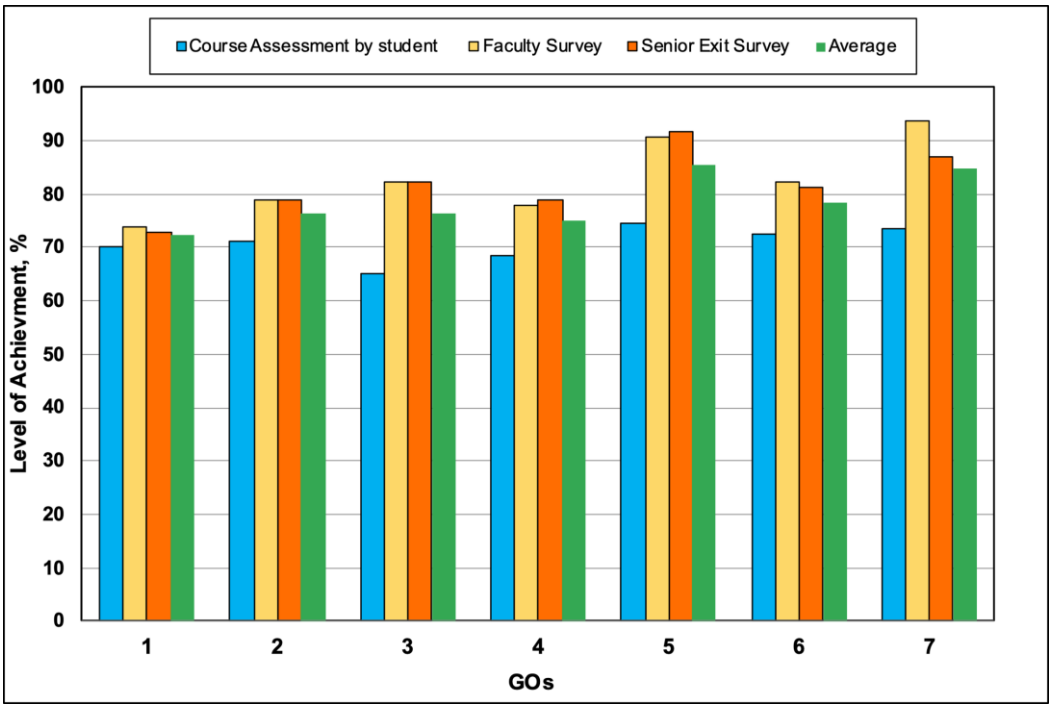


**Figure 4.1. Achievement of GOs Based indirect assessment methods**

The results of the direct measures are based on the results of the performance indicators assessment for each GO as presented below.

## 1. Assessment and Evaluation of Outcome (i)

**Outcome (i): An ability to distinguish, identify, define, formulate, and solve engineering problems by applying principles of engineering, science and mathematics.**

| Performance Indicator | Where summative data are collected | Methods of Assessment | Time of Summative Data Collection | Performance Threshold | Performance Indictor Measures | |
|---|---|---|---|---|---|---|
| | | | | | 2020 | 2021 |
| 1- Formulate the problem and identify key issues/variables | CIVIL ENGINEERING3319, CIVIL ENGINEERING2307 | Final Exam (rubric) | 2020, 2021 | 80% | 60% | 80% |
| | Surveys | Avg. indirect achievement | | | | |
| 2- Applies appropriate solution method using math/science/ engineering principles | CIVIL ENGINEERING3319, CIVIL ENGINEERING2307 | Final Exam (rubric) | 2020, 2021 | 70% | 60% | 71% |
| | Surveys | Avg. indirect achievement | | | | |
| 2- Generates a problem solution | CIVIL ENGINEERING3319, CIVIL ENGINEERING2307 | Final Exam (rubric) | 2020, 2021 | 60% | 60% | 67% |
| | Surveys | Avg. indirect | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | achievement | | | | |
| 4- Evaluates alternative solutions | CIVIL ENGINEERING3319, CIVIL ENGINEERING2307 | Final Exam (rubric) | 2020, 2021 | 60% | 60% | 66% |
| | Surveys | Avg. indirect achievement | | | | |

**Assessment Results Summary (direct measures) 2020:** It should be noted that the 2020 assessment was made based on CAP program that had been used by the faculty for outcomes assessment before adopting the current method of assessment by using performance indictors and rubrics. Therefore, the values of the performance measures were the same for all the indicators. The percent of the sample that demonstrated each indicator at **satisfactory** or **exemplary** were as follows: Indicator #1-54%; Indicator #2-54%; Indicator #3-54%; and Indicator #4-54%

**Evaluation and Actions:** Course outcome assessments showed students relatively weak in problem solving skills. The faculty who was in charge of the assessment met in the Fall of 2020 to review the data and make recommendations for changes during those academic years. Based on the analysis of the results, the faculty recommended change the instructors of these courses, give more homework assignments, solve as many problems in class as possible.

**Second-Cycle Results Summary (direct measures) 2021**: The second cycle summative data were collected in Environmental Engineering and Strength of Materials. Students were required to solve problems during the final exam. Based on actions taken as a result of the 2020 evaluation process, the following improvements were seen in 2021: Indicator #1 up 33% ; Indicator #2 up 18%; Indicator #3 up 12%; and Indicator #4 up 10% (66).

**Evaluation and Actions**: The faculty teaching the related courses who was in charge of the assessment met in the Fall of 2020 to review the data and make recommendations for changes during those academic years. Based on the analysis of the results, the faculty made recommendations to the faulty to give more explanations about alternative solution to improve Indicators #3 and #4. It was recommended to give more homework assignments and solve as many problems in class as possible.

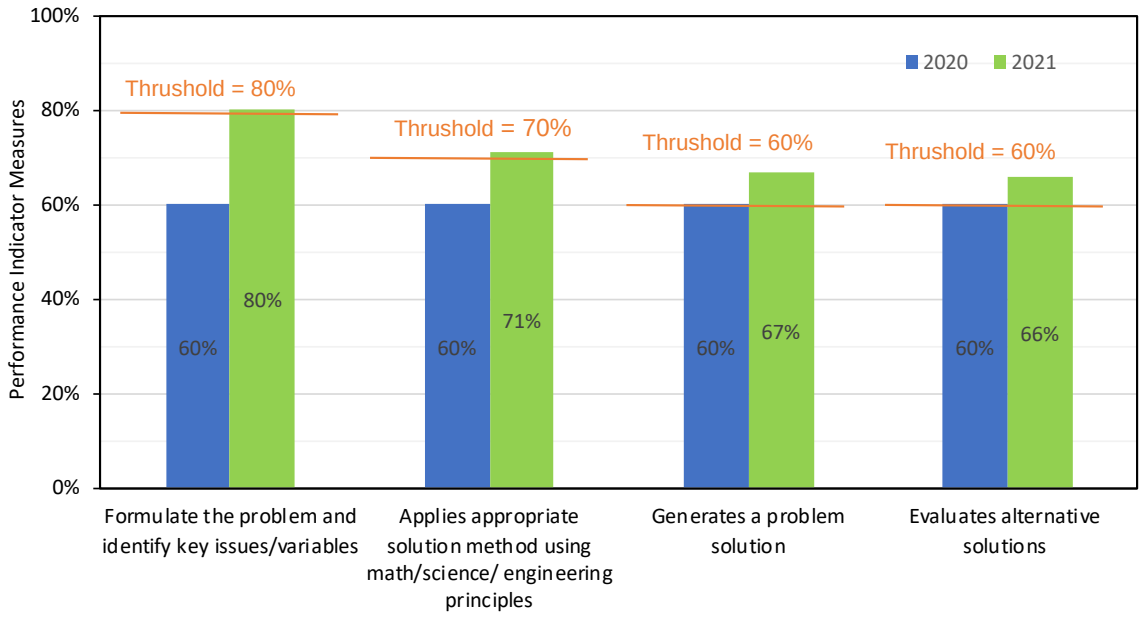


Figure 4.2. Measures and trends of Graduate Outcome (i) over time.

