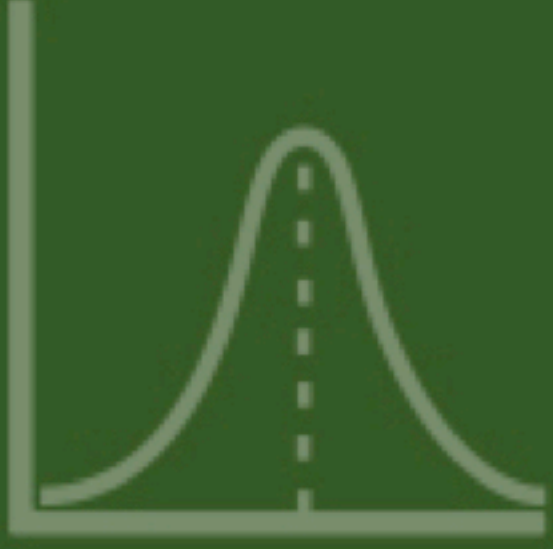
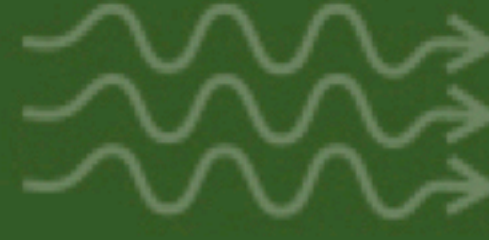
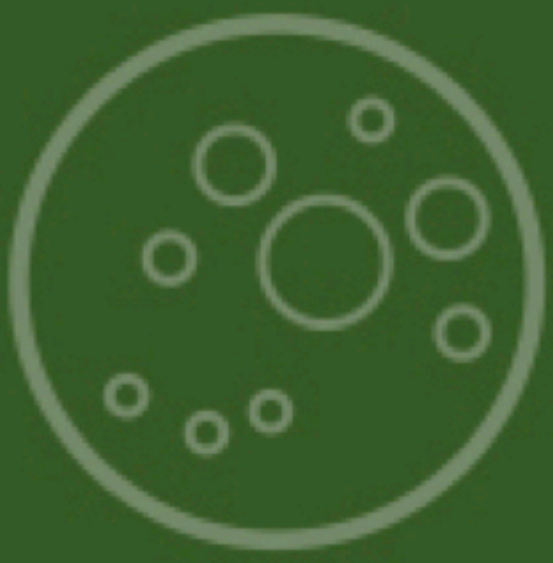




$$\nabla \times \vec{B} = \mu_0 \vec{J} + \frac{1}{c^2} \frac{\partial \vec{E}}{\partial t}$$



$$E = mc^2$$

2024-2025

Quality Assurance Handbook

Department of Physics and Astronomy

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*This manual has been approved by the Department of Physics and Astronomy
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CHAPTER 1: INTRODUCTION

1.1 Program Vision and mission

Mission, Vision and goals of all programs of the Physics and Astronomy department were submitted in website of the department which can be accessed at <https://sciences.ksu.edu.sa/ar/node/109> . Also, they are written in detail in the program's specifications. All these missions and goals are consistent with the mission and goals of the College of Science.

The program's mission must be:

Consistent with the college and institution's mission.

Applied in accordance with the goals of the program's specific needs to ensure that the standard requirements are met.

Clearly and sufficiently identify the goals and top priorities. They should also be useful in directing and organizing department activity.

Evidence of the quality of the mission can be gained through:

- Copies of mission documentation.
- The modifications.
- Interviews with staff and students to see how well they understood and supported the mission.
- Evaluate stakeholders' understanding of the program's mission and goals.
- Answers to questionnaire questions about the scope of mission acquisition and support.

1.2 Program Quality Objectives

The objective of quality assurance is to confirm the continuous enhancement of the deference program process and its outcomes. The

quality assurance of the program relies on the subsequent evaluations and audits:

- Ensure high standards, quality outcomes, and continual program improvement.
- Identify strengths and weaknesses.
- Document, integrate, and convey the various methods for quality assurance processes.
- Monitoring the implementation of program action plans.
- Reviewing a program is a tool for effective change.

The Quality Assurance (QA) Manual was created with the intention of giving departments a reference and a better understanding of how to conduct QA activities. The Manual's activities and processes have all been authorized by the department and college councils after being discussed with colleagues. The unique requirements and conditions of the programs are always taken into consideration, regardless of the processes used.

1.3 Definitions in the Quality

Starting with definition of the terms and phrases used will help you to be familiar with, and have a better awareness of the terminologies used, addressing quality assurance in education. For the rest of this document, the following definitions are generally recognized and ought to be handy as a point of reference.

