

King Saud University

College of Architecture and Planning

Department of Architecture and Building Sciences



المركز الوطني للتقويم والاعتماد الأكاديمي
National Center for Academic Accreditation and Evaluation

Quality and Assurance Manual

Master of Architecture

2018

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1. Introduction

Quality management and continuous improvements have been embraced at King Saud University by both management and faculty at all levels. The university has created a designated Vice Dean in each college for quality and development that has direct oversight of all quality, national and international accreditation and development planning.

The Program Head is the key person responsible in the cyclical process and is his assurance that the quality of the administration is perpetuated.

In general, the next points are concluded:

- All teaching and other staff participate in self-assessments and cooperate with reporting and improvement processes in their sphere of activity.
- Creativity and innovation combined with clear guidelines and accountability processes are actively encouraged.
- Mistakes and weaknesses are acknowledged, and dealt with constructively, with help given for improvement.
- Improvements in quality are appropriately acknowledged and outstanding achievements recognized.
- Evaluation and planning for quality improvement are integrated into normal administrative processes.

The full functionality is operated by two main quality committees which are the College Quality Accreditation Committee and Program Quality Accreditation Committees (QAC) for each program. In Department of Architecture and Building Science (DABS) in addition to QAC, the M.Sc. Committee of Architecture and Building Sciences (MCABS) are mainly responsible to assure program quality.

1.1 Quality and Accreditation Committee (QAC)

The QAC is directly related to program and course assessment and evaluation. Resources are available for regular formal assessment; among these are the Exit surveys, alumni surveys and employer' surveys. An important role of this committee is to ensure adequate assessment sources and that direct and indirect measures are available for assessment of objectives and outcomes. Some of the QAC responsibilities that are related to assessment are to:

- Review direct and indirect assessments for all courses;
- Check that corrective actions proposed by faculty members are adequate and follow their implementation;
- Analyze the exit, student, and training surveys;
- Aggregate the course direct and indirect assessment data, and produce the program outcomes assessment;
- Analyze the employer and alumni surveys;

- Suggest corrective actions related to the teaching environment and conditions, the Student Intended Learning Outcomes, and the program objectives.

1.2 M.Sc. Committee of Architecture and Building Sciences (MCABS)

The objective of this committee is to maintain the quality of the programs offered by the DABS department. It aims to continuously improve programs and plan with respect to standard recommendations and best practices. The main tasks of the committee are to:

- Review requests from faculty for approval of course modifications;
- Review requests from faculty for approval of new courses;
- Review requests for approval of program modifications, including termination of existing programs or tracks;
- Review requests for approval of new programs, to ensure the programs are needed and that proper curriculum development techniques were employed;
- Recommend changes to course syllabus, course description, textbooks and programs;
- Review and approve all revised curricula to ensure that the changes are logical and will improve the program, and meet the market needs;
- Review and approve all new programs and revised curricula to ensure that the curricula comply with all standards.
- Analyze assessment results from QAC and recommend corrective actions;
- Develop, review periodically, and when necessary suggest modification of the procedures for approval and review of courses or programs.

2. Program Development Processes

2.1 The four stages cycled process "PIAR"

The dept. of architecture and building science has a concrete process for developing the academic programs that belong to the department.

As a policy, dept. of architecture and building science uses four stages cycled process called "PIAR" (which means "Plan – Implement – Asses - Recommend") for continuous development of the program (Fig. 1).



Figure 1: PIAR process

Stage 1: Planning

The planning process of establishing the program depends on the essential resources such as:

1. Reviewing the program Mission.
2. The required specifications of the graduates by the community and labor market (employers).
3. The National Qualification Framework of the Kingdome of Saudi Arabia that identified the intended learning outcome of the program level.
4. Reviewing the beer-programs and the competitor programs in the labor market.
5. The up-to-date knowledges and skills in the field of the program.
6. The recommendations and specifications of specialized boards and associations (national or international).
7. The best practices in the field of the program (such as teaching strategies-assessment strategies ...etc.).

8. The recommendations and the action plan received by the dept. council (as a result of the internal and independent review process).

The output of this stage is:

- Program Specifications and courses specifications which present the academic plans of action in the program level and course level.
- The benchmark program for the purpose of comparing the performance of the program.

The main procedures in this stage include:

1. Establishing a committee for proposing/developing/reviewing the program.
2. The committee study the program mission and running the needed studies to conclude the program specifications in-detail.
3. The committee submits its report and outputs to the head of the department.
4. The head of the department may send the suggested program/improvements to an independent reviewer to review it.
5. The head of the department discusses the proposal of the program or the changes proposed with the dept. council.
6. If there are major changes in the program specifications (especially changes in the curriculum), the dept. council take the suitable decision towards the suggested proposal/changes and submit it to the college council.
7. The college council takes the suitable decision towards the suggested proposal/changes and submits it to the academic affairs of the university.
8. By getting the agreement by the university, the department begins the next stage.

Stage 2: Implementing

The plan implementation is the responsibility of the head of the department and monitored by the dept. council then the vice-dean for the academic affairs then the college council. In this stage, professors and instructors implement the proposed academic plans that identified in the program specifications generally and the courses specifications especially.

The department has a set of procedures to manage this stage includes:

1. Assigning a course coordinator for each course.
2. The course coordinator holds a preparatory meeting with the course instructors to discuss the changes in the course specifications made by the dept. council (as the main output of stage1).
3. At the end of the semester, instructors submit a section report to the course coordinator.
4. The course coordinator discusses the report results in the specialized committee that he belongs to it.
5. The course coordinator submits the course report to the head of the department and the program reviewing committee.
6. The specialized committees submit its reports to the head of the department.

The outputs of this stage are:

- Section reports by instructors and professors.
- Course report by the course coordinator.
- Reports by the specialized committees

Stage 3: Assessing

The main procedures in this stage include:

Running the Self-reviewing through:

- Internal Reviewing (for program and courses specifications, sections and course reports... etc).
- Student Satisfaction Survey.
- Course evaluation Survey.
- Faculty Survey
- Alumni Survey.
- Employers Survey.

Running the Independent Reviewing through:

- Independent Reviewers (if any).
- NCAA Reviewers (if any).
- Running the Program Intended Learning Outcomes (PILOs) assessment.

The outputs of this stage are:

- Reports of the internal reviewing.
- Surveys results reports.
- Independent reviewing reports.
- Report of assessing the PILOs achieving.

But the most important point of these reports is the recommendations issued in each report.

Stage 4: Recommending

The main procedures in this stage include:

1. Preparing the program report that includes the conclusion of all assessment processes and its recommendations.
2. Submitting the report to the dept. council.
3. Discussing all aspects of the implementation process. in the dept. council
4. Discussing the assessors' recommendations in the dept. council.
5. The dept. council takes the suitable decisions related to the submitted recommendations and its action plan.

The outputs of this stage are:

- Department council decisions.
- An Action plan for improving the program included in the program report.

The next stage: back to stage 1 to begin the process

2.2 Program Evaluation and Review Processes

The department of Architecture and building science uses a concrete process for evaluating and reviewing the program. This process includes two main axis.

2.2.1 The Self-Reviewing and Evaluation:

In this axe, the department uses the next tools to get the weak points and the recommendations for improving the program aspects:

- 1- The “Internal Reviewing Committee ”: This committee reviews the essential documents of the program such as Program Specifications, Courses Specifications, Courses reports, Program Report. The Internal Review Committee submit a review report that includes recommendations for improving to the head of the department. The head of the department discusses the report in the dept. council.
- 2- The Students Experience Survey: This survey measures the opinion of the last year students towards the different aspects of the program. The results of this survey used by the dept. council to improve the weak points of the program. On the other hand, the results of this survey are very important input in the process of assessing the program intended learning outcomes (PILOs).
- 3- The course Evaluation Survey: The students of all courses submit a response through the academic gate of the university. The results of this survey used by the instructor to improve the weak points of the course. On the other hand, the results of this survey are very important input in the process of assessing the program intended learning outcomes (PILOs).
- 4- The Alumni Survey: The results of this survey are very important input in the process of assessing the program intended learning outcomes (PILOs) beside its rule in exploring the week points of the program and its aspects.
- 5- The Employers Survey: It is a very important tool because the employers are the main user of our graduates, which represents the outpost of the teaching and learning process. The dept. invites the different types of employers that use the graduates of the program to evaluate the program regarding to the quality level of its graduates. The feedback of the employers helps the dept. to improve the program as well as assessing the real properties of the graduates.