## 2. Assessment and Evaluation of Outcome (ii)

**Outcome (ii): An ability to produce engineering designs that meet desired needs within certain constraints by applying both analysis and synthesis in the design process.**

| Performance Indicator | Where summative data are collected | Methods of Assessment | Time of Summative Data Collection | Performance Threshold | Performance Indictor Measures | |
|---|---|---|---|---|---|---|
| | | | | | 2020 | 2021 |
| 1. Formulate the problem (identify the "need") and analyze constraints | CIVIL ENGINEERING4310, CIVIL ENGINEERING4302 | Project Exam | 2020, 2021 | 80% | 62% | 68% |
| | Surveys | Avg. indirect achievement | | | | |
| 2. Establish "fitness" criteria for evaluating potential solutions and tradeoffs | CIVIL ENGINEERING3319, CIVIL ENGINEERING2307 | Project Exam | 2020, 2021 | 70% | 62% | 71% |
| | Surveys | Avg. indirect achievement | | | | |
| 3. Generate alternative solutions | CIVIL ENGINEERING3319, CIVIL ENGINEERING2307 | Project Exam | 2020, 2021 | 60% | 62% | 66% |
| | Surveys | Avg. indirect achievement | | | | |
| 4. Build a prototype and analyze performance | CIVIL ENGINEERING3319, CIVIL ENGINEERING2307 | Project Exam | 2020, 2021 | 80% | 62% | 73% |
| | Surveys | Avg. indirect achievement | | | | |
| 5. Improve prototype | CIVIL ENGINEERING3319, CIVIL ENGINEERING2307 | Project Exam | 2020, 2021 | 80% | 62% | 72% |
| | Surveys | Avg. indirect achievement | | | | |

**Assessment Results Summary (direct measures) 2020:** The percent of the sample that demonstrated each indicator at **satisfactory** or **exemplary** were as follows: Indicator #1-62%; Indicator #2-62%; Indicator #3-62%; and Indicator #4-62%; Indicator #5-62%

**Evaluation and Actions:** The outcome assessment showed students weak in the ability of producing engineering designs. As previously mentioned, the 2020 assessment was made based on CAP program which was not efficient in measuring the performance in the design activities. The scientific committee of the CIVIL ENGINEERING made recommendations for changes during those academic years by introducing a new style for design projects that are in alignment with the PEO and Graduate Outcomes.

**Second-Cycle Results Summary (direct measures) 2021**: Based on actions taken as a result of the 2020 evaluation process, the following improvements were seen in 2021: Indicator #1 up 10%; Indicator #2 up 15%); Indicator #3 up 6%; Indicator #4 up 18%; and Indicator #5 up 16%

**Evaluation and Actions**: The outcome assessment is still showing students weak in the ability of producing engineering designs. These results are expected as the new style of multi-disciplinary design projects was not familiar for both students and faculty. The scientific committee of the CIVIL ENGINEERING recommended holding workshops to explain how the design process should be accomplished and what is expected from the

students in the design classes. The committee also recommended establish new computer lab, provided with the necessary office and IT tools, which is designated for senior students to work on the design projects. The design courses will be monitored to ensure the requirements continue to be met.

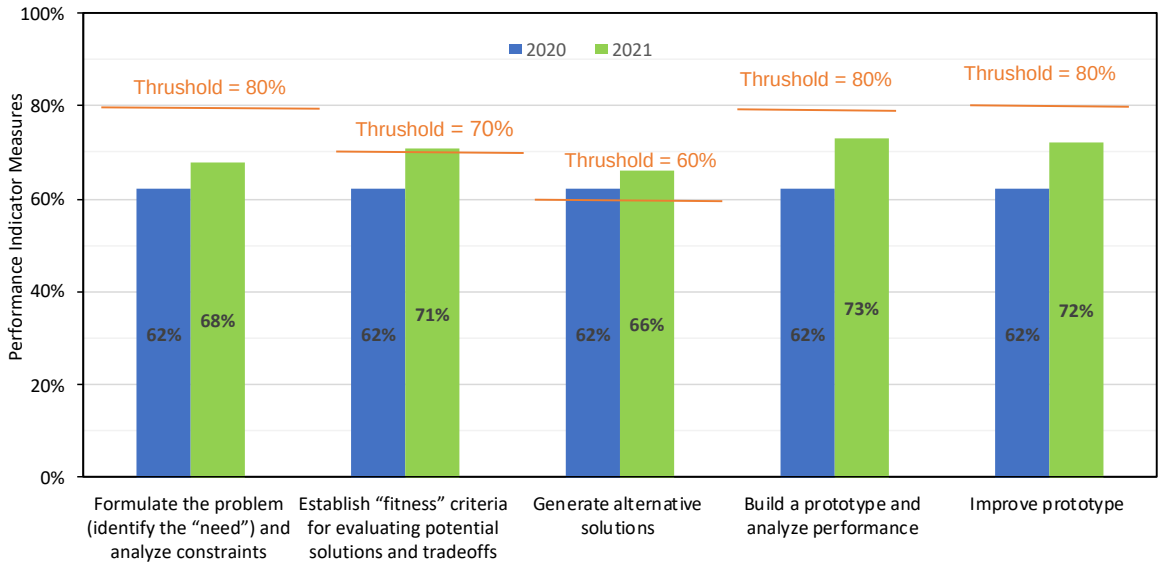


Figure 4.3. Measures and trends of Graduate Outcome (ii) over time.

## 3. Assessment and Evaluation of Outcome (iii)

**Outcome (iii): An ability to create and carry out proper measurement and tests with quality assurance, analyze and interpret results, and utilize engineering judgment to make inferences.**

| Performance Indicator | Where summative data are collected | Methods of Assessment | Time of Summative Data Collection | Performance Threshold | Performance Indictor Measures | |
|---|---|---|---|---|---|---|
| | | | | | 2020 | 2020 |
| 1- Design an Experiment Plan (How to answer the Driving Question?) | CIVIL ENGINEERING2312, CIVIL ENGINEERING3312 | Lab report (rubric) | 2020, 2021 | 80% | 66% | 100% |
| | On-line Survey | Senior Surveys | | | | |
| 2- Acquire data on appropriate variables | CIVIL ENGINEERING2312, CIVIL | Lab report (rubric) | 2020, 2021 | 70% | 66% | 100% |

| | | | | | | |
|---|---|---|---|---|---|---|
| | ENGINEERING3312 | | | | | |
| | On-line Survey | Senior Surveys | | | | |
| **3- Interpret experimental data and results with respect to appropriate theoretical models** | CIVIL ENGINEERING2312, CIVIL ENGINEERING3312 | Lab report (rubric) | 2020, 2021 | 70% | 66% | 66% |
| | On-line Survey | Senior Surveys | | | | |
| **4- Explain observed differences between model and experiment (bad model, bad measurements, noise, etc.) and draw conclusions** | CIVIL ENGINEERING2312, CIVIL ENGINEERING3312 | Lab report (rubric) | 2020, 2021 | 60% | 66% | 67% |
| | On-line Survey | Senior Surveys | | | | |

**Assessment Results Summary (direct measures) 2020:** Data were collected from all the lab that were given. It should be noted that the assessment was made based on CAP program that had been used by the faculty for outcomes assessment before adopting the current method of assessment by using performance indictors and rubrics. Therefore, the values of the performance measures were the same for all the indicators. The percent of the sample that demonstrated each indicator at **satisfactory** or **exemplary** were as follows: Indicator #1-66%; Indicator #2-66%; Indicator #3-66%; and Indicator #4-66%

**Evaluation and Actions:** The faculty who used experiments in their courses met in the fall of 2020 to review the data and make recommendations for changes during those academic years. Based on the analysis of the results, the faculty recommended asking faculty to provide the students the rubrics for Indicators 2 & 3 and give them formal feedback making their scores a part of the grade where appropriate.

**Second-Cycle Results Summary (direct measures) 2021**: The second cycle summative data were collected in the Concrete Lab (CIVIL ENGINEERING2312) and Environment Lab (CIVIL ENGINEERING3312). Students completed two experiments where they were required to develop laboratory reports. Based on actions taken as a result of the 2020 evaluation process, the following improvements were seen in 2021: Indicator #1 up 52% (100%); Indicator #2 up 52% (100%), Indicator #3 up 0% (66%); and Indicator #4 up 1% (67).

**Evaluation and Actions**: The faculty who used experiments in their courses met in the fall of 2021 to review the formative data and make recommendations for changes during this academic year. The assessment results were evaluated by the faculty at a retreat held in August of 20201. The faculty teaching the laboratory courses appointed a committee to review the results. The committee made recommendations to the faulty to give more explanations about the expected results of the experiment before lab to improve Indicator #3.