Quality: An educational definition is a continuous process that guarantees the fulfillment of predetermined standards. This consensus on standards should guarantee that each educational institution has the capacity to produce high-quality content and outcomes wherever quality is guaranteed.

Quality Assurance (QA): is the process by which an institution can

verify that the standards established by the institution, or another awarding body are being upheld and improved.

Accreditation: is the process by which an authority—recognized by government and institutions—determines whether an institution providing education programs might become self-accrediting or present its own education awards subject to regular evaluation.

An accreditation body verifies that the procedures are suitable for the goal and that the criteria of a program match the award it qualifies for.

Accreditation is the outcome of an assessment of an institution or education program under specific quality criteria decided upon beforehand. It's a sort of acknowledgement that a program or institution meets specific criteria.

Standards: A statement clearly expressing the broad intellectual traits expected of a graduate either generally or in a specific field or discipline. Standards are seen to be able to be expressed on a scale, at least to the degree of differentiating pass and fail from various degrees of honors attainment. Standards can be stated relative, that is norm-referenced; or in absolute terms, that is criterion-referenced.

Program Learning Outcomes: that is, what students are expected to know and be able to do by the time of graduation and at the time of course successful completion—describe These have to do with the knowledge, abilities, and values students pick up as they work through the program until the required credit count is acquired to graduate.

Key performance indicators are data, generally quantitative in nature, that allow one to compare changes in performance or the performance of others against which an individual's or an organization's performance could be measured.

Evaluation: One or more procedures for deciphering the evidence and data gathered during assessment activities. Evaluation helps one to find the degree of targeted learning results attainment. Results of evaluation

guide decisions and activities meant to improve programs.

Program Specification: A document for outlining the program, level, learning objectives, credit unit count and contact hours.

Course specification: It is a description of the course content, requirements, learning outcomes, teaching and assessment strategies.

Program File: The design of a program comprising all course specifications and the program definition. Additionally provided should be supporting data of the main design inputs—external scan.

Program Report: It is a document that uses the NCAAA Program Report template to report on how the program was delivered over the previous year. This program evaluation shows that requirements have been met while also identifying areas for further development and improvement. It also allows for the identification of best practices, which can then be shared throughout the university.

Course Report: It is a document that defines the course content, learning outcomes, teaching and learning performance, as well as sample student exams and course assessment survey data. This report is based on the NCAAA Course Report Template.

Stakeholders: a term that refers to all faculty members, students, alumni, and employers who influence or are influenced by the academic program's outcomes.

External Examiners: individuals or groups with extensive competence in scientific and academic subjects who represent worldwide academic institutions or consulting firms.

Academic Programs: (Bachelor, Master, and PhD) are available in a variety of learning modalities (traditional, electronic, blended, and distance).

Graduate Attributes: are a collection of abilities, competencies, and knowledge that graduates should have to enter the job market, pursue post-graduate education, and conduct scholarly research in their area of specialization or a related topic.

Benchmark: A benchmark, reference point, or criterion against which something's quality can be tested, judged, and evaluated, as well as the outcomes of a certain activity. The phrase "benchmark" refers to a measure of best practice performance. The existence of a benchmark is a necessary stage in the benchmarking process.

1.4 Quality Assurance in Education

The National Commission for Academic Accreditation & Assessment (NCAAA) has instituted mandatory standards across six primary domains of activity and has formulated the Saudi Arabian Qualification Framework (SAQF), formerly known as the National Qualification Framework (NQF), which delineates generic criteria of Learning outcomes at each qualification level. The criteria for accreditation judgments are founded on widely recognized best practices in undergraduate and postgraduate programs. The NCAAA has defined six requirements for these programs.

- Mission and Goals
- Program Management and Quality Assurance
- Teaching and Learning
- Students.
- Teaching Staff.
- Learning Resources, Facilities, and Equipment

1.5 Significance of Quality Assurance

To support the mission of the Physics and Astronomy Department by ensuring the high quality of the programs and teaching and learning support services.

- To assist and plan for the ongoing improvement of program quality and services for teaching and learning support.

- To guarantee efficacy and uniformity in academic quality assurance initiatives.
- To define each party's responsibilities and obligations in academic quality assurance initiatives.

It is essential to note that the concepts in this manual originated from the current quality management practices within the university (link: <https://dqd.ksu.edu.sa/en/node/2962>), which are in accordance with the standards of the Education and Training Evaluation Commission (ETEC).

1.6 Program Quality Assurance Cycle

The department commits to the Plan-Implement-Assess-Improve cycle, which depicts the concept of closing the loop as a mechanism for achieving continuing improvement. The department leadership fully supports this strong commitment to quality management and improvement.