2.2.2 The Independent Reviewing and Evaluation:

In this axe, the department uses the next tools to get the weak points and the recommendations for improving the program aspects:

- Inviting Independent Reviewer to review the program aspects and activities.
- Independent Reviewing by NCAAA

The time-frame of this process is shown in table1 :

Table 1: Process and plan of Reviewing the Program

Axes of reviewing	Tool	Responsibility	Time frame
Axe 1: The Self-Reviewing and Evaluation	Internal Reviewing Committee	Head of Architecture and Building Science dept.	The beginning of the new academic year
	Students Experience Survey	Survey committee.	End of the semester
	The course Evaluation Survey	The academic gate of KSU	End of the semester
	Alumni Survey	Survey committee.	End of the academic year
	Employers Survey	Survey committee.	End of the academic year
Axe2: The Independent Reviewing and Evaluation	NCAAA reviewing	NCAAA	Periodically
	Independent Reviewers	Head of Architecture and Building Science dept.	2 years cycle

3.The Program Goals (PGs)

The Program Goals (PGs) of the DABS master program describe the expected attainments of graduates after the first few years following their graduation. By the completion of their MSc of Architecture and Building Science graduates will have:

- **PG1. Attracting qualified local and international graduates and training them to excel in scientific research in architecture and building sciences.**
- **PG2. Providing students with intellectual, professional and research skills in architecture and building sciences within ethical standards.**
- **PG3. Producing research in architecture and building science and publishing it in local and international scientific publishing channels.**
- **PG4. Meeting the requirements of the development in the Kingdom of Saudi Arabia of researchers and researchers in architecture and building sciences.**

The Program Goals are posted on the DABS website:

<https://cap.ksu.edu.sa/ar/master-program>

They are also published in the student’s guide and flyers given to prospective students.

3.1 Consistency of the Program Goals with the Mission of the Institution

The DABS master program PGs are closely linked to, and consistent with, the mission of the DABS which is in turn consistent with the Collage and KSU missions and contribute toward its success. The DABS contributes in a significant way in fulfilling the institutional missions by providing graduates who are competitive in the workplace and in covering the needs of local and regional Architecture communities in terms of Architectural professionals. Furthermore, a significant portion of our graduates pursue PhD studies locally or abroad in well ranked universities. Most of those finishing their postgraduate studies are first hired as teaching assistants or lecturers in KSU or other universities. More specifically, PG #1 and PG #3 support the effort of the institution to foster creative and innovative research. PG #2 address responsibilities and ethical values and focus on the individual abilities and soft skills for self-development. PG #4 supports the leadership and competitiveness levels that both the college and the University expect to reach regionally and worldwide in all sectors related to the Architecture field in general.

In summary, the consistency the Master program mission statements and PGs with the goals and mission statements of the Collage can be summarized as shown in Table 2.

Table 2: Consistency of Master PGs with Collage mission statement

		College Mission	College Goals					
		Providing distinguished education and innovative scientific research that serves the profession and society in the areas of the built environment.	Quality and excellence in education and scientific research	Raising graduates' level of proficiency.	Creating Supportive Educational Environment	Enhancing Abilities of Faculty Staff Members	Building Supportive Administrative System	Forging Societal Partnership
Program Mission	Preparing professionals in the field of Architecture and Building Science with capability for research and further knowledge, to participate in all aspects of urban development.	✓						
Program Goals	PG1. Attracting qualified local and international graduates and training them to excel in scientific research in architecture and building sciences.		✓		✓			✓
	PG2. Providing students with intellectual, professional and research skills in architecture and building sciences within ethical standards.			✓	✓			
	PG3. Producing research in architecture and building science and publishing it in local and international scientific publishing channels.		✓					✓
	PG4. Meeting the requirements of the development in the Kingdom of Saudi Arabia of researchers and researchers in architecture and building sciences.		✓	✓	✓	✓	✓	

3.2 Program Constituencies

Program constituencies can be identified as:

- KSU University and College of Architecture and Planning
- Faculty
- Students
- Alumni
- Employers

As constituents of the program, KSU provides guidelines through mission statement and strategic plans. Other constituents like students, faculty, employers, Dept. Advisory Board, and alumni provide valuable feedback for the development and improvement of the PGs. This feedback is both formal and informal, which ensures the alignment of PGs with the needs of the stakeholders. Feedback is gathered by:

- Alumni surveys on PGs.
- Employers of graduate provide formal and informal feedback on the alignment of PGs with the needs of the job market.
- The Dept. Advisory Board provides feedback on PGs during each annual meeting.

The Dept. Advisory Board consists of DABS sector experts, some of whom are alumni of the DABS Department They hold mostly leading technical and managerial positions in their respective organizations. The participation of the Dept. Advisory Board is basically done through an annual meeting or through direct communication with the department chair. Table 3 below presents the current members of the DABS Department’s Dept. Advisory Board.

Table 3: Dept. Advisory Board Members

Member	Sectors
Dr. Khaled Al-Saud	Academic expertise members
Prof. Mohammed Al-Hussein	Academic expertise members
Dr. Thamer Alrugaib	Academic expertise members
Arch. Abdullah Alhamad	Governmental sector expertise
Arch. Basem Al-shihabi	Private Sector
Arch. Ali Al-Shuaibi	Private Sector
Arch. Abdullah Al-Abdul Karim	Private Sector
Dr. Abdul Rahman Al- Tassan	College representative members
Dr. Faisal Bin Sulaiman	College representative members
Arch. Yazeed Al-Khudairi	College representative members
Arch, Bader Al-Qahtani	College representative members

Other sources of information offering contributions to program development and objectives are:

- Industry and private sector leaders – through informal contact and through:
 - Senior students' presentations
 - Market studies
 - Collaboration agreements
- Saudi Arabia ministry of Higher Education through National accreditation body.

The participation of students is done through various channels such as membership to student advisory board, regular meetings with the Department Chair, faculty member and course evaluations surveys (Exit survey). The participation of faculty members is done through membership to the department council, participation in department committees, participation in the Dept. Advisory Board and regular meetings with Department Chair.

In summary, the PGs have been determined based on:

- The needs of the market in terms of Architectural professionals.
- The needs of higher education in terms of graduates in Architecture to fill teaching positions in DABS or another Architecture field.
- The needs of higher education and the market for graduates to conduct research in the profession.

3.3 Process for Review of the Program Goals

The process in which our PGs are periodically reviewed, is performed every four years, as demonstrated in Figure 2 below. It encompasses four operations namely:

- *Gathering Feedback:* Feedback gathering from different constituents and sources including Dept. Advisory Board, alumni, employers, faculty, and strategic plans. QAC in DABS Department, with the help of the Graduate and alumni committee are responsible for the task of gathering, analyzing and evaluating the feedbacks from the various constituents.
- *Proposing Changes:* The quality unit produces a report that summarizes the results of the different feedbacks and submits it along with the related material. In light of this report, the QAC proposes a revision of the PGs if necessary. Revision of the PGs may induce review of the curriculum and Student Intended Learning Outcomes.
- *Approving changes:* The new formulated PGs are then presented to MCABS and them to the Department Council for discussion and approval.
- *Adopting PGs:* PGs are posted on the DABS Department website, and published in the Department publications.

Alignment of PGs with the needs of constituencies discuss during the annual meeting of Dept. Advisory Board.

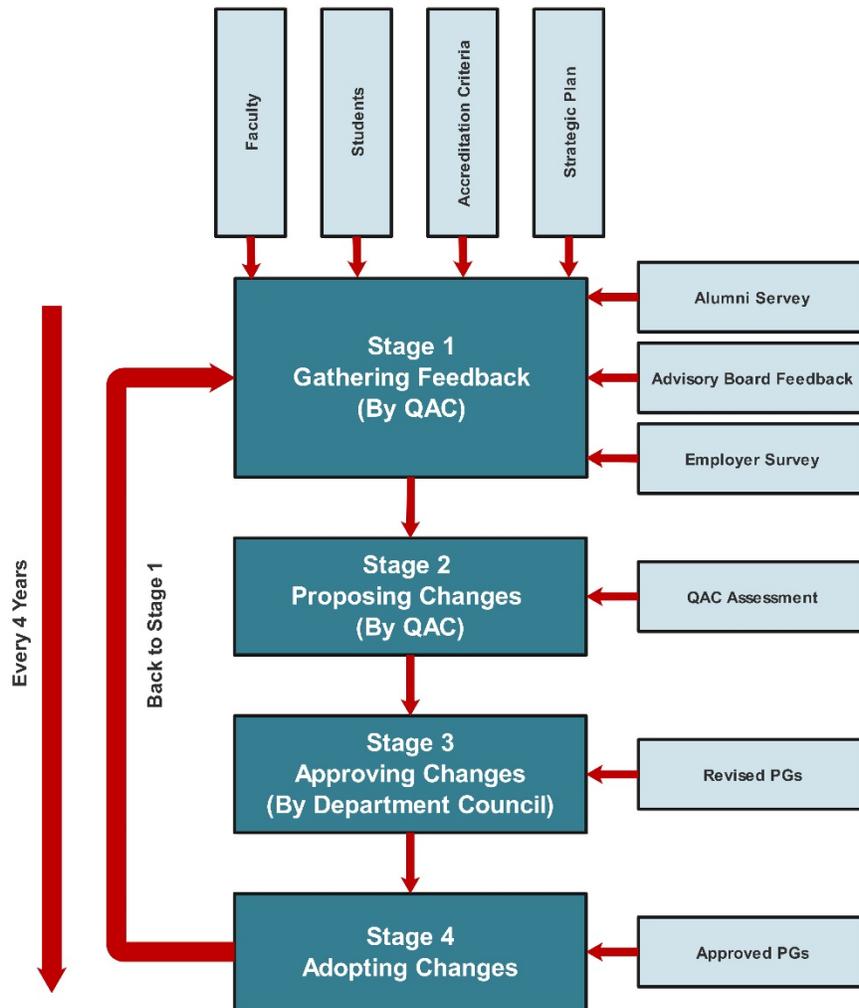


Figure 2: Process for reviewing PGs

3.4 Results Documentation and Maintenance

The QAC keeps records of all surveys, results, and analysis in PG ‘s assessment folders. Three folders are maintained for Alumni, Employers, Dept. Advisory Board.