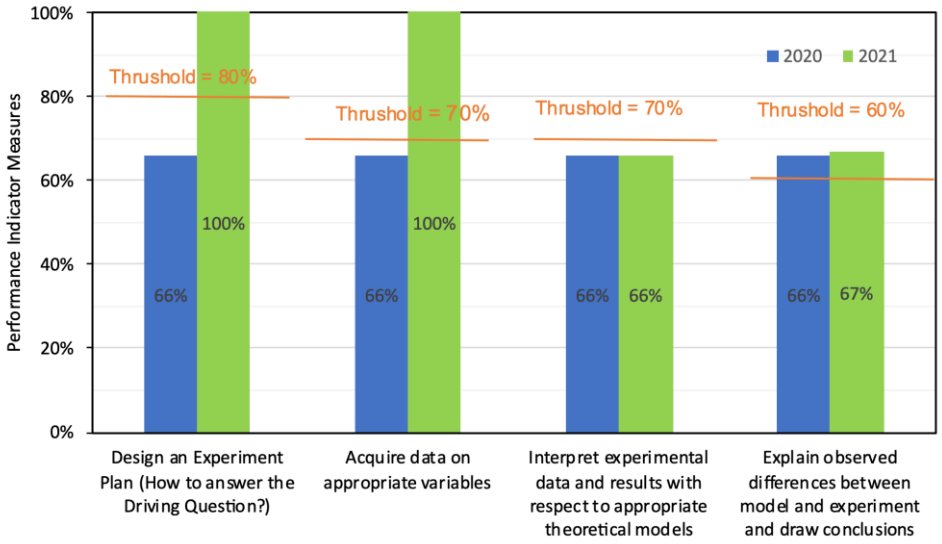


Figure 4.4. Measures and trends of Graduate Outcome (iii) over time.

## 4. Assessment and Evaluation of Outcome (iv)

**Outcome (iv): An ability to skillfully communicate orally with a gathering of people and in writing with various managerial levels.**

| Performance Indicator | Where summative data are collected | Methods of Assessment | Time of Summative Data Collection | Performance Threshold | Performance Indictor Measures | |
|---|---|---|---|---|---|---|
| | | | | | 2020 | 2021 |
| 1. Organize the material | CIVIL ENGINEERING3305, CIVIL ENGINEERING4303 | Project Seminar, Essay | 2020, 2021 | 80% | 71% | 76% |
| | Surveys | Avg. indirect achievement | | | | |
| 2. Present content in own words to demonstrate comprehension | CIVIL ENGINEERING3305, CIVIL ENGINEERING4303 | Project Seminar, Essay | 2020, 2021 | 60% | 71% | 75% |
| | Surveys | Avg. indirect achievement | | | | |
| 3. Provide data to support claims or inform audience | CIVIL ENGINEERING3305, CIVIL ENGINEERING4303 | Project Seminar, Essay | 2020, 2021 | 80% | 71% | 75% |
| | Surveys | Avg. indirect achievement | | | | |
| 4. Demonstrate proper use of English | CIVIL ENGINEERING3305, CIVIL ENGINEERING4303 | Project Seminar, Essay | 2020, 2021 | 60% | 71% | 66% |
| | Surveys | Avg. indirect achievement | | | | |
| 5. Deliver an oral presentation | CIVIL ENGINEERING3305, | Project Seminar, | 2020, 2021 | 80% | 71% | 72% |

| | | | | | | |
|---|---|---|---|---|---|---|
| | CIVIL ENGINEERING4303 | Essay | | | | |
| | Surveys | Avg. indirect achievement | | | | |

**Assessment Results Summary (direct measures) 2020:** The percent of the sample that demonstrated each indicator at **satisfactory** or **exemplary** was 71% for all the performance indicators.
**Evaluation and Actions:** The assessment showed students weak in the identify and appropriately use oral and written communication skills. As previously mentioned, the 2020 assessment was made based on CAP program which was not efficient in measuring the communication activities. The scientific committee of the CIVIL ENGINEERING made recommendations for changes during those academic years by introducing new a style for design projects that are in alignment with the PEO and Graduate Outcomes.

**Second-Cycle Results Summary (direct measures) 2021**: Based on actions taken as a result of the 2020 evaluation process, the following slight improvements were seen in 2021: Indicator #1 up 7%; Indicator #2 up 6%); Indicator #3 up 6%; Indicator #4 down -7%; and Indicator #5 up 1%
**Evaluation and Actions**: The outcome assessment is still showing students weak in the communication skills. It is believed that assessed courses were affected by the COVID-19 pandemic as these courses occurred online in an online format. The scientific committee of the CIVIL ENGINEERING recommended holding workshops to explain these skills and what is expected from the students in the related classes. The courses will be monitored to ensure the requirements continue to be met.

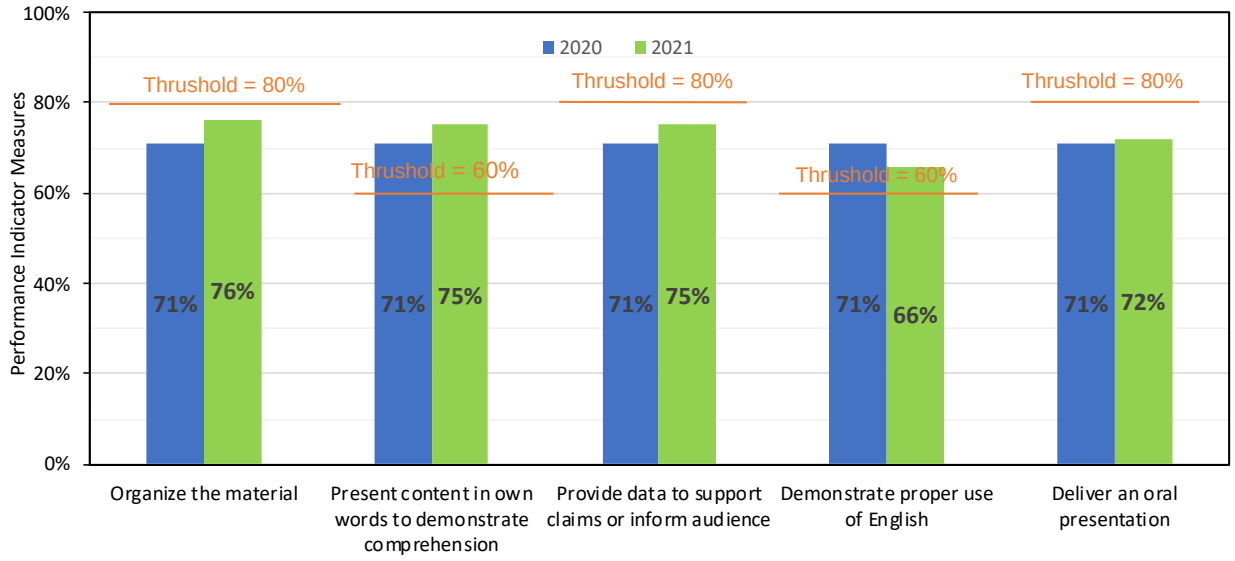


Figure 4.5. Measures and trends of Graduate Outcome (iv) over time.

## 5. Assessment and Evaluation of Outcome (v)

**Outcome (v): An ability to perceive ethical and professional responsibilities in engineering cases and make brilliant judgments taking into account the**

**consequences in worldwide financial, ecological and societal considerations.**

| Performance Indicator | Where summative data are collected | Methods of Assessment | Time of Summative Data Collection | Performance Threshold | Performance Indictor Measures | |
|---|---|---|---|---|---|---|
| | | | | | 2020 | 2021 |
| 1. Identify the global, economic, environmental, and societal context of an engineering situation | CIVIL ENGINEERING4333, CIVIL ENGINEERING4309 | Project Exam | 2020, 2021 | 70% | 71% | 73% |
| | Surveys | Avg. indirect achievement | | | | |
| 2. Describe ethical and professional responsibilities related to an engineering project | CIVIL ENGINEERING4333, CIVIL ENGINEERING4309 | Project Exam | 2020, 2021 | 70% | 71% | 77% |
| | Surveys | Avg. indirect achievement | | | | |
| 3. Explain the impact of engineering decisions in a global, economic, environmental, and societal context. | CIVIL ENGINEERING4333, CIVIL ENGINEERING4309 | Project Exam | 2020, 2021 | 70% | 71% | 73% |
| | Surveys | Avg. indirect achievement | | | | |
| | Surveys | Avg. indirect achievement | | | | |

**Assessment Results Summary (direct measures) 2020:** The percent of the sample that demonstrated each indicator at **satisfactory** or **exemplary** was 71% for all the performance indicators
**Evaluation and Actions:** The students meet minimum expectations for this the outcome. However, the instructor believes that more course instruction would be beneficial.

**Second-Cycle Results Summary (direct measures) 2021**: Slight improvements were seen in 2021: Indicator #1 up 3%; Indicator #2 up 8%; Indicator #3 up 3%.