Figure (1.1) Quality Cycle

The following stages make up the improvement cycle, just like in the model in figure (1.1):

Plan: During this stage, we create executive plans for the academic program based on numerous assessments and identifying strengths and weaknesses that the plan will address.

Implementation (Do): During this phase, we begin to implement the planned actions and assess the application's effectiveness in delivering the desired outcomes.

Assessment (Evaluation): This stage involves evaluating and analyzing the measured findings, proposing options for improvement, and defining means of execution.

Improvement (Act): Improvement steps are distributed across the academic program to attain the desired results. If the desired outcomes and goals are not met, we return to the planning stage and attempt again.

1.7 Key Performance Indicators (KPIs)

11 essential Key Performance Indicators (KPIs) were diligently selected from the Education and Training Evaluation Commission (ETEC) as part of the dedication to excellence. These KPIs, which comprise a wide variety of metrics, guaranteed the continuous monitoring and improvement of performance in critical areas of the organization.

Figure (1.2) illustrates the Physics and Astronomy Department's implementation of the KPI monitoring process as a critical framework to optimize organizational performance and guarantee strategic objectives were achieved. This model enabled the systematic monitoring and assessment of critical metrics that were in accordance with specific objectives. Table (1.1) lists the various tools that are used to assess these indicators.

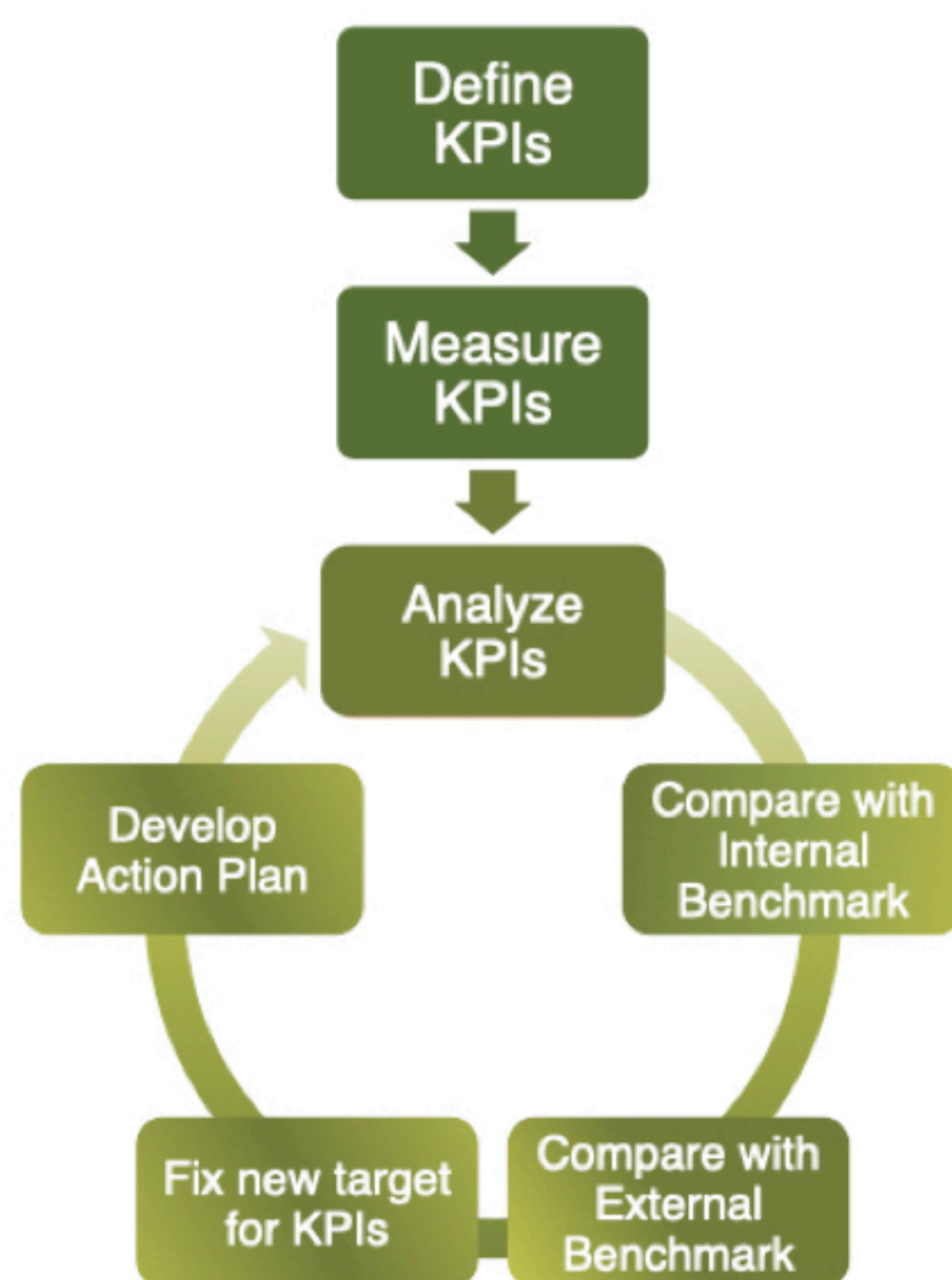


Figure (1.2) KPIs monitoring process.