4. Student Program Intended Learning Outcomes (PLOs)

The DABS master program Student Intended Learning Outcomes are related to the knowledge, skills and values that students acquire through the program. They are expressed as narrower statements that describe what students are expected to know and be able to do by the time of graduation. Upon graduation, a KSU postgraduate in DABS is expected to demonstrate skills and abilities in Architecture and Building Science as listed in Tables 4.

Table 4: Master of Architecture and Building Science program Intended learning Outcomes

Students program Intended Learning Outcomes (PLOs)	Description
1.1	Recognize and understand the advanced knowledge in Architecture and Building Sciences
1.2	Understanding of the impact of Architectural solutions in societal and environmental contexts; and knowledge of sustainable development
1.3	Understanding of advanced concepts in professional Architectural practice
2.1	Conduct scholarly activities in the field of architecture and building science in order to solve advanced Architectural problems.
2.2	Propose creative solutions for complex problems, and design systems by integrating technical, environmental, theoretical and professional knowledge in architecture
2.3	Assess and apply the state of art techniques, resources, and modelling, to complex Architectural practice
2.4	Communicate effectively both in written and oral forms to present design and management deliverables
2.5	Translate advanced conceptual thinking into resolved schemes that incorporate detailed and professionally aligned requirements
3.1	Apply ethical principles and commit to professional ethics, responsibilities and norms of research and architectural practice
3.2	Enhance the concept of quality of life and strengthen the local identity and ability to engage in lifelong learning of Architectural field

4.1 Relationship of student Intended Learning outcomes to Program Goals

Student Intended Learning outcomes support PGs and therefore the mission of the Department. Table 5 below shows the mapping between (PILOs) and PGs. Being able to practice in academia or as a DABS

professional. (PG#1) related to “attracting qualified local and international graduates and training them to excel in scientific research in architecture and building sciences” is supported by Student Intended Learning Outcomes (2.1), (2.3), (2.4), (2.5) and (3.2). (PG#2) related to providing students with intellectual, professional and research skills in architecture and building sciences within ethical standards requires Student Intended Learning Outcomes (1.1), (1.2), (1.3), (2.2), (2.3), (2.5) and (3.1). Student Intended Learning Outcomes (1.1), (2.1), (2.4) and (3.1) support attainment of PG#3 related to producing research in architecture and building science and publishing it in local and international scientific publishing channels. Student Intended Learning Outcomes (1.2), (3.1) and (3.2) help (PG#4) related to meeting the requirements of the development in the Kingdom of Saudi Arabia of researchers and researchers in architecture and building sciences.

Table 5: Mapping Students program Intended Learning Outcomes (PLOs) to PGs

		Program Goals			
		PG#1	PG#2	PG#3	PG#4
Students program Intended Learning Outcomes (PILOs)		Attracting qualified local and international graduates and training them to excel in scientific research in architecture and building sciences.	Providing students with intellectual, professional and research skills in architecture and building sciences within ethical standards.	Producing research in architecture and building science and publishing it in local and international scientific publishing channels.	Meeting the requirements of the development in the Kingdom of Saudi Arabia of researchers and researchers in architecture and building sciences.
1.1	Recognize and understand the advanced knowledge in Architecture and Building Sciences		✓	✓	
1.2	Understanding of the impact of Architectural solutions in societal and environmental contexts; and knowledge of sustainable development		✓		✓
1.3	Understanding of advanced concepts in professional Architectural practice		✓		
2.1	Conduct scholarly activities in the field of architecture and building science in order to solve advanced Architectural problems.	✓		✓	

2.2	Propose creative solutions for complex problems, and design systems by integrating technical, environmental, theoretical and professional knowledge in architecture		✓		
2.3	Assess and apply the state of art techniques, resources, and modelling, to complex Architectural practice	✓	✓		
2.4	Communicate effectively both in written and oral forms to present design and management deliverables	✓		✓	
2.5	Translate advanced conceptual thinking into resolved schemes that incorporate detailed and professionally aligned requirements	✓	✓		
3.1	Apply ethical principles and commit to professional ethics, responsibilities and norms of research and architectural practice		✓	✓	✓
3.2	Enhance the concept of quality of life and strengthen the local identity and ability to engage in lifelong learning of Architectural field	✓			✓

4.2 Process of the establishment and Revision of Student Intended Learning Outcomes

An initial draft of Student Intended Learning Outcomes discussed through a series of internal workshops and faculty meetings, with the spirit to be supportive of the PGs and the needs of the students and different constituencies. The student Intended Learning outcomes discuss during the annual Dept. Advisory Board meetings. The process for Student Intended Learning Outcomes’ revision is similar to the one adopted for PGs as shown and illustrated on Figure 2. However, this process is executed every four years.

In every cycle the (PILOs) are revised and slightly changed to meet the recommendations from different sources including the Dept. Advisory Board, faculty, students, Accreditation Criteria and PGs.

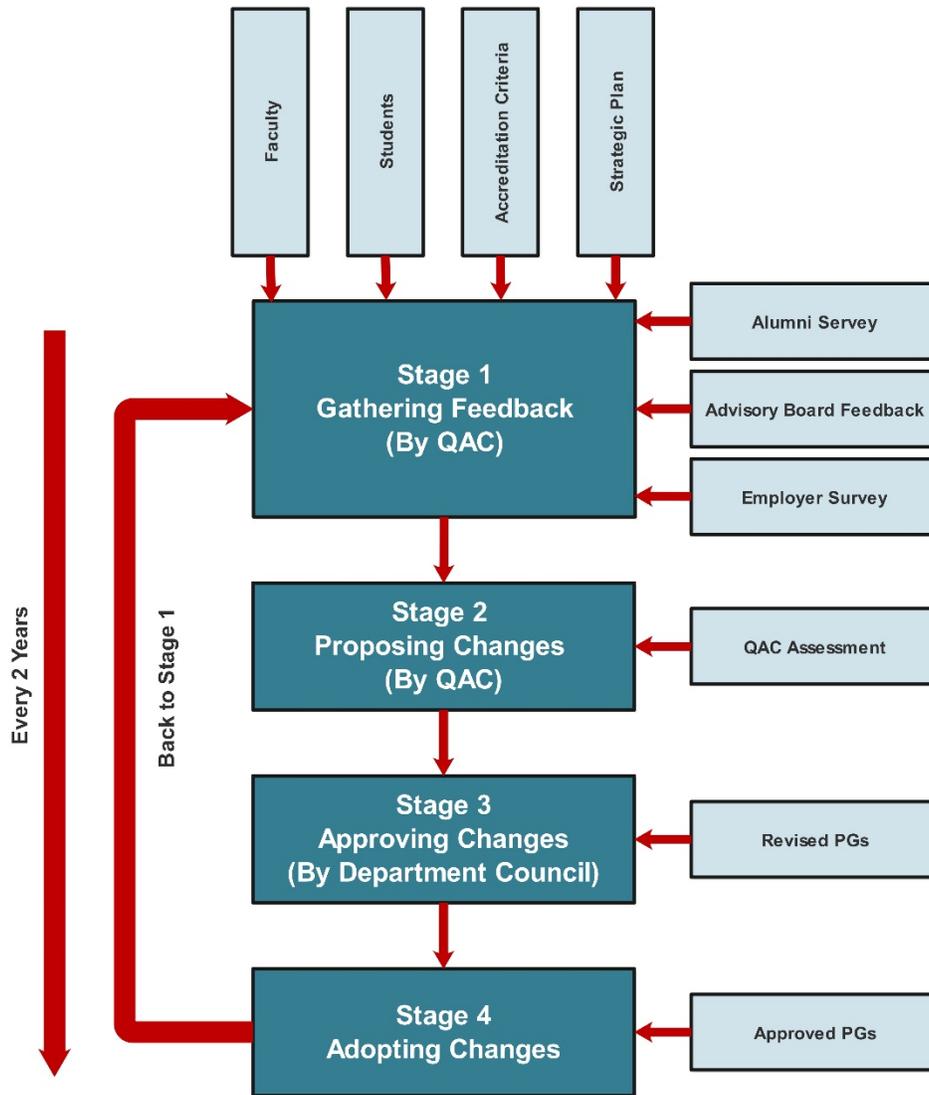


Figure 3: Process of (PILOs) evaluation and revision

The process in which our Master Student Intended Learning Outcomes are periodically revised, is performed every four years, is demonstrated in Figure 3. It encompasses four operations namely:

- *Gathering Feedback*: Feedback gathering from different constituents and sources including the Dept. Advisory Board, faculty, students, Accreditation Criteria and PGs. The Quality and

Accreditation Committee (QAC) in the DABS Dept. are responsible for the task of gathering, analyzing and evaluating the feedbacks from the various constituents.