**Evaluation and Actions**: The students meet the minimum expectations for this the outcome. No action required. However, the instructor believes that more course instruction would be beneficial.

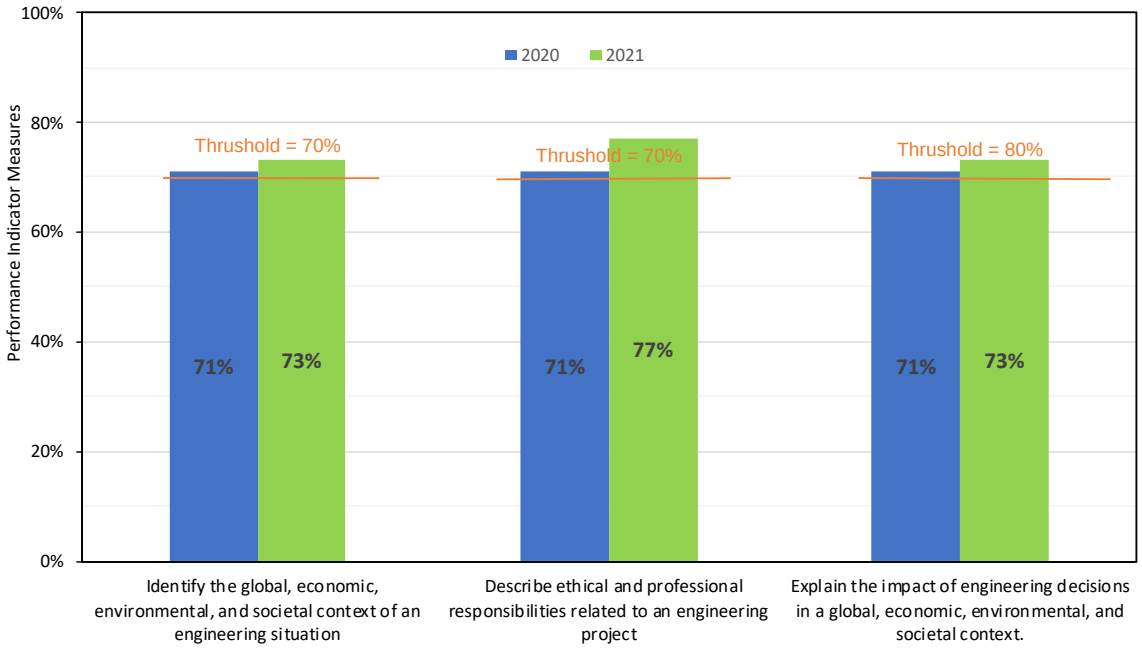


Figure 4.6. Measures and trends of Graduate Outcome (v) over time.

## 6. Assessment and Evaluation of Outcome (vi)

**Outcome (vi): An ability to perceive the continual necessity for professional knowledge growth and how to find, assess, assemble and apply it properly.**

| Performance Indicator | Where summative data are collected | Methods of Assessment | Time of Summative Data Collection | Performance Threshold | Performance Indictor Measures | |
|---|---|---|---|---|---|---|
| | | | | | 2020 | 2021 |
| 1. Identify necessary techniques, skills and tools for a new situation (research) | CIVIL ENGINEERING2309, CIVIL ENGINEERING3308 | Lab Project | 2020, 2021 | 80% | 83% | 95% |
| | Surveys | Avg. indirect achievement | | | | |
| 2. Explain the use of the new techniques, skills and tools (acquisition) | CIVIL ENGINEERING2309, CIVIL ENGINEERING3308 | Lab Project | 2020, 2021 | 75% | 83% | 95% |
| | Surveys | Avg. indirect achievement | | | | |
| 3. Apply the new techniques, skills and tools to the given situation | CIVIL ENGINEERING2309, CIVIL ENGINEERING3308 | Lab Project | 2020, 2021 | 80% | 83% | 85% |
| | Surveys | Avg. indirect achievement | | | | |

**Assessment Results Summary (direct measures) 2020:** The percent of the sample that demonstrated each indicator at **satisfactory** or **exemplary** was 83% for all the performance indicators.
**Evaluation and Actions:** The students meet minimum expectations for this the outcome.

**Second-Cycle Results Summary (direct measures) 2021**: Some significant improvement levels were seen in 2021: Indicator #1 up 14%; Indicator #2 up 14%; Indicator #3 up 2%.

**Evaluation and Actions**: The students meet the minimum expectations for this the outcome. No action required.

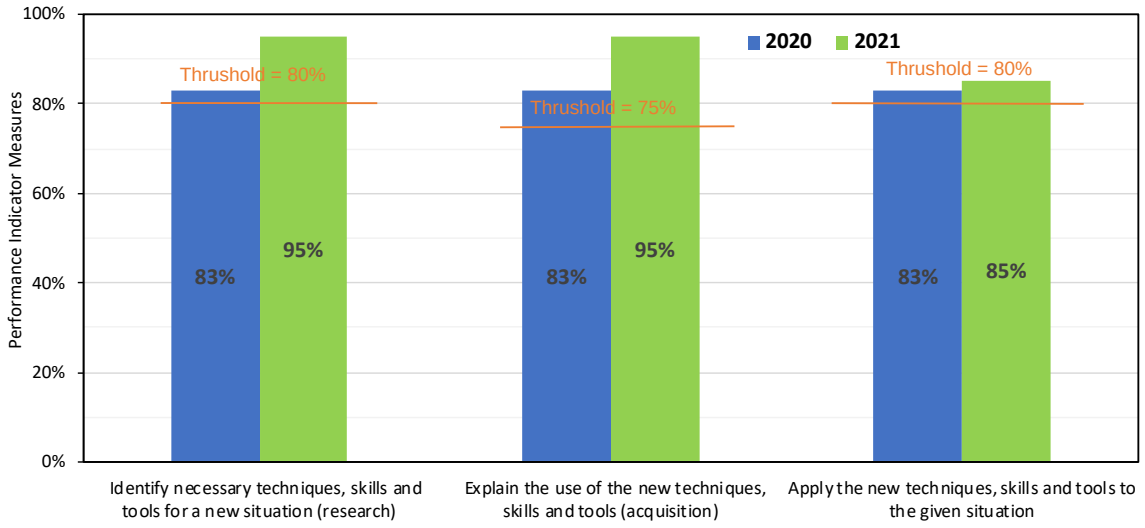


Figure 4.7. Measures and trends of Graduate Outcome (v) over time.

## 7. Assessment and Evaluation of Outcome (vii)

**Outcome (vii): An ability to work adequately on teams and to set up objectives, plan activities, meet due dates, and manage risk and uncertainty.**

| Performance Indicator | Where summative data are collected | Methods of Assessment | Time of Summative Data Collection | Performance Threshold | Performance Indictor Measures | |
|---|---|---|---|---|---|---|
| | | | | | 2020 | 2021 |
| 1. Establish a collaborative and inclusive environment (Teamwork) | CIVIL ENGINEERING3311, CIVIL ENGINEERING4311 | Seminar Project | 2020, 2021 | 80% | 83% | 95% |
| | Surveys | Avg. indirect achievement | | | | |
| 2. Fulfill individual responsibilities and contribute to the team's success. (Individual accountability) | CIVIL ENGINEERING3311, CIVIL ENGINEERING4311 | Seminar Project | 2020, 2021 | 80% | 83% | 93% |
| | Surveys | Avg. indirect achievement | | | | |
| 3. Define team goals and | CIVIL | Seminar | 2020, 2021 | 70% | 83% | 87% |

| | | | | | | |
|---|---|---|---|---|---|---|
| **deadlines, plan tasks, organize & facilitate effective team meetings. (Project management)** | ENGINEERING3311, CIVIL ENGINEERING4311 | Project | | | | |
| | Surveys | Avg. indirect achievement | | | | |

**Assessment Results Summary (direct measures) 2020:** The percent of the sample that demonstrated each indicator at **satisfactory** or **exemplary** was 83% for all the performance indicators.
**Evaluation and Actions:** The students meet minimum expectations for this the outcome.

**Second-Cycle Results Summary (direct measures) 2021**: Some significant improvement levels were seen in 2021: Indicator #1 up 14%; Indicator #2 up 12%; Indicator #3 up 5%.

**Evaluation and Actions**: The students meet the minimum expectations for this the outcome. In light of this outcome, no changes are planned for these courses. The courses will be monitored to ensure the requirements continue to be met.