Table (1.1): The Quality Assurance procedures at the course and program levels.

Activity	End of Term	Annually	Responsibility
Course Evaluation Survey	✓		Course coordinators
Course report (CR)	✓		Course coordinators
Course file submission	✓		Course coordinators
Students experience survey	✓		Quality Committee
Program evaluation survey	✓		Quality Committee
Faculty members satisfaction survey		✓	Quality Committee
Stakeholders' evaluation survey		✓	Quality Committee and Alumni committee.
Operational plan report		✓	Quality Committee
Program KPI report		✓	Quality Committee

Annual program report (APR)		✓	Academic accreditation committee
PLOs assessment report		✓	Academic accreditation committee
Self-study report (SSRP)		✓	Quality Committee and Academic accreditation committee

CHAPTER 2: THE STRUCTURE OF THE ACADEMIC QUALITY ASSURANCE SYSTEM

The organization structure of the Quality management system (QMS) in the Physics and Astronomy Department contains several committees working together. The Committee Structure diagram (Figure 2.1) illustrates the organization of main and Sub-Committees, which are liable to the Department Council and the Chairman of the department. A number of these committees play critical roles in the supervision of the development and implementation of the Department's quality assurance framework, as well as the monitoring of quality and standards.

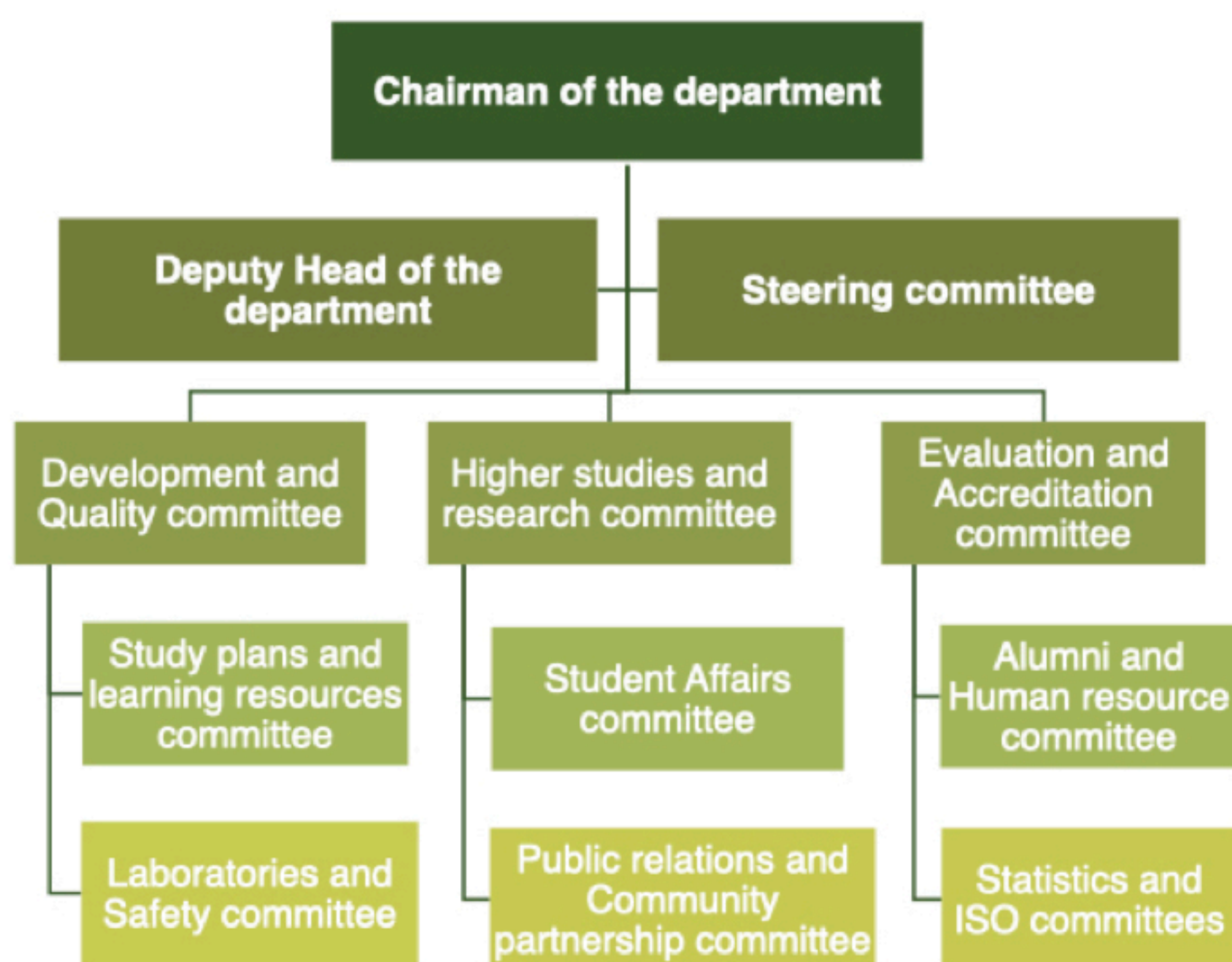


Figure (2.1): Committee Structure diagram of Physics and Astronomy Department.

2.1 Department's Steering Committee

Supervision and follow-up of quality activities

- Supervising the implementation of the working plans of the various activities of the department.
- Follow up the completion of all academic accreditation requirements.
- Preparing and updating the manual of the department and program.
- Holding a monthly meeting to discuss the reports of the quality management system in the department.
- Follow-up and coordination with the Vice Dean of Development and quality and providing it with periodic reports.

The strategic plan

- Define the vision, mission and goals of the department and review it periodically.
- Follow up the implementation of the department's action plan.
- Identifying elements of strength and weakness in the various activities of the program and drawing up the necessary plans to benefit or address them.
- Looking forward to the future plans of the department.

2.2 The Development and Quality Committee (DQC):

To accomplish the following tasks:

- Enhancing quality culture among faculty members, department staff and students.
- Develop, manage and monitor quality control processes in the department.

- Prepare, monitor, distribute, collect and analyze all five questionnaires of the National Commission for Academic Evaluation and Accreditation.
- Selecting performance indicators and benchmarking of the program, analyzing it and building improvement plans based on it.
- Select and follow up the independent auditor's report and develop improvement plans based on his / her recommendations.
- Follow up the development of modern trends in methods, methodology and teaching techniques.