- *Proposing Changes:* The quality unit produces a report that summarizes the results of the different feedbacks and submits it along with the related material. In light of this report, the QAC proposes a revision of the (PILOs) if necessary. Revision of the (PILOs) may induce review of the curriculum.
- *Approving changes:* The new formulated (PILOs) are then presented to MCABS and them to the department council for discussion and approval.
- *Adopting (PILOs):* The (PILOs) are published in related documentation.

4.3 Enabled Student Intended Learning Outcomes

All core courses in the program are used to attain established Student Intended Learning Outcomes with varying degrees. DABS faculty members have devised a scheme where each of the DABS program courses serves a group of Student Intended Learning Outcomes with different weights of importance. Culminating courses such as Master Theses are practically covering most outcomes. Table 6 illustrates the mapping of the Student Intended Learning Outcomes to the DABS program courses.

Table 6: Mapping of DABS Courses to Students program Intended Learning Outcomes (PLOs)

Courses		Course Name	Students program Intended Learning Outcomes (PLOs)									
			Knowledge & Understanding			Skills					Values	
Level	Course code		1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	3.1	3.2
Level 1	ARCH 501	INTEGRATED ARCHITECTURAL WORKSHOP	✓	✓								
	ARCH 580	DESIGN METHODS	✓				✓			✓		
	ARCH 590	RESEARCH METHODS				✓				✓	✓	
Level 2	ARCH 503	ADVANCED DESIGN / RESEARCH	✓	✓	✓							
	ARCH 596	COMPUTER APPLICATIONS IN BUILDING TECHNOLOGY AND MANAGEMENT								✓		✓
	ARCH 599	SPECIAL TOPICS IN ARCHITECTURAL RESEARCH				✓				✓		

Level 3	ARCH 513	SPECIAL TOPICS IN ARCHITECTURAL HISTORY	✓	✓								✓
	ARCH 521	PRINCIPLES OF FACILITY DESIGN			✓			✓		✓		
	ARCH 571	INTEGRATION OF BUILDING SUB-SYSTEMS			✓			✓		✓		
	ARCH 576	SPECIAL TOPICS IN BUILDING ECONOMICS & M			✓			✓				
Level 4	ARCH 538	SPECIAL TOPICS IN ENVIRONMENTAL DESIGN		✓			✓					
	ARCH 600	MASTER THESES				✓			✓		✓	✓

5. Students program Intended Learning Outcomes (PILOs) Assessment Plan

5.1 Assessment and Evaluation process

The DABS Department uses different tools and processes to regularly assess and evaluate the extent to which the DABS Master Student Intended Learning Outcomes (PILOs) are being attained. These processes are used to gather the data necessary for assessment. Evaluation, in the form of interpreting the data, is then carried out in order to determine how well the program goals and (PILOs) are being attained. Direct and indirect methods of collecting data are used. Direct assessment relies on the actual grades (or portion of grades) that the students achieve in addressing a particular skill or area of knowledge, while indirect assessment is based upon data collected from surveys. The assessment and evaluation results are used for continuous improvement of the program through planning and implementation of corrective actions. The assessment and evaluation processes are summarized in Figure 4.

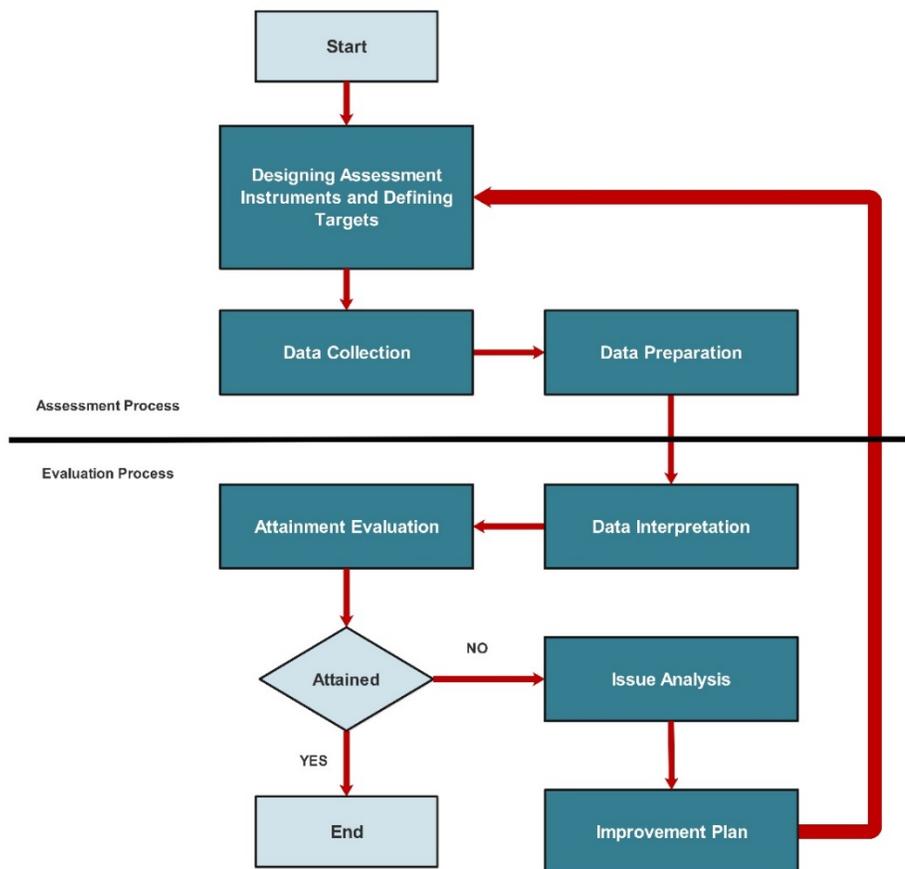


Figure 4: The assessment and evaluation process

The assessment and evaluation processes can be described as follows:

5.1.1 Assessment processes

- **Designing assessment instruments:** Appropriate Surveys and exam questions are identified and/or designed to assess (PILOs). Alumni, employers and Dept. Advisory Board feedback are also used to assess students' skills and capabilities after graduation. The different assessment instruments are summarized in Figure 5.
- **Defining targets benchmarks:** A target benchmark for the attainment of each (PILO) is defined. These targets are proposed by QAC.
- **Data Collection:** Data are collected using different tools such as Alumni and employer surveys for a general assessment of the program. Exams and CLO's survey results are gathered to assess Student Intended Learning Outcomes.
- **Data Preparation:** The collected data is checked, transformed, and validated to make sure it is consistent and usable.

5.1.2 Evaluation processes

- **Data Interpretation:** The used set of metrics is measured to determine the attainment levels (PILOs).
- **Attainment Evaluation:** The attainment levels of outcomes are compared to the targets for each of them. If attainments are higher than or equal to targets, the outcome is considered attained.
- **Issue Analysis:** If the attainment levels are lower than the targets, the outcome is considered to be not attained. An analysis is required to identify the reasons behind the non-attained outcome.
- **Improvement Plan:** Based on the analysis of the reasons behind the non- attainment of an outcome, an improvement plan is decided in order to overcome the identified issues. Then, a new assessment cycle starts.