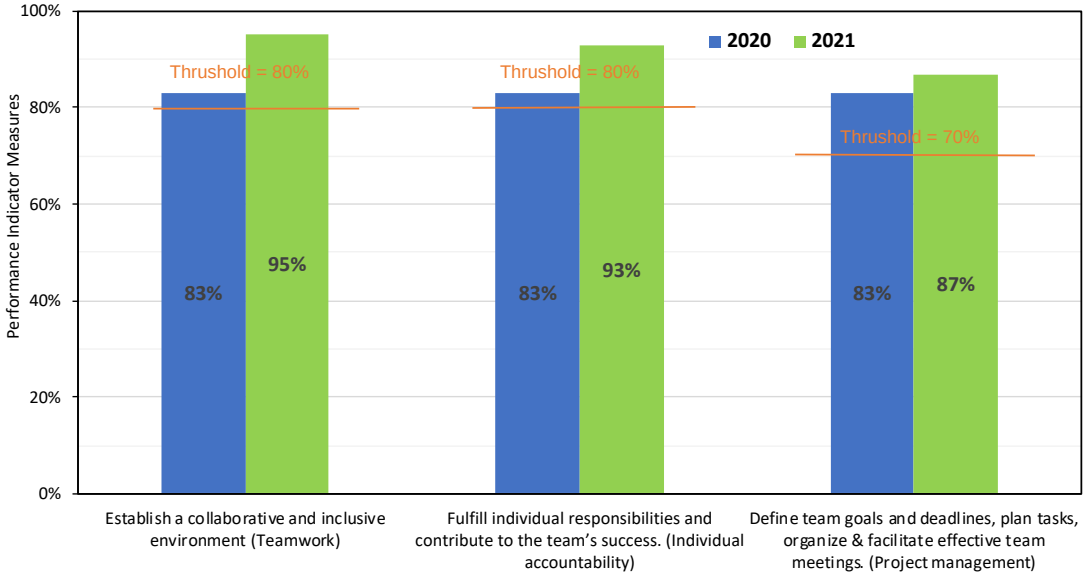


Figure 4.8 Measures and trends of Graduate Outcome (vii) over time.

## 4.4 Summary of Evaluations

Table 4.4 below summarizes the assessment results and any changes (whether or not effective) in those cases where the evaluations has been completed. Also, any significant future program improvement plans are discussed based upon recent evaluations.

### Table 1. Summary of recommendations and actions for continues improvement based on the SO assessment

| SO | Date Recommended | Recommendation | Action | Implemented/ date |
|---|---|---|---|---|
| i | Fall 2021 | -change the instructors of these courses<br>-give more homework | - Instructors have been changed,<br>- more HW and in class | Action pending |

| | | | | |
|---|---|---|---|---|
| | | assignments<br>-solve as many problems in class as possible | problems are being assigned | |
| ii | Fall 2021 | -holding workshops to explain how the design process should be accomplished and what is expected from the students in the design classes.<br>- establish new computer lab, provided with the necessary office and IT tools, which is designated for senior students to work on the design projects. | - More information about the design process has been given in the design classes and the senior design project as well<br>- College Dean has requested a new lab from the University administration | Action pending |
| iii | Fall 2021 | give more explanations about the expected results of the experiment before lab | The labs are being monitored to ensure the requirements continue to be met | Action pending |
| iv | Fall 2021 | holding workshops to explain these skills and what is expected from the students in the related classes | The courses are being monitored to ensure the requirements continue to be met | Action pending |
| v | Fall 2021 | -All students met the performance goals<br>-more course instruction would be beneficial | No action required | NA |
| vi | Fall 2021 | All students met the performance goals | No action required | NA |
| vii | Fall 2021 | All students met the performance goals | No action required | NA |

### 4.5 Additional Information

Copies of any of the assessment instruments or materials referenced in Appendix B and additional documentations will be available electronically at the time of the visit. Other information, such as minutes from meetings from the CIVIL ENGINEERING committees where the assessment results were evaluated and where recommendations for action were made, will also be included.

## CRITERION 5: STUDENTS

### 5.1 Student Admission

**Procedures for student admission and registration in the college:**

**First**: - The admission of the student to the college and specifying the scientific department are to be centralized by the Ministry of Higher Education and Scientific Research - Directorate of Studies, Planning and

Follow-up - Central Admission. this is for all admission channels (central - 10% first over Iraqi institutes - 5% first on technical education - holders of an equivalent degrees) and according to what qualifies, the attained average and the student's desire to choose the college and department mentioned in the application form through the electronic portal of the Directorate of Studies, Planning and Follow-up based on the admission plan sent by the college, specifies the number of students who can be accepted in each scientific department.

**Second: -** Accepted student in the college must register electronically using a prepared registration form of new students by the presidency of the university - Department of Registration and Student Affairs in order to, record his personal information in the 'My University system' to obtain university identification number of all students admitted to University of Anbar and then create an electronic account for each student, the student also will be provided with a password to enter the university electronic systems.

**Third: -** The student must come to the new student reception committee formed in the college within a two-week period from the date of announcing the results of the central admission in Iraqi universities for the purpose of completing the personal file for admission to the college, handing over the required certificates and personal documents, medical examination, registration fees, and also conducting a personal interview to verify the student's physical and health qualifications according to the university valid instructions, completing the form for obtaining university identity and submission of a written commitment to preserve the college's property and to apply all instructions and laws that must be followed during the study period.

**Fourth: -** The college issues administrative orders for enrolled students in the college and informs the scientific departments therein, the student must start attendance within a period of two weeks from the date of issuance of the administrative order, otherwise considered failed due to absence for the current academic year, according to item-9 of the examination instructions, 134 of the year 2000 issued by the Ministry of Higher Education and Scientific Research.

**Conditions for student admission to the college**

1- Must be Iraqi nationality.
2- Must hold the Iraqi secondary study certificate for one of the two branches (biological or applied) or a certificate equivalent to it, supported by the approval
of the General Directorate of Education in the province.
3- Must be successful in the medical examination, according to the applicable health-fitness conditions based on the valid Health Fitness Regulation No. 5 of 1992.
4- Full-time study, it is not permissible to combine study and job.
5- Must be graduated of the current or previous academic year who did not have

central admission or any other admission.

6- The age of the applicant to study at the college must not be more than (24) years old.

### 2.5.2 Student Performance and Progress

**The academic system, the length of study in the college and the permitted years of wastage**

1- The academic system followed in the college, is the semester system consisting of two semesters. Each academic term lasting 15 weeks.
2- The duration of study in the college is four years.
3- For the student to succeed to a higher stage of study, he/she is to succeed in the academic subjects of the stage, or they may fail in two academic subjects. In this case, he/she is considered successful by crossing to a higher stage. The student must succeed with the transit courses in the following academic year. In the case of failure, his/her enrolment in the college is
permanently written off.
4- The student has the right to amend his/her candidacy for admission to another college in the event that he/she does not wish to complete the study in the college, provided that he/she is deferred or failed in the current academic year. The deferred or failed academic year, is not counted within the time limit allowed for the student.
5- The student may postpone his/her studies for one year after presenting reasons that are convincing by the College Council. The President of the University, based on the recommendation of the College Council, may postpone the student's study for a second year. The Minister of Higher Education and Scientific Research or whoever authorizes him and based on the recommendation of the University Council and for legitimate reasons that he/she is convinced to postpone the student's study for a third academic year, provided that the student submits a request for postponement in all cases
before (30) thirty days at least from the start of the final exam.
6- A student may fail two years in the college, provided that they are not consecutive.

**Instructions and regulations that the student must adhere to during the study**

**First: Examination Instructions 134 for the year 2000 and their amendments, the most important of which are:**

**A.** clause (6): The minimum passing score that the student must obtain in order

to succeed in any academic subject is (50%) fifty percent.

**B.** Clause (9): A student is considered to have failed in any academic course if his/her absence exceeds 10% of the hours prescribed for that course without a legitimate excuse and 15% with a legitimate excuse approved by the College Council.

**C.** Clause (12): A student has no right to postpone the second attempt of final exams in any way.

**D.** Clause (19): A student's relationship with the college ends in one of the following two cases:

1. If he/she fails two consecutive years in his/her class.
2. If the student exceeds the total period prescribed for study in his/her major and half of this period (i.e., six years) and the years of postponement and non-failure are not counted as part of that.

**E.** clause (20): If it is proven that the student cheated or attempted to cheat in any of the daily, weekly, monthly, quarterly, or final exams, he/she shall be considered as failing in all courses for that year, and if this is repeated, he/she shall be dismissed from the faculty and permanently closing his/her records.

**Second: Instructions for student discipline in the institutions of the Ministry of Higher Education and Scientific Research No. 160 of year 2007 amended, the most important of which are:**

**A.** The student shall abide by the internal laws and regulations, instructions and orders issued by the Ministry of Higher Education and Scientific Research and
the University.