2.3 Evaluation and Academic Accreditation Committee (EAAC):

Acted by assigned Coordinators, and his nominating members, to accomplish the following tasks:

- Preparing and revising reports of Program's Description, course specification, and Courses Reports that are assembled from department members, and running its electronic saving, and then sorting them in their specific files in the program's academic room (PAR).
- Organizing, supervising and preserving program's documentations in the academic room, in order to be ready prepared and organized at the time of the external auditors' surveillance stopover.
- Confirming the implicitly of students' examination forms, as well as its typical exams' answers forms of all taught course of Program or Programs and filed in the (ACR).
- Regularly updating and revising all (QMS) accreditation files documentation of ACR's, in order to be ready at any sudden visit of scrutiny, and any allowed users.

- Organizing, preparing and submitting periodical reports of the Committee's
- meeting, regularly, and placing all these reports in the program's Academic
- Accreditation room (ACR).
- Supervising and Preparing the Self-study report (SSR) for obtaining or
- updating national and international accreditations.

2.4 Student Affairs Committee

Guidance and student rights

- Prepare a plan for the student guidance program and update it annually.
- Raising awareness of the importance of academic, professional, psychological
- and social accreditation.
- Raising students' awareness of supporting services and activities provided by
- the college and university and follow-up.
- Receiving and responding to students' proposals or complaints and working to
- overcome them.
- Prepare preventive programs to protect students from vulnerability.
- Academic support (study the situation of students with default or low rates)
- and preparing academic programs to support students with unsatisfactory

- performance.
- Follow-up of extra-curricular activities

Registration and tests

- Equation of the courses of the program with the courses of other programs.
- Work on the preparation of study schedules; to be delivered in a timely manner.
- Follow up the commitment of the departments with the regulations of the college in the preparation of the timetable of the study.
- Prepare and review the teaching load of faculty members.
- Follow-up distribution of the courses of the departments on the halls assigned to each department.
- Checking the suitability of the number of students in each section with the capacity of the class assigned for the course.
- Follow up the work of the examination committees.
- Receive the results from the teachers of the courses in preparation for adoption before monitoring.

2.5 Committee of study plans and learning resources

Study Plans

- Arbitration of study plans from internal and external bodies to ensure access to an academic excellence plan, with emphasis on the fulfillment of the "National Qualifications Framework".
- Developing plans, curricula and scientific curricula in accordance with the needs of the society and the labor market.
- Activate the role of the advisory committee in the department.