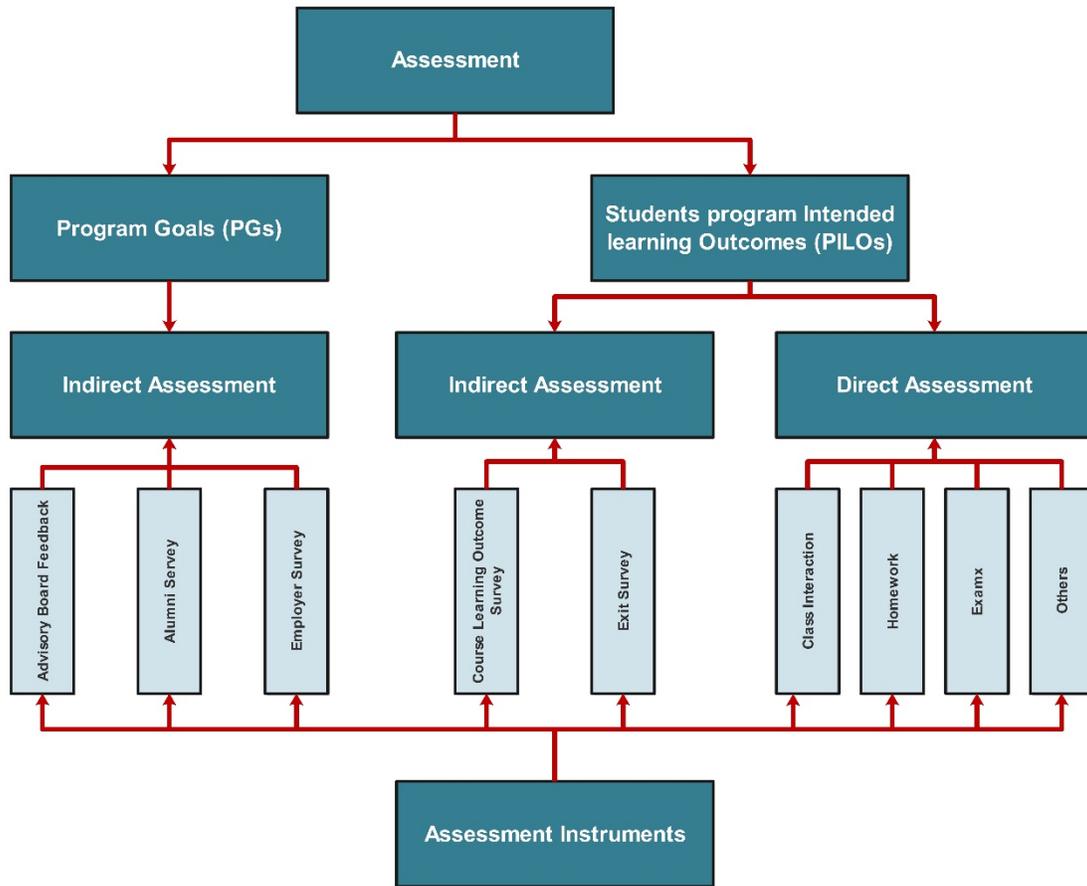


Figure 5: The assessment instruments for (PILOs)

5.2 Students PILOs Assessment and Evaluation Process at Course and Program Level

(PILOs) reflect the competencies, knowledge, skills, and values students are expected to have as they complete the program curriculum. Attainment of (PILOs) is assessed on both course and program levels. Both direct and indirect methods are used. Direct assessment of the outcomes relies mostly on the course work, which includes exams, homework, class interaction, etc. The indirect assessment of the outcomes is based on several surveys such as Course Learning Outcomes (CLOs) survey and Exit survey. The module instructors are responsible for assessing (PILOs) attainment on the course level while the QAC is responsible for the assessment on the program level. The (PILOs) assessment process and the different tools used are described in Figure 6 and Table 7. Generally, the attainment assessment process of (PILOs) is designed to assess all (PILOs) in a cycle of two years. Currently, assessment processes, at the course levels are carried-out each year. Every semester, half of the courses are assessed using both direct and indirect tools. However, program assessment and evaluation are carried out every two years.

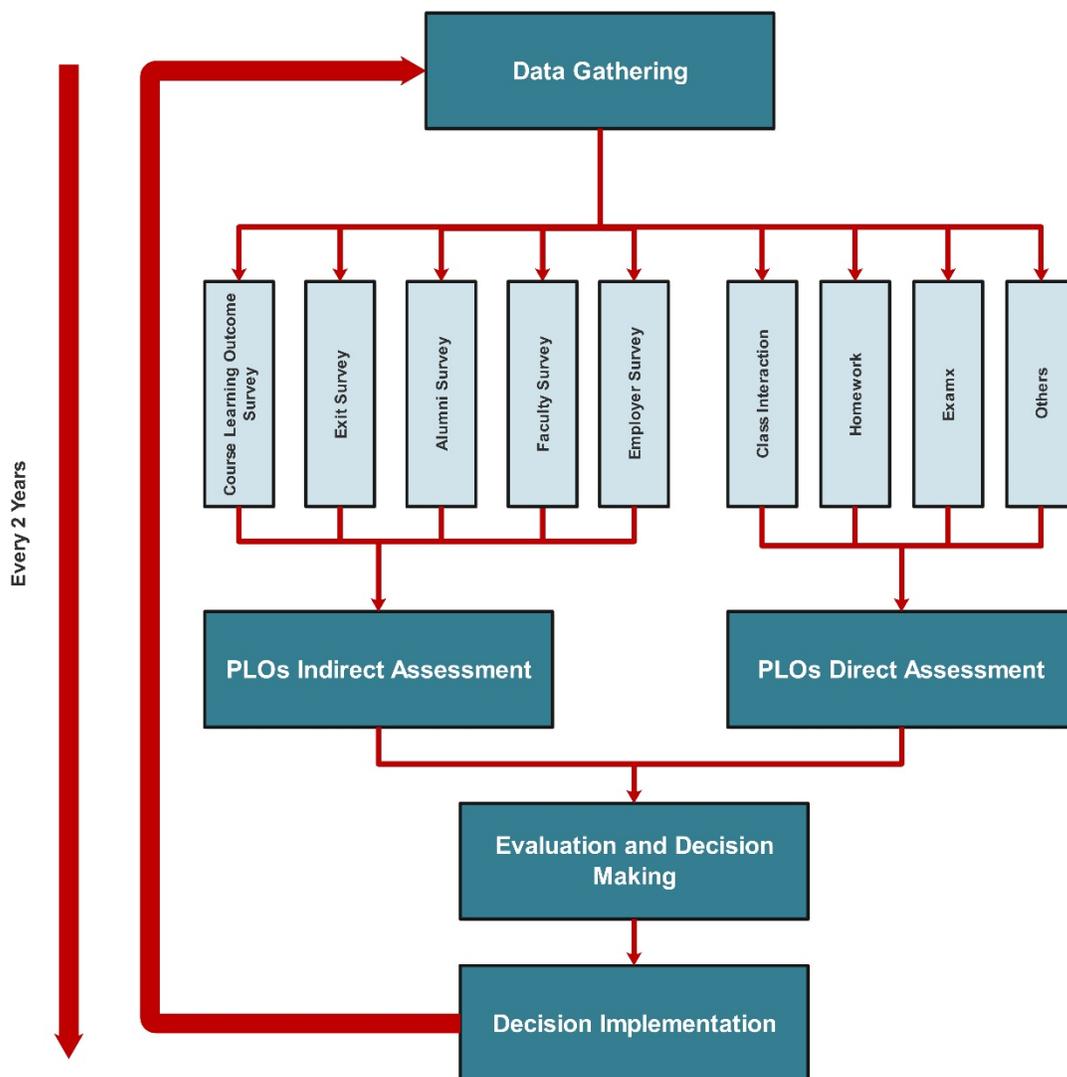


Figure 6: Assessing (PILOs) Attainment Cycle

Table 7: Processes & Tools used in data gathering and assessment

Assessment Level	Assessment process	Data gathering tool
Course level	Direct	<ul style="list-style-type: none"> Exam, quizzes, HomeWorks
	Indirect	<ul style="list-style-type: none"> CLO surveys
Program level	Direct	<ul style="list-style-type: none"> Aggregation of (PILOs) course result
	Indirect	<ul style="list-style-type: none"> Exit survey Aggregation of CLO Students surveys Alumni Survey Faculty Survey Employer Survey

5.2.1 The Satisfactory level for Student Intended Learning Outcomes

The satisfactory level is used to calculate the level of attainment. the satisfactory level may differ based upon the assessment method (direct or indirect) and the level of assessment (course level or program level).

- On the course level, the satisfactory level for direct methods is identified as 70%. This means that students attaining a grade of 70% or more are considered satisfactorily attaining the outcome. However, for the Thesis module, the satisfactory level is set to be 80%.
- On the program level, for direct methods, the satisfactory level is 70% for all (PILOs).

For Indirect methods in course and program levels, the satisfactory level is defined based upon the type of question used in the survey. In our surveys we have three types of questions:

- 2-point scale questions (YES/NO). In this case, the YES answer is considered satisfactory.
- 5-point scale question (Strongly agree, Agree, Neutral, Disagree, Strongly Disagree). In this case, the answer that chooses the first or second point of scale (Strongly agree, Agree) is considered satisfactory.
- 5-point scale question (Excellent, Good, Average, Below average, Poor). In this case, the answer that chooses the first or second point of scale (Excellent, Good) is considered satisfactory

5.2.2 The target attainment levels

The target level of attainment of (PILOs) is defined as the percentage of students achieving the satisfactory level in the specific outcome.