**B.** Not to prejudice religious beliefs, national unity, or national sentiments by bad or intentionally provoking sectarian or ethnic strife, by word or deed.

**C.** Not to harm the reputation of the ministry or its institutions by word or deed, inside and outside it.

**D.** Avoiding everything that is inconsistent with university behaviour, with high discipline and respect for the administration, faculty and staff, collegial relations
and cooperation with students.

**E.** Preserving the academic supplies and the university and college property.

**F.** Adherence to the uniform prescribed for students by the university.

**The Evaluation process and assessment measures may be summarized as follows:**

**Table 5.1:** The course evaluation process

| Course Type | Progress Exam-1 | Progress Exam-2 | Activities | Lab | Final Exam | Final Grade |
|---|---|---|---|---|---|---|
| Lab. Courses | 15% | 15%% | 10% | 10% | 50% | 100% |
| Regular Courses | 15% | 15%% | 10% | - | 40% | 100% |
| Engineering Drawing | | | | | | |

One exception to this is the Capstone project where the course work is going to be 50% and the dissertation viva will be 50%.
Students who fail or were not able to attend the final examination are allowed to take a second attempt exam. If the student fails to get 50% in the last attempt, he/she will be considered as (FAIL) in that course. The student is allowed to transfer/load two failed courses to the next year level, but if he/she failed in more than two courses, the student must repeat the academic year. Fail to succeed in two successive years, the student will be dismissed from the university.

## 5.3 Students Transfer

### Transfer and scientific set-off standards

**First: - Transfer procedures**

1- Transfer procedures must start from the student's original college exclusively. The letter of non-objection to the student's transfer from the mother college to the corresponding one should provide the study materials that the student passed and the number of courses credit units are attached for the purpose of conducting the scientific set-off. All procedures should be done electronically using the website prepared by the Ministry of Higher Education and Scientific Research.
2- Only successful students (from the first stage to the second and from the second stage to the third) are entitled to transfer.
3- The transfer order for the student from his/her original college is issued after the issuance of a letter of no-objection for the transfer from the college to which he/she wants to transfer to. It is not permissible to register the student in the college to be transferred till the transfer order and his/her going away from the original college are issued.
4- Top students in the departments (Physics, Life Physics and Applied Sciences) are entitled to transfer to the college and be accepted into the electrical engineering department and exclusively through the Ministry of Higher Education and Scientific Research.

5- Students returning to Iraq, who continue to study in the morning shift outside Iraq and studying in one of the recognized universities have the right to transfer to the college provided that their pass rate of students is within the minimum limits for admission to the college and must be through the ministry exclusively.
6- Faculty members' sons/daughters are entitled to transfer to universities in the governorate of their residence in the academic year in which they are admitted, provided that the difference in their pass rate does not exceed the minimum for admission to the college by only (5) five degrees.

**Second: Scientific Set-Off**

A scientific set-off/clearing is intended to make a comparison between the academic courses that the student studied in the original college and in the college to be transferred to. It is the specialty of the scientific committee formed in the department exclusively according to the following:

1- Admission of the student to the same academic stage. If the academic courses are identical between the two colleges (transferred to and from) or differ in one or two courses with the fact that the academic system is identical.
2- If the difference in academic courses between the two colleges is more than two methodological courses, then the student has the choice between getting back him/her to a lower stage of study or cancelling his/his transfer to the college, in the event that he/she chooses to transfer to a lower stage of study, the academic year is not counted within the total time limit allowed for the student.
3- The subjects (human rights, democracy, computer, Arabic language, English language) are not included in the scientific clearing account and the student will be demanded to them during his/her study years.

## 5.4 Students Advising and Extracurricular Activities

Typically, students spend only 30% of their waking hours inside of the college classroom, students have several options for spending their out-of-classroom time. Students involved in extracurricular activities report developing higher confidence, intimacy, mature interpersonal relationships, and purpose.

Involvement in extracurricular activities provides college students with opportunities to meet and connect with other students, explore areas of interest, and contribute to the campus and community. With so many choices available and the pressure to succeed seemingly increasing, students can easily become overwhelmed with their involvement outside of the classroom to the extent that it compromises their academic success.

the necessary organizational procedures were put in place to meet the students through holding meetings under the supervision of the educational

supervisors in the scientific department and all the information for the purpose of guidance and educational guidance as follows:

- The advising unit at the College of Engineering contact the department and provide file for the new students.
- At the department level, there is an advising committee which distributes the students among faculty staff.
- For each student a file is assigned. The file contains all required information pertinent to the student regarding academic progress, behaviour, and attitude.
- The adviser meets the student on regular basis and on demand to monitor his/her progress, solve any problems the student is facing, and advise him/her in any curricular/ extracurricular matters.
- All these procedures are well documented and reserved at the department.

## 5.5 Graduation Requirements

**The requirements for graduation from the college and the mechanism for calculating the overall average and round of the graduation student:**

**First: Graduation requirements**

1- For the student to graduate from the college, the student must pass all the academic subjects that are the requirements of the college and the scientific department.
2- Completion of summer training (summer training means practical application in actual fields of work in government, public, and private sectors that the student practices in order to live part of the practical life of his/her scientific specialization).

3- The student's acquittal from the property of the university, college, and scientific department.

**Second: The mechanism for calculating the student's graduation rate and the attempt he/she graduated from**

1- The overall college graduation average is calculated by multiplying the student's rate in each academic year by the percentage indicated against that, the total academic years is the overall average of the student's graduation.
   - The first academic year (10%) is ten percent.
   - The second academic year (20%) is twenty percent.
   - The third academic year (30%) is thirty percent.
   - The fourth academic year (40%) is forty percent.

2- The number of attempts that the student has completed depends on the graduation requirements to determine the attempt of graduation from the college (first or second). Therefore, the student is considered a graduate of the second round in the event that he/she passes the scientific clearing materials or transit materials in the second attempt even if he/she has successfully passed the courses of the final stage of the first attempt.

# CRITERION 6: FACULTY

## 6.1 Faculty Qualification

Qualified and competent faculty members are key to the success of the civil Engineering Department. Detailed qualifications of the faculty members can be found in the following university of Anbar website: (https://www.uoanbar.edu.iq/Staff_Form.php). The faculty members teach courses, conduct research in their specialty areas, and mentor and supervise students at both undergraduate and graduate levels of the offered programs. The faculty specialization and expertise cover the following CivilEngineering disciplines:

1. Transportation engineering
2. Structural Engineering
3. Concrete Design and Concrete Technology
4. Geotechnical Engineering
5. Construction Management Engineering
6. Environmental Engineering
7. Geomatic Engineering

## 6.2 Faculty Workload

The normal teaching assignment for a full-time faculty in the professorial ranks is 12 credits per semester (including senior design supervision load), and 15 credits per semester for lecturers. The faculty teaching load typically involves preparation for two courses. One of the two courses has one section and the other has two sections making total of nine credits in class teaching. In addition, each faculty member supervises about two groups of senior design project, which is equivalent to two to three credit hours per semester.
The teaching load of faculty holding administrative duties, including Chairs of Departments, Deans and Vice-Deans of Colleges, directors of administrative units, coordinators of programs, and others who are assigned special duties

by the Chancellor are reduced by 3 to 6 credit hours, depending on the position. Faculty members are generally assigned teaching assistants to assist in grading and tutoring. The faculty workload summary is provided in Table 6.2. It includes information in terms of workload expectations and requirements for all faculty members.

### 6.3 Faculty Size

The civil Department has adequate faculty members to cover the teaching load and meet the teaching requirements of the various core areas in Civil Engineering. The Department includes 24 full time faculty members. The Civil Department is keen on attracting high quality experienced professionals, educated from the best universities. The faculty hiring and retention in the Department is consistent with the workforce retention trends in the Iraq as a whole. Most of the faculty members in the Department were educated in the Iraq, Gulf, UK, USA, Malaysia, and Turkey.

Several factors define the Department's needs and allocation in terms of number of faculty. Some of the factors listed below are common to all universities and some are unique to the University of Anbar and similar institutions:

- Numbers of students enrolled.
- Student intake per semester.
- Areas of focus in curricula.
- Strategic focus of Department.
- Flexibility of university in terms of faculty teaching loads.
- Delegation of faculty to special tasks and assignments.
- Minimum class size to open a section.
- Maximum class size to justify opening new sections.
- Faculty leave arrangements.
- Graduate program staffing requirements.