- Identify and implement training programs to develop teaching, research and technical skills for faculty members.
- Determine the appropriateness of courses for practical life.
- Submit periodic reports on the curricula and scientific programs to the department council.
- Introducing good interdisciplinary programs.

Learning Resources

- Supervising the library of the department.
- Follow-up and work to provide sources of learning to meet all the needs of the program and its courses.
- Ensuring easy access to learning resources when students need them.
- Collecting the needs of the teaching staff from the learning resources before using them in sufficient time and work to provide them.
- Follow-up updating the scientific references of the decisions.

E-Learning

- Activating and integrating the work with electronic courses and digital content at all levels of study in the department.
- Commitment to the Blackboard system to be the tool in delivering electronic course information.
- Determine the appropriate training needs for faculty members and students to apply e-learning.
- Supervising the department's website.
- Urging faculty members to update their electronic pages on the department's website and to develop their educational materials and scientific production.

2.6 Alumni and Human Resources Committee

- Establish a database of graduates of the department and update it periodically.
- Collecting personal data of the students who are expected to graduate including their contacting means.
- Attract graduates qualified to continue their higher studies.
- Follow-up promotion of faculty members.
- Collecting, tabulating and documenting the data of employers and employees, indicating how to contact them, and exploring the possibility of
- cooperation with them in recruiting graduates and creating effective partnerships in this context.
- Develop communication programs, whether electronic or otherwise, to strengthen the relationship between graduate students and employment.
- Surveying (preparation, distribution and collection of questionnaires) graduates' opinions who have jobs in the public and private sectors outside the college.
- Find an effective mechanism to provide employment opportunities for graduates in their fields of specialization.
- Communicating with the public and private sectors to find opportunities to train students and qualify them to work in summer classes

2.7 Laboratories and Safety Committee

Laboratories

- Inventory materials, equipment and equipment in various laboratories and

- their requirements of materials, and organize the process of placing them in
- the correct place and maintenance periodically.
- Make a list of the day and date and sign the examiner at each device and
- follow it up first.
- Ensure the availability and operation of all laboratory equipment in the
- student laboratories.
- Ensure that maintenance plans (periodic and preventive) are available for
- laboratories and scientific equipment.
- Working to provide the required spare parts through guaranteed signed and
- approved maintenance and purchase contracts.
- Supervising and following-up the updating of the equipment in the student
- labs, providing the necessary maintenance, and ensuring full care for their cleanliness.
- Follow up the requests of faculty members for equipping laboratories or
- halls, and follow up the implementation of these requests.
- Provide teaching and learning aids for students in laboratories.

Safety

- Develop safety policies and regulations that achieve the safety in the department.
- Monitor the inspection of the equipments and all safety measures in the laboratory.
- Inventory safety equipment and organize the process of placing it in the correct place and maintenance periodically.
- Ensure that safety measures are provided in laboratories and classrooms before starting the study in each semester.
- Communicate with the main safety committee in the college regarding coordination, training courses and other works.
- Development of emergency phone numbers - Preparation of awareness raising instructional publications for students on safety procedures for various hazards (electrochemical) at the beginning of the academic year.
- Follow up the conservation of chemical and radioactive wastes in the department.
- Follow-up safety procedures in laboratories and classrooms and Place the safety phone numbers in the laboratory.
- Conducting periodic training for faculty members and students to comply with the implementation of evacuation methods and dealing with safety methods in laboratories.
- Follow-up of all safety requirements in the Department - Raising awareness among the staff of the department and students of the importance of complying with safety instructions.

2.8 Graduate Studies and Research Committee

- Develop a strategic plan for scientific research in the department and follow up on its implementation.
- Examining the files of applicants for postgraduate studies, sorting and nominating suitable candidates.
- Follow-up of the comprehensive examination for doctoral students.
- Supervising the performance of graduate students and submitting recommendations thereon to the department council.
- Follow-up student scholarship and submit periodic reports about them to the department.
- Establishing and updating a database of research, scientific projects and conferences locally and internationally, in addition to patents, prizes, books and translations.
- Encouraging publication in scientific journals with a global classification.
- List of graduate students involved in research, projects, conferences, patents, and local or international awards.
- Evaluation of the graduate programs in the department periodically.
- Prepare a list of graduates of the master's and doctoral students.
- Prepare a list of the faculty members supervising the scientific theses of the higher studies and its numbers.
- Conducting an annual evaluation of scientific research projects in the department and submitting recommendations to the Higher Studies and Scientific Research Committee at the College.