To evaluate the attainment of the (PILOs), the percentage of students achieving a satisfactory level is used as a metric where it is compared to a target benchmark identified as 70%. This attainment target has been selected by QAC but the benchmark may change up and down from cycle to cycle according to the attained results. Based upon the attainment target (AT), the level of attainment is further classified into four categories as described in Table 8.

Table 8: Target attainment Levels for (PILOs) (direct, indirect, course, program)

Level of satisfaction	Exceeds Expectations (EE)	Meets Expectations (ME)	Progressing Towards Expectations (PE)	Does Not Meet Expectations (DNME)
Targets	(AT+10) or above	(AT)-(AT+9)	(AT-10) - (AT-1)	Below (AT-10)
Selected (AT)	80% or above	70%-79%	60%-69%	Below 60%
Recommendation	Continue the good work	Aim to improve	Attention is required to some elements	Action is required to resolve issues

5.2.1 The PLOs Assessment Results calculation method

The PLOs Assessment Results calculation method on both course and program level is the way the direct and indirect assessment are being combined for each PLO in certain weights to get the total PLOs assessment. The proposed calculation method by QAC is to combined 60% of direct assessment to 40% of indirect assessment.

5.3 The Assessment Cycles of Program Intended Learning Outcomes (PILOs)

As we mentioned before, Student Program Intended Learning Outcomes (PILOs) reflect the values, knowledge, and skills students are expected to have as they complete the program curriculum. Attainment of (PILOs) is assessed on both course and program levels. Both direct and indirect methods are used. Direct assessment of the outcomes relies mostly on the course work, which includes exams, homework, quizzes, tutorial participation, and presentations delivery, active participation during classes, small group discussions, midterm exams and final exams. Individual Course learning Outcomes (CLOs) are defined for all courses and are made known to all students. All (CLOs) in each course are mapped to their appropriate intended Student Intended Learning Outcomes (PILOs), with a weight for each mapped (PILO) that represents the course's coverage for this (PILO). The indirect assessment of the outcomes is based on several surveys such as Course Learning Outcomes (CLOs) survey and Exit survey.

The module instructors are responsible for assessing the (CLOs) and (PILOs) attainment on the course level while the QAC is responsible for the assessment on the program level. At the end of the semester, the instructors provided a course report where they reported the assessment results, identified the weaknesses and proposed corrective actions to improve the student outcome achievement in the following semester.

Generally, the attainment assessment process of (PILOs) is designed to assess all (PILOs) in a cycle of two years. Every semester, about half of the courses are assessed using both direct and indirect tools. However, program assessment and evaluation are carried out every two years. Sometimes the assessment on the course level and/or the program level may run over one semester or one year because of special circumstances like local and/or international accreditation visits.

5.4 The main stages of PLOs Assessment

The main stages of assessing PILOs in each Cycle are described in Figure 7 and Table 9

- Stage1: Checking That Course Intended Learning Outcomes (CILOs) meet Program Intended Learning Outcomes (PILOs).
- Stage2: Checking Course Intended Learning Outcomes Assessment Methods.
- Stage3: Measuring Course Intended Learning Outcomes (CILOs).
- Stage4: Measuring Program Intended Learning Outcomes (PILOs).
- Stage5: Implementing Dept. Board decisions.
- Back to stage 1...

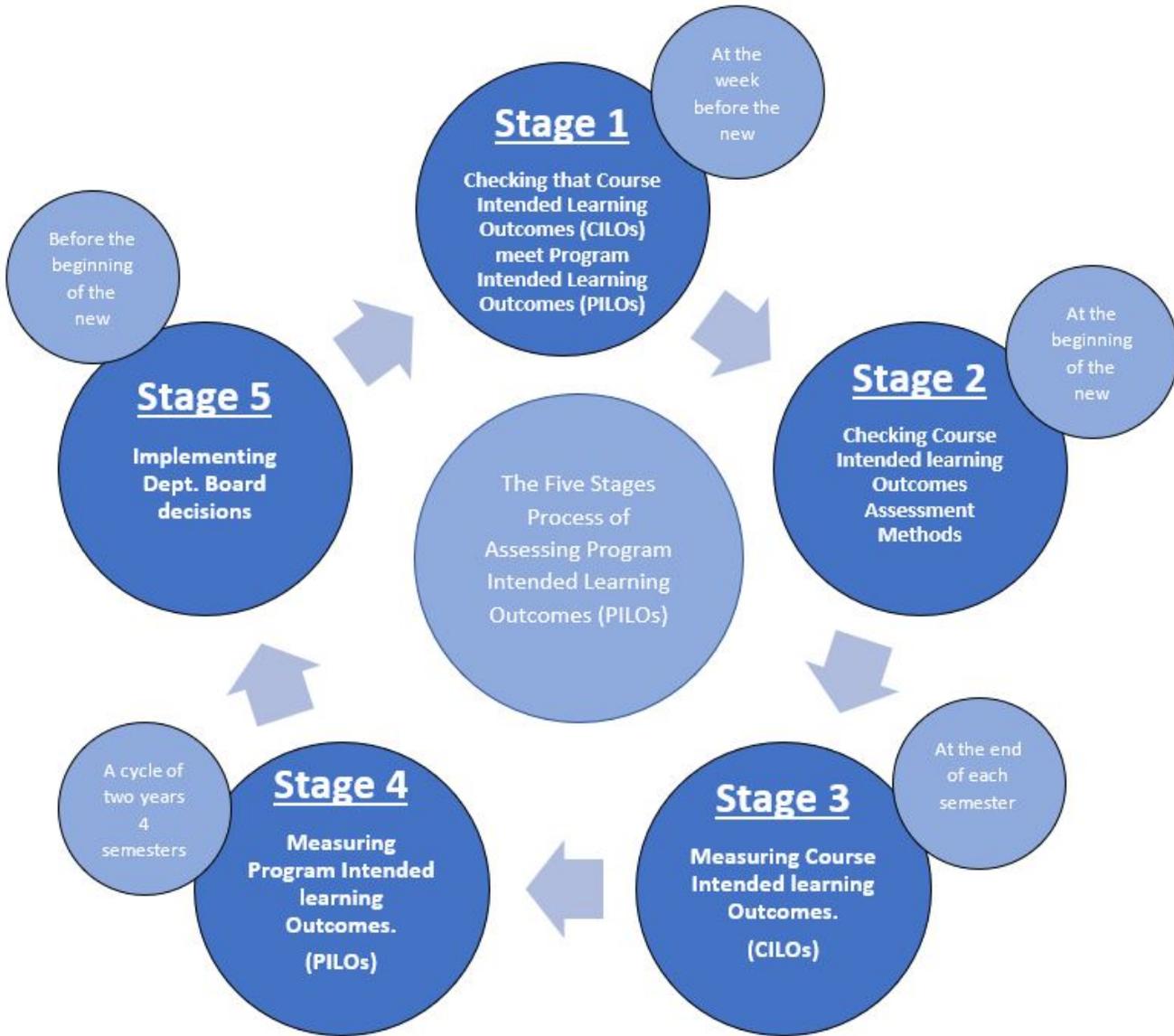


Figure 7: The main stages of assessing PILOs

The next table shows the assessment stages in detail.