The University requires each department to assess its needs for faculty on an annual basis. At the beginning of each academic year, the department needs are assessed in view of projected teaching and other workload assignments. A series of forms known as the New Faculty Request Forms are completed by the department to indicate the existing faculty workloads, projected workloads, and department needs are filled-out in this regard. Requests for new positions are accompanied by request to advertise the positions in certain venues including the University Website, the Chronicle for Higher Education, Academic Keys, and Research Gate. These requirements are discussed for review and assessment first within the department and college, and then sent to the Vice Chancellor for Academic Affairs for processing within the Senior University Administration system. Upon approval, the positions are advertised. Throughout the process, the Department enjoys full support from the senior university administration and so far, all requests for faculty

positions have been supported as possible. In addition, the Civil Department analyzes students advising and other extracurricular activities requirements to ensure that enough faculty members are available to support these activities. Normally, students seek individual appointments with their assigned faculty advisor or visit their advisors during the office hours to review their progress and performance, and to discuss any issue or concern. Faculty members extend their availability in terms of office hours during intensive advising weeks.

### 6.4 Faculty Development

Faculty members are actively involved in professional development activities. The Civil Engineering Department supports and encourages faculty members to benefit from the various professional development activities offered by the University. The University provides the faculty members with opportunities and support to attend local and international conferences, seminars, forums, workshops, and training programs. Funds for these opportunities are allocated within the College budget. Additional faculty development opportunities are also provided by the Graduate Studies and Research in the form of research grants, establishment and support of interdisciplinary research groups, and research visits to reputable universities and research organizations to help faculty conduct part of their research and collaborate with other researchers.

The University also organizes workshops and forums geared toward enhancing educational process (teaching and learning), training on the use of IT in education, and educational assessment and continuous improvement, where local, regional and international experts are invited to share knowledge and experience with all faculties.

### 6.5 Faculty Authority and Responsibility

The University of Anbar has a well-established decision-making process that outlines the responsibilities and authorities of the faculty as per the University Bylaws. At the Department level, the faculty is primarily responsible for all curricular and academic affairs related to the program. This includes deciding on which courses are required within the curricula and determining what new positions are needed, and in which areas. Important decisions related to the curriculum or hiring for vacant positions involve the formation of designated committees to analyze the requirements and to bring recommendations to the Department Council for deliberation and approval.

The development and implementation of the assessment, evaluation, and continuing improvement of the curricula and courses are primarily a faculty responsibility. Every course is assigned a coordinator (i.e., course

coordinator) who is responsible for course updating, maintenance, and development. To improve or add new courses, faculty members and course coordinators follow a systematic procedure that is well-established.
The Civil Department has representatives on the College-level and University-level committees that coordinate academic and administrative activities across the CIVIL ENGINEERING Department, the College of Engineering, and the University. This coordination includes identification of best practices, sharing of central data, and ensuring communication concerning basic logistics, procedures, and deadlines.
The University Bylaws specify the duties and responsibilities of faculty members. The main duties are the following:

1. **Teaching:** Teaching and curricular development are the main duties of faculty members at the University of Anbar.
2. **Research:** Faculty members are expected to actively engage in and lead relevant research, publish their research findings in recognized specialized journals, and present their results at regional and international forums and conferences.
3. **Academic Advising:** Faculty members are assigned academic advising duties to guide students through completing their graduation requirements, assist students with relevant academic issues during their studies, and to help them graduate from the University.
4. **Contribute to Administration:** All faculty members are expected to contribute to the development of the university and get actively involved in relevant committees and tasks at the Department, College and/or University levels.
5. **Community Service:** This entails serving the local community and the profession through providing services and leadership to fulfill their needs and contributing to their advancement.

Table 6-3 shows the weights allocated by the university for each of the five performance categories. The University is planning to give flexibility to the faculty members in terms of distributing their efforts between teaching and research in order to release research active faculties from part of the teaching load if possible.

**Table 6.3:** Assigned Weights for Faculty Involvement in Academic Duties

| Faculty Activity | Allocated Points for Faculty in Professional Ranks | Allocated Points for Lectures |
|---|---|---|
| Teaching | 38% - 53 % | 70% - 90% |
| Research | 15% - 35% | N / A |
| Student Advising | 0.5% | 5% |
| Administrative Service | 5 – 10% | 5 – 10% |
| Community Service | 10% | 5 – 10% |

# CRITERION 7: ADMINISTRATIVE SUPPORT

## 7.1 Leadership and Administrative Services

CivilEngineering Department (CIVIL ENGINEERING) has a clear organizational structure that is updated at the start of every academic year. The Department Chair assumes the leadership of the B.Sc. in the field of Civilengineering Program. Dr. Jumaa A. Al-Somadaei assumed the position of acting department chair effective beginning of Summer 2019. Prior to that, Dr. Sadeq O. Sulaiman was the Department Chair, where the Department Chair meets with the College Dean on a regular basis to discuss the department matters. The chair is entitled to a quarter teaching load reduction along with a monthly financial allowance.

The responsibilities of the department chair include preparation and management of the department's annual evaluation of faculty and staff. The chair also leads the process of planning to hire candidates for full-time academic and non-academic positions, at the department level, based on deliberations of appointed search committees and the department council.

Each faculty member, staff, and employee in the department has a defined function and role. Both faculty and staff in the Department have a role in the decision making through the various functions and committees that they participate in, with the council of faculty members serving as the ultimate forum in which issues are discussed and decisions are made at the department level. Formal minutes of meetings of the Department Council and committees are recorded and approved by all members. The roles of Faculty, Department Chair, Department Council, College Dean, College council, and other individuals and entities are well defined in the University Bylaws. The Department's organization chart is shown in Fig. 7.1.

**Chairperson's Role**

1. Preparation of department's needs after consultation with other faculty and staff members in the department so that it can be taken into consideration when the budget is prepared.
2. Maintaining records for the activities of the department, university documents relating to the department and supervision of their use in accordance with rules and practices followed in the University.
3. Supervising the selection of course textbooks and references.
4. Proposing the distribution of courses to be taught among staff members and submitting it to the Departmental Council.
5. Encouraging academic research and assisting faculty members in conducting research.
6. Distributing students amongst academic advisors and following up the progress of their study plans.

**Faculty Role**

1. Teaching and conducting examinations.
2. Conducting original research.

3. Supervision of dissertations, student research and student academic and social activities.
4. Academic advising.
5. Participation in University committees and in councils and committees which the University approves or participates in.
6. Devoting himself to his academic duties at the University and maintaining the levels appropriate to the University position and reputation in the fields of research, teaching, guidance, and administration.
7. Performance of any tasks requested by the President or College Dean given that such tasks are not incompatible with the nature of their work.
8. Serving the local community and fulfilling its needs.

**Staff Role**

Staff member's duties include conducting administrative tasks, lab supervision and taking care of technical issues. The main responsibility of staff is providing support services, such as secretariat, lab supervision and budget preparation that are necessary for the support and success of the program.

## 7.2 Faculty Support

### 7.2.1 Faculty Recruitment

The university requires each department to assess its needs from faculty members at the beginning of each academic year. These needs are assessed due to the expected teaching and other workload tasks. These requirements are discussed and approved first within the department and college, then forwarded to the Vice President for Scientific Affairs for processing. Upon approval, positions are announced after the financial support is available from the Ministry of Finance.

### 7.2.2 Faculty Retention and promotion

The promotion of the faculty was performed by special committee in each department. The regulations of the promotion were set by the ministry for all Iraqi Universities.

### 7.2.3 Faculty Development Support

CIVIL ENGINEERING department holds several seminars specifically for postgraduate students to share and discuss ideas and assessment the progress in their projects. Academic visits to water resources projects such as barrages and dams is another activity to engage students with the real life of engineers. Competition of final year project is organized by CIVIL ENGINEERING department is proposed to encourage students in the final year produce the

best within their projects. In addition, workshops in different subjects are hold through the academic year to help students reaching the goal of program and for staff as training chance to upgrade their skills.
Educational and Technology Courses are organized in continuing education center to teach the new staff how to teach, these courses were organized periodically for new member of staff.
The teacher is rated by the Quality Assurance Committee using special form prepared by the Ministry of Higher Education and Scientific Research.
The professional development efforts represent a prime objective of the university. Development is administered by the Ministry (Research and Development in the MOHESR). There is an office in the Ministry responsible for supporting financially the research works in the universities. Also, the university has its own budget for supporting professional activities at the university level.

### 7.3 Technical and Administrative Staff Support

#### 7.3.1 Staff Size and Qualification
The program has sufficient staff of administration to support the faculty. Also, the program has several experienced engineers (mechanical and electrical) to run the labs.