2.9 Committee on Public Relations and Community Partnership

Public relations

- Caring for social relations between faculty members and / or department.
- Develop programs of internal and external visits to the college or department.
- Follow-up files and correspondence with internal and external bodies and twinning projects and inform the Dean of the College or the Head of the Department of the progress and results later to make the appropriate decisions.
- Receiving foreign delegations and organizing their residency programs and visits.
- Contribute in providing the university magazine and the site of the college on web with the activities and events that taking place.
- Caring for social relations between faculty members or the department.

Community Partnership

- Develop practical programs to strengthen the relationship between the department and the community and follow up their implementation.
- Monitor and categorize scientific research projects carried out by the department and its members that contribute to the service of society and development plans.
- Monitoring and tabulating training programs and scientific consultations, and cultural and awareness activities carried out by

the department, which contribute to community service and development plans.

- Supervising the activities that serve the community, namely: museums, astronomical observatory, permanent exhibition, grassland, etc.
- Encouraging and developing the spirit of initiative among the employees of the department and the students to maximize the return of the service role to society.
- Activating the partnership between the program and the various community institutions, in particular public and private schools.
- Deepening communication between the department (Program) and the bodies responsible for development plans in the Kingdom of Saudi Arabia.

2.10 Supporting Committees

ISO Committee

- Preparing the organizational structure, job descriptions and tasks for each of its units.
- Supervise the implementation of the administrative quality system and address the gaps that prevent its implementation.
- Preparing plans to develop and improve the department's quality management system.
- Working on achieving and applying the objectives and policy of administrative quality.
- Making recommendations for improving financial and administrative performance.
- Surveying the satisfaction of beneficiaries (internal and external) about the services provided.

- Provide the necessary facilities to implement the system.
- To identify, analyze and solve the employee problems.
- Analyzing and treatment of complaints of beneficiaries and take the necessary corrective and preventive measures.
- Supervise internal and external audit and follow up the implementation of its recommendations.

Statistics Committee

- Updating a database of faculty members, administrators, technicians, scholarships and internal supervision in the department and keeping them in a special record.
- Making list of the scientific works of each member of the teaching staff, and the activities they has undertaken since the previous year whether writing books, research projects, scientific research, attending seminars or conferences inside or outside the Kingdom.
- Making list of seminars, conferences, lectures, training courses, scientific consultations, research services, cultural, social and awareness activities of the faculty members which they have undertaken for community service over the past three years.
- Making a list of the prizes received by faculty members or students in the department.

CHAPTER 3: TEACHING, LEARNING AND ASSESSMENT ASSURANCE SYSTEM

Both undergraduate and postgraduate programs at the Physics and Astronomy department implements different methods to gain a comprehensive understanding of the quality of teaching and learning, leading to informed decisions that enhance the educational experience for students.

3.1 Curriculum

- Each course in the program has a predefined curriculum. The department's planning committee oversees the program structure, syllabi and curricula to make sure that the program complies with the regulations of institute's Vice Rectorate for Educational and Academic Affairs. Any changes or updates must be reviewed and approved by the committee and department council.
- The curriculum is regularly reviewed to ensure that it aligns with educational standards and national needs.
- The curriculum is frequently assessed to make sure that it is current, relevant, and challenging enough to promote deep learning.

3.2 Teaching effectiveness

- Instructors teaching in the program must have a PhD degree in physics and an outstanding record of research.
- The teaching methods, responsibilities, and expectations are well defined among the program instructors to ensure effective teaching.
- All instructors must follow the same approved curriculum, teaching and assessment methods and the timeline set by the program to ensure:

- **Consistency:** A predefined curriculum ensures that all students receive the same level of instruction and are exposed to the same material. This helps maintain consistency in the learning experience for all students.
- **Efficiency:** Following the curriculum can help the instructors stay on track and ensure that they are able to cover all necessary material within the semester timeline.
- **Student Success:** A well-designed curriculum is intended to support student learning and help them achieve specific learning outcomes. By following the curriculum, instructors can help ensure that students are receiving the instruction and support they need to be successful in their academic pursuits.

3.3 Learning Outcomes

- The department sets program learning outcomes that must be approved by the department council to ensure that students achieve specific knowledge, skills, and values by the time they complete their program of study.
- For each course, the program has established clear, measurable learning outcomes that reflect the knowledge, skills and values students should acquire through the course.

3.4 Evaluations

Student Learning: The student learning is assessed via:

Direct Assessments: At the end of each course, instructors analyze student

performance on exams, projects, and assignments to evaluate whether learning outcomes are being met.

Course Evaluation: At the end of each semester, standardized surveys are used to gather student perceptions of teaching effectiveness, course content, and overall satisfaction.

Program Evaluation: Informal surveys are distributed during the semester to gather real-time feedback from instructors and students and adjust as needed.

Teaching Evaluation: At the end of each course, instructors are asked to submit course reports, grades and students' evaluation to the course, which showcase the instructors' teaching methods, materials, and the effectiveness of their teaching.