Table 9: The main stages of assessing PILOs

Stage	Tools and materials	Process	Responsible body	Time frame
Stage1: Checking that Course Intended Learning Outcomes (CILOs) meet Program Intended Learning Outcomes (PILOs)	<ul style="list-style-type: none"> PILOs/Courses matrix. Course Specifications. Program Specification. 	1. Reviewing PILOs/Courses matrix. 2. Reviewing Courses Intended Learning Outcomes (CILOs). 3. Reviewing Courses Specifications. 4. Reviewing Program Specification. 5. Confirming changes if any (Department Board approval).	PILOs Assessment Committee	The week before the beginning the new Semester
Stage2: Checking Course Intended Learning Outcomes Assessment Methods	<ul style="list-style-type: none"> Course specifications. 	6. Checking methods used for assessing CILOs.	PILOs Assessment Committee	Beginning of each Semester
		7. Arrange schedule for assessing CILOs.	Course Instructor (CI)	
Stage3: Measuring Course Intended Learning Outcomes. (CILOs)	Direct <ul style="list-style-type: none"> Locally developed tests/test questions. Rubrics for evaluating. Standardized tests. 	8. Each course instructor assesses the CILOs using the assessment methods identified in the course specification.	Course Instructor (CI)	Through the semester depending on the identified schedule.
	Indirect <ul style="list-style-type: none"> Student Survey. Course evaluations. 			
	<ul style="list-style-type: none"> Course Report. 	9. Each Course instructor must fill out a separate Section Course Report for his section (SR) by the end of the semester to the Course Coordinator (CC) including Summary analysis of assessment results for each CILO, for the section that he teaches.	Course Instructor (CI)	End of each semester

Stage	Tools and materials	Process	Responsible body	Time frame
	<ul style="list-style-type: none"> Sections Reports. Course Report Template. 	10. Course Coordinator (CC) reviews Section Reports (SRs) 11. CC prepare a Course Report (CR) that includes collective summary analysis for CILOs results. 12. CC submit the CR to The Program Committee (PC).	Course Coordinator (CC)	End of each semester
Stage4: Measuring Program Intended Learning Outcomes. (PILOs)	Direct	13. PILOs Assessment Sub-committees receives the different Resources, studies it, and concludes the Achievement rate of PILOs that assigned to assess. 14. PILOs Assessment Sub-Committee Submit its report to the Chairman of the Department.	Course Coordinator (CC)	End of each semester
			PILOs Assessment Committee	After Graduation.
	+Indirect	15. The Chairman discusses the report recommendations with the committee coordinator. 16. Chair of the Department submits it to the Dept. Board. 17. The Dept. Board takes improvement decisions.	Peer / independent Evaluator	One time every 2 years
			Survey committee	End of each semester
			Survey committee	Annually
			Specialized groups.	Annually
			Survey committee	Annually
<ul style="list-style-type: none"> Courses PILOs Assessment and Results. Weighted Measurements based on CLOs weights in each course. 				
<ul style="list-style-type: none"> CLOs Students Surveys Alumni Survey Exit Surveys Faculty Survey Employer Survey 				

Stage	Tools and materials	Process	Responsible body	Time frame
Stage5: Implementing Dept. Board decisions	<ul style="list-style-type: none"> Decisions of the Dept. Board. 	18. PILOs Assessment Committee receives the Dept. Board decisions and submit it to the responsible bodies (especially the coordinators of the Specialized Groups)	PILOs Assessment Committee	At the end of the academic year
		19. Coordinators of the Specialized Groups submit Dept. Board decisions to courses coordinators to implement it through course instructors.	Specialized Groups Coordinators	Before the beginning of the new academic year
			Courses Coordinators	
Courses Instructors				
20. At the end of the cycle, the PILOs assessment committee conducts a comprehensive report for the whole assessment stages and submit it to the program chair to discuss it in the dept. board.				
+Indirect learning assessment of the CLOs is based on the average of the four survey assessments mentioned above.				

5.4.1 Assessment on the course level (Stages 1-3)

Table 10 shows the two-years (4 semesters) cycle for the course level assessment by instructors and course folder reviewing by QAC. Indirect assessments are carried out for all courses every semester.

Table 10: Course level assessment and reviewing cycle

	SEM 1/ SEM 3	SEM 2/ SEM 4	SEM 2 / SEM 4	SEM 1/ SEM 3
	Assessment by instructors	Reviewing by QAC	Assessment by instructors	Reviewing by QAC
Core Modules	Group A		Group B	
	Level 1	Level 3	Level 2	Level 4
	Arch 501	Arch 513	Arch 503	Arch 538
	Arch 580	Arch 521	Arch 596	
	Arch 590	Arch 571	Arch 599	
		Arch 576		
	Arch 600			

Each course aims at covering a number of (PILOs). The Course Learning Outcomes (CLOs) for each course are mapped into the set of the most relevant (PILOs). The attainment of students for these (PILOs) is assessed using direct and indirect methods.

Direct Assessment

- Assessment phase carried out by each section instructor.
 - Tools Used: Direct exam questions, quizzes and/or assignments are designed to assess different Student Intended Learning Outcomes targeted by the course. The percentage of students attaining a satisfactory level in these questions and/or assignment is considered to be the attainment of the corresponding (PILO).
 - Define target levels of the attainment of (PILOs) for evaluating student’s direct assessment results (Table 8)
- Evaluation phase

- Tabulate and Display (PILOs) attainment based on student’s direct assessment results
- Compare attainment to the defined target levels
- Comment on (PILOs) assessment – propose corrective action plan if needed

As a student is tested, or turns-in assignments or projects related to the different CLOs of the course, the level of attainment of those CLOs is used as a measure of the students’ attainment of the (PILOs) addressed by the course.

Indirect Assessment

- Assessment phase (carried out by each section instructor - near completion of semester)
 - Tools Used: CLOs Surveys
 - Define target levels of attainment of (PILOs) for evaluating indirect assessment survey (Table 8)
- Evaluation phase
 - Tabulate and Display (PILOs) attainment based on Indirect Surveys
 - Compare attainment to the defined target levels
 - Comment on (PILOs) assessment - propose corrective action plan if needed

The indirect assessment measures the attainment level of each CLO of the course and hence the (PILOs) of the course, through the viewpoint of the students enrolled in the course. Hence each student is asked to complete a survey at the end of a semester indicating the level of satisfaction of his attainment of the different CLOs of the course. The scales provided for students, ranges from strongly agree to strongly disagree. Both strongly agree and agree selections are considered satisfactory

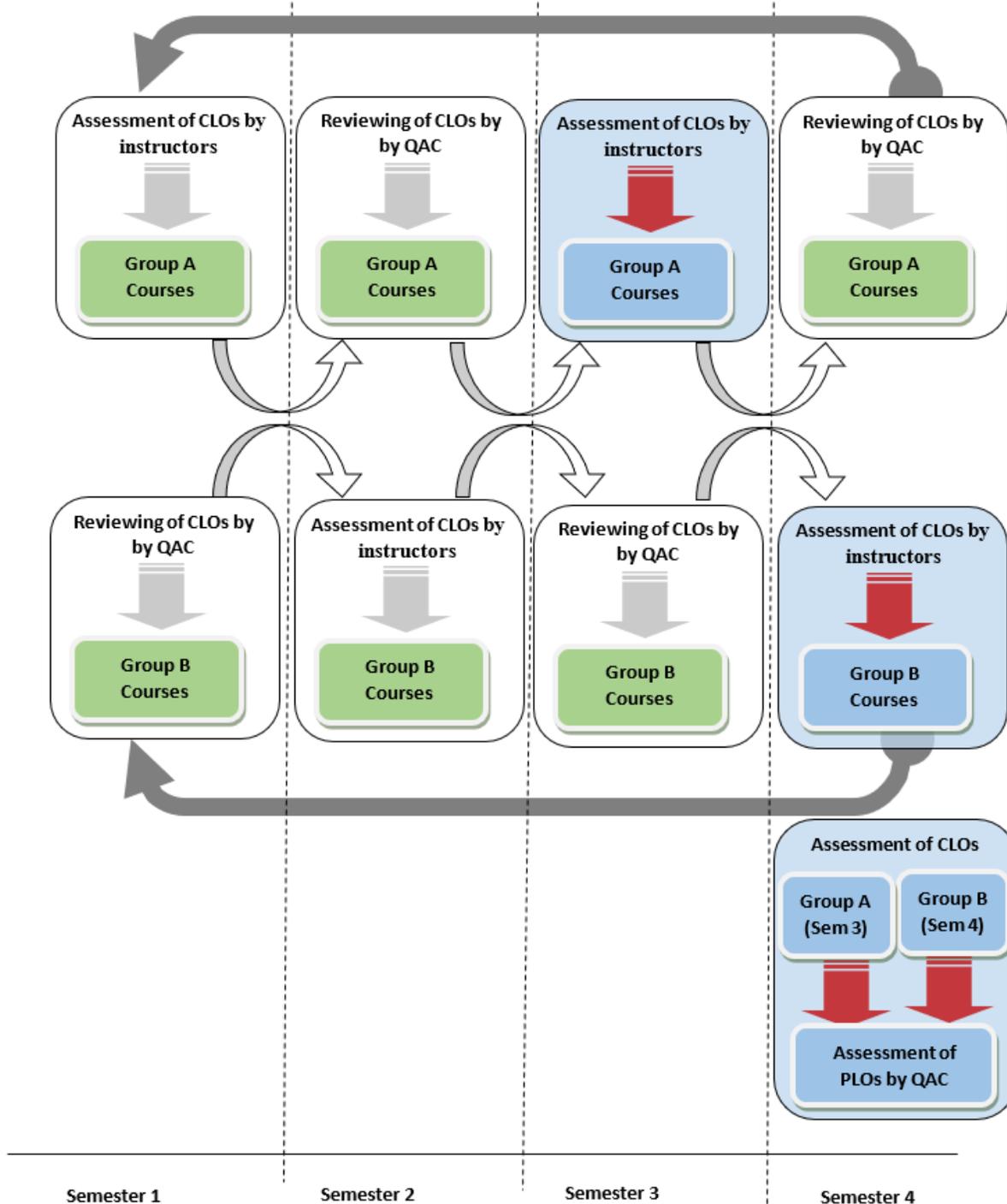
As mentioned above, the (PILO) attainment in each course is computed as the percentage as students achieving the outcome in the course with ME or EE evaluation. If attainment target (AT) of the students achieve the outcome in the course, the outcome is considered to be achieved at the course level.