#### 7.3.2 Staff Recruitment and Retention
The staff are currently adequate to support the teaching needs of the program and therefore, there is no plan to hire new personnel.

#### 7.3.3 Staff Development
The department organized different courses through the center of continuing education in several areas, including the use and applications of computer systems, maintenance and how to use them in administrative work.

## CRITERION 8: FINANCIAL SUPPORT

### 8.1 Funding Resources

The budgets for all departments were set by ministry every year according to central budget of the Ministry. There is also fund box of higher education support all Iraqi University for specific purposes. There is no specific percentage for the branches. However, there are some other funding resources like the Consultancy Bureau and evening study if applicable.

### 8.2 Program Budget

**In the department, the budget is typically prepared in the following manner**

1. The College of Engineering has initiated a strategic planning process that serves in part as the basis for communicating to the University the status, priorities, strategies, and budget needs.
2. The College compiles an overall budget based on budget requests from all Departments and submits the budget to the University.
3. The Vice-President for Finance and Administrative Affairs and members of the Finance and Administrative Affairs Unit discuss the budget request from the College with the Dean and faculty from the College, usually the Chairpersons and Assistant/Vice-Dean. The meeting is typically held for purposes of seeking clarifications and discussing requests in view of university policies and requirements.

4. Colleges are informed of approved budgets and details of approved items. The College of Engineering then discusses the budget in the College Board, and Departments start spending as per standard university procedures.
5. The Finance and Administrative Affairs Unit, with its various Departments and Units, exercises proper control over purchasing and inventory management.

### 8.2.1 Teaching and Learning Financial Support

The Department manages and monitors its own budget, which includes all the operating expenses of the Department and capital equipment for continuous improvement of undergraduate laboratories. The categories include maintenance and repair, functional operations of undergraduate laboratories, over-load teaching, educational support, and staff salaries.

### 8.2.2 Facilities Financial Support

This category includes facilities requirements. Each faculty room should have desk for each faculty, laptop for each faculty, air conditioning.

### 8.2.3 Faculty Financial Support

This category includes faculty salaries, overload teaching, evening load teaching and educational support.

### 8.2.4 Staff Financial Support

This category includes staff salaries, evening load lab teaching and educational support.

# CRITERION 9: FACILITIES

The space and facilities allocated to the College of Engineering are adequate to allow all departments of the College to successfully run and deliver their academic programs. In particular, the CivilEngineering Department occupies ample space within the College of Engineering and the University. The Department also utilizes classrooms and laboratories located in the adjacent buildings. A summary of offices, classrooms, and laboratories is described below.

## 9.1 Built Spaces and Associated Equipment

### 9.1.1 Offices

All offices (for faculty and staff) are fully equipped with up-to-date computing and printing facilities. Based on the needs, the faculty members may also be provided with a laptop computer, individual scanner, color printer, and other accessories. Each faculty is eligible to request other facilities and equipment that may facilitate his/her academic and research work in order to achieve the student outcomes. These requests are processed through the yearly budget requirements of the CivilEngineering Department.

### 9.1.2 Classrooms

Classrooms across the College are adequately equipped with all basic needs and technologies to provide support for teaching and learning activities, including students' desk, a large white board, an overhead projector. Wireless internet connections are available in the department. The CivilEngineering Department utilizes 6 classrooms with total capacity of 400 seats. Projectors and Data-shows is used to enable lecturers deliver the course requirements.

### 9.1.3 Laboratory facilities

The Central Laboratories Unit, which reports to the Deanship, is the administrative unit responsible for operating and managing all laboratories at the College. The duties of The Central Laboratories Unit include space

management, buildings maintenance, purchasing new equipment, equipment maintenance, store services, inventory, safety, and training.
The Central Laboratories Unit administers all the labs for the College of Engineering.

### 9.1.4 Campus infrastructure and supportive facilities

The University of Anbar have all the necessary infrastructure necessary for students, faculty, and staff. These facilities include main library, sport facilities for football, basketball, tennis, volleyball and others, student's center for food and rest, faculty center and gardens and student hostels.

## 9.2 Computing Assets

In The CivilEngineering Department general computer support is available by an expert team in the computer lab. Generally, Lab hours are 9 am to 2pm, through Sunday to Thursday (excluding the national holidays).
The most commonly used computer lab by CivilEngineering Department is located in the main Building. This computer laboratory composed is (20) Laptops, projectors. The software that is used within the curriculum includes Microsoft Office applications, MATLAB /Simulink, AutoCAD, and GIS. All the computer hardware and software systems more than adequately support the CIVIL ENGINEERING program educational objectives and outcomes.

## 9.3 Students Direction and Safety Precautions

The program in The CivilEngineering gives the candidate a high level of experience in both theoretical and experimental study. To achieve this, different ways are used for example lectures prepared by teaching staff according to the universal level are available to students. To ensure the engaged of theoretical and experimental aspects, the supervisory team who is responsible about each laboratory prepares a guideline book for each lab. Besides, workshops and seminars can add another option to accomplish the criteria of CIVIL ENGINEERING engineering requirements.

## 9.4 Maintenance and Upgrading of Facilities

The maintenance unit at engineering college is responsible for insuring and maintaining all laboratory equipment and facilities from their own budget. The maintenance unit typically organizes maintenance and insurance agreements with various specialized firms and coordinates such activities with the concerned academic department. This arrangement has worked effectively so far.
During the second semester of every academic year, each academic department prepares a detailed budget request for the upcoming academic year. In the budget, the department indicates its budget request for laboratory equipment based on the needs identified by faculty members and laboratory engineers in the different disciplines of the program.

A department budget request is added to the requests made by other departments in the College to form the College Budget request. The College Budget request is forwarded to the Vice Chancellor for Administration and Financial Affairs then discussed in the presence of the Dean, Vice Dean and other College representatives with the Vice Chancellor and members of the University Financial Affairs Committee. Upon review, the budget is handled by senior administration and eventually approved.
At the beginning of each new academic year, the college receives a copy of the approved budget. The budget is then forwarded to the departments and each department spends according to its approved share of the budget. The department forwards its requests for equipment with the required technical specifications. The Purchasing Department processes the requests and seeks three bids from potential suppliers. The bids are forwarded to the requesting department to check whether the technical specifications are met; finally, the Purchasing Department acts upon the recommendations of the requesting department.

### 9.5 Library Services

The college of engineering has an excellent library to provide students by textbooks, journals, and PhD students-thesis. In a very professional way students can loan any book form the library. Library is managed by an expert team. Hundreds of books are available for students though the working hours of library and can be loaned to help student achieve the course requirements. Besides, e-books are available for students. Overall, library successfully introduces an acceptable level of service.

### Overall Comments on Facilities

Currently, all facilities are acceptable in terms of students and other staff can do their aim successfully. However, financial issue is the most challenge to maintain and upgrade the current facilities. Most laboratories in The CivilEngineering department need for new devices and allocated area for each lab should be extended. This can be considered the main parameter in achieving the purpose of the academic program.

On the other hands, in order to safely accomplish program objectives, the following safety measures are taken in all facilities of the the CivilEngineering.

**Fire Safety:**

All laboratories, classrooms halls, and corridors are equipped with fire extinguisher. In some laboratories, sand buckets are also provided for extinguishing fires in machines and equipment.

**First Aid:**

First aid kits are available in all laboratories and main corridors where faculty offices are located. All personnel of the College of Engineering are financially

supported to participate in safety and first aid trainings regularly provide by the University Center for Continuing Education.

**Personal Protective Equipment:**
All laboratories are equipped with personal protective gears, when needed, including:

- Safety gloves
- Masks
- Lab coats
- Safety goggles
- Safety shoes
- Helmets
- Face masks (for sparks, chips, etc.)

## SPECIFIC PROGRAM CRITERIA

Civil Engineering program lies under the Civil Engineering Ambarella. Specific program criteria are taken from the ICAEE requirements in addition to the usual University/College/Departmental requirements.
The criteria set the following requirements:

**PROGRAM CRITERIA FOR CIVIL ENGINEERING**
**(And similarly named engineering programs or similar modifiers in their titles) Curriculum**

The curriculum must prepare graduates to apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of basic science; apply probability and statistics to address uncertainty; analyze and solve problems in at least four technical areas appropriate to civil engineering; conduct experiments in at least two technical areas of civil engineering and analyze and interpret the resulting data; design a system, component, or process in at least two civil engineering contexts; include principles of sustainability in design; explain basic concepts in project management, business, public policy, and leadership; analyze issues in professional ethics; and explain the importance of professional licensure.

All the above requirements are fulfilled through the CIVIL ENGINEERING program extensive curriculum.