Students' right to appeal assessment decisions: Students (and staff) are informed of the written guidelines about the grounds for appeal and the appeals process.

3.5 Continuous Improvement:

Action Plans: Based on the data collected from instructors and students, action plans are developed to address identified areas for improvement.

Review Cycles: A continuous assessment and improvement cycle is established to ensure ongoing enhancement of teaching and learning quality.

The quality cycle of teaching and learning is shown in figure (3.1)

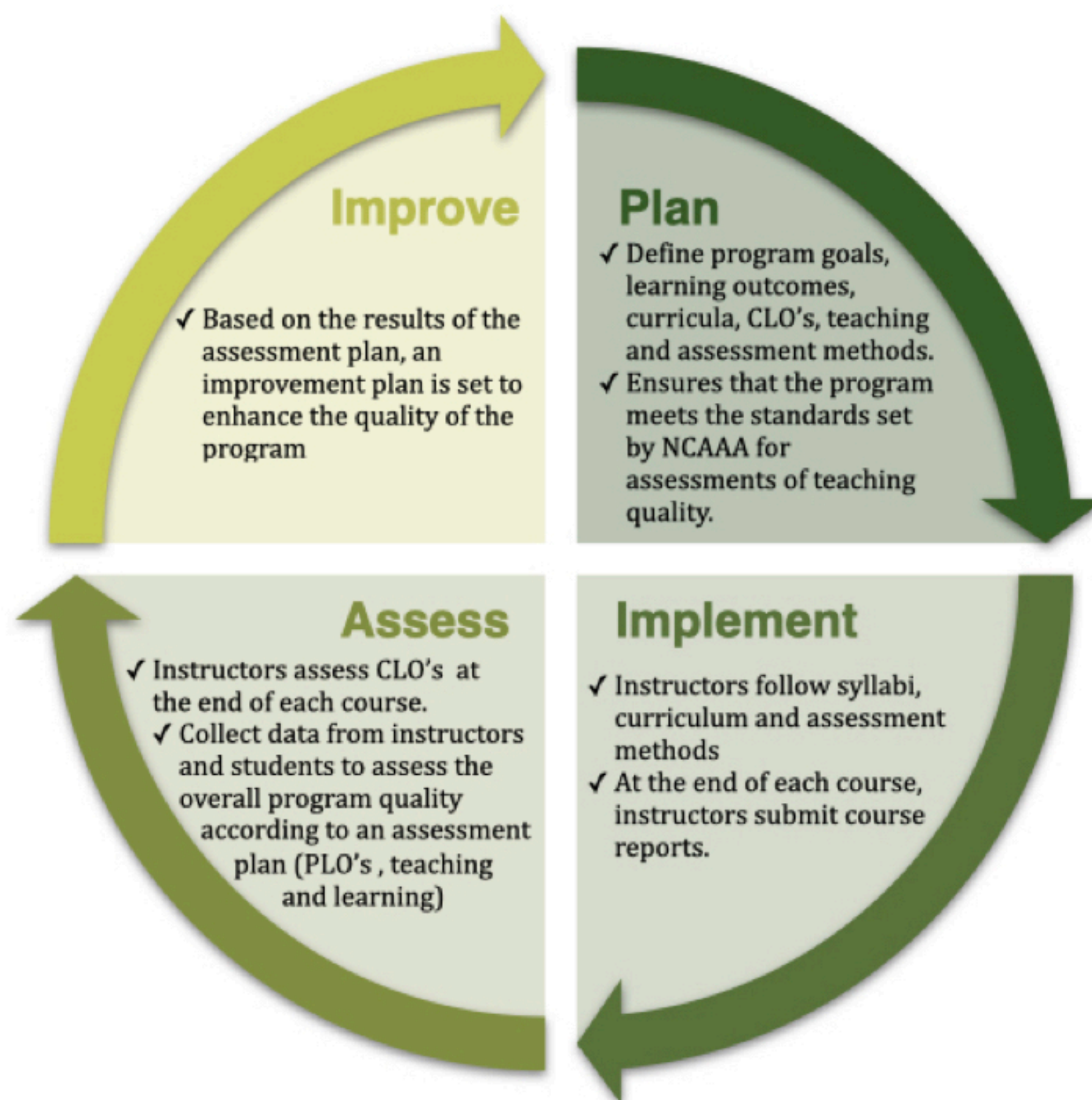


Figure (3.1) The Quality Cycle of Teaching and Learning.

CHAPTER 4: QUALITY ASSURANCE IN FACULTY, ADMINISTRATION AND TECHNICAL STAFF

Quality assurance in the Department of Physics and Astronomy ensures the faculty, administration, and technical staff contribute effectively