Both direct and indirect assessment results are documented in the Course Assessment Report (CAR). A combination of the direct and indirect assessment results (60% direct & 40% indirect) for each (PILO) is carried out. Ideally, at the course level, the combination of both direct and indirect assessments should reflect the target level of attainment of each (PILO) of the course. For any assessment results reflecting an attainment level of DNME or PE of an (PILO) covered in a course, the instructor is required to provide a justification of why such low attainment existed, and what steps need to be taken in the future to eliminate such low attainment. The proposed corrective actions are implemented as soon as possible and their impact on the outcome achievement shall be assessed. The CAR is submitted to the QAC, which is responsible to follow the proposed changes and ensures the implementation of corrective actions.

5.4.2 Assessment on the program level (Stages 4-5)

By the end of the two years cycle, course level results for the last two semesters (semester 3 and semester 4) are integrated to assess the program level students’ outcomes (PILOs). Figure 8 shows the two years cycle PILOs assessment.

Figure 8: The two years cycle PILOs assessment.



To conduct the direct/indirect assessment and evaluation process of (PILOs), the Assessment Committee selected for each (PILO) a set of representative and fundamental DABS courses with a reasonable coverage. Due to the small number of courses in Master Program, all courses are selected for the assessment of the different Student Intended Learning Outcomes on the program level as shown in

Table 11.

Table 11: (PILOs) Assessment Map

PLO	Courses That Cover Outcome	Source of Assessment	Course title	Assessment Method
1- Knowledge & Understanding				
1.1	ARCH 501	Semester 3	INTEGRATED ARCHITECTURAL WORKSHOP	Direct & Indirect Assessment
	ARCH 580	Semester 3	DESIGN METHODS	
	ARCH 513	Semester 3	SPECIAL TOPICS IN ARCHITECTURAL HISTORY	
1.2	ARCH 501	Semester 3	INTEGRATED ARCHITECTURAL WORKSHOP	
	ARCH 513	Semester 3	SPECIAL TOPICS IN ARCHITECTURAL HISTORY	
	ARCH 538	Semester 4	SPECIAL TOPICS IN ENVIRONMENTAL DESIGN	
1.3	ARCH 521	Semester 3	PRINCIPLES OF FACILITY DESIGN	
	ARCH 571	Semester 3	INTEGRATION OF BUILDING SUB-SYSTEMS	
	ARCH 576	Semester 3	SPECIAL TOPICS IN BUILDING ECONOMICS & M	
2- Skills				
2.1	ARCH 590	Semester 3	RESEARCH METHODS	Direct & Indirect Assessment
	ARCH 503	Semester 4	ADVANCED DESIGN / RESEARCH	
	ARCH 599	Semester 4	SPECIAL TOPICS IN ARCHITECTURAL RESEARCH	
	ARCH 600	Semester 4	MASTER THESES	
2.2	ARCH 580	Semester 3	DESIGN METHODS	
	ARCH 538	Semester 4	SPECIAL TOPICS IN ENVIRONMENTAL DESIGN	

2.3	ARCH 596	Semester 4	COMPUTER APPLICATIONS IN BUILDING TECHNOLOGY AND MANAGEMENT		
	ARCH 521	Semester 3	PRINCIPLES OF FACILITY DESIGN		
	ARCH 571	Semester 3	INTEGRATION OF BUILDING SUB-SYSTEMS		
	ARCH 576	Semester 3	SPECIAL TOPICS IN BUILDING ECONOMICS & M		
2.4	ARCH 590	Semester 3	RESEARCH METHODS		
	ARCH 599	Semester 4	SPECIAL TOPICS IN ARCHITECTURAL RESEARCH		
	ARCH 600	Semester 4	MASTER THESES		
2.5	ARCH 580	Semester 3	DESIGN METHODS		
	ARCH 521	Semester 3	PRINCIPLES OF FACILITY DESIGN		
	ARCH 571	Semester 3	INTEGRATION OF BUILDING SUB-SYSTEMS		
3- Values					
3.1	ARCH 590	Semester 3	RESEARCH METHODS		Direct & Indirect Assessment
	ARCH 596	Semester 4	COMPUTER APPLICATIONS IN BUILDING TECHNOLOGY AND MANAGEMENT		
	ARCH 600	Semester 4	MASTER THESES		
3.2	ARCH 503	Semester 4	ADVANCED DESIGN / RESEARCH		
	ARCH 513	Semester 3	SPECIAL TOPICS IN ARCHITECTURAL HISTORY		
	ARCH 600	Semester 4	MASTER THESES		

For each (PILO), the selected courses' results are aggregated to compute the (PILO) attainment at the program level before graduation. The aggregation of results is based upon the percentage of PILOs weights in each course. Weights dedicated to the specific outcome in each selected course (the coverage of the (PILO) in all modules in terms of weights). Table 12 shows the weighted percentage of PILOs distribution in courses.

Table 12: The weighted percentage of PILOs distribution in courses

	Level 1			Level 2			Level 3				Level 4	
	ARCH 501	ARCH 580	ARCH 590	ARCH 503	ARCH 596	ARCH 599	ARCH 513	ARCH 521	ARCH 571	ARCH 576	ARCH 538	ARCH 600
1- Knowledge & Understanding												
1.1	50%	20%					50%					
1.2	50%						25%				50%	
1.3								50%	25%	60%		
2- Skills												
2.1			50%	70%		60%						35%
2.2		45%									50%	
2.3					85%			25%	35%	40%		
2.4			30%			40%						30%
2.5		35%						25%	40%			
3- Values												
3.1			20%		15%							20%
3.2				30%			25%					15%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

To assess the attainment of (PILOs) on the program level, direct and indirect methods are used. Direct assessment is based on aggregating the direct results of (PILOs) attainment on a selected representative list of course, while indirect method is based upon using Exit survey and aggregating the indirect results of (PILOs) attainment on the same selected courses.

Direct Assessment

- Assessment phase (Carried out by QAC – Assessment Committee after getting CAR reports)
 - Tools Used: The actual attainment levels of students in a selected list of courses that covers all (PILOs).
 - Define target level of attainment of (PILO) ‘s for evaluating student's direct assessment results
- Evaluation phase
 - Tabulate and display (PILOs) attainment based on student's direct assessment results
 - Compare attainment to the defined target levels
 - Comment on (PILOs) assessment - propose corrective action plan if needed

Indirect Assessment

- Assessment phase (Carried out by QAC – Assessment Committee after getting indirect assessment reports of courses)
 - Tools Used: CLO Surveys, Exit Surveys, Faculty Survey, Employer Survey and Alumni Survey
 - Define target level of attainment of (PILO) ‘s for evaluating indirect assessment surveys
- Evaluation phase
 - Tabulate and Display (PILOs) Achievement based on Indirect Surveys
 - Compare attainment to the defined target levels
 - Comment on (PILOs) assessment - propose corrective action plan if needed

The frequency of carrying out these assessments is shown below in Table 13.

Table 13: Assessment tools, frequency and responsibilities for (PILOs) indirect assessment

Assessment tool	Frequency	Media	Collection Method	Source	Collected by	Evaluated by
CLOs Students survey	Every semester	Survey	Online/ Paper	Students	Instructors	Assessment sub-committee
Exit survey	Every 2 years	Survey	Online/ Paper	Graduating Students	QAC	Assessment sub-committee
Faculty Survey	Every 2 years	Survey	Online/ Paper	Faculty	QAC	Assessment sub-committee
Employer Survey	Every 2 years	Survey	Online/ Paper	Employer	QAC	Assessment sub-committee
Alumni Survey	Every 2 years	Survey	Online/ Paper	Alumni	QAC	Assessment sub-committee

5.5 Results Documentation and maintenance

At the end of every semester, course coordinators submit course assessment reports (CARs) that include direct and indirect (CLOs survey) assessment results. The report also contains analysis and suggested improvements. The CAR is included in the course folder. Course folders are available in the Quality room. The QAC keeps records of all surveys, results, and analysis in the Quality room. Three folders are maintained for Alumni, Employers, Dept. Advisory Board. The exit surveys are also produced and maintained by the QAC. Copies of those documents are available in the Quality room as well. The Assessment and evaluation are documented and the recommendation reports are submitted to the Department Council. Copies of the Assessment reports are available in the Quality room. The Department Council meeting minutes are available in the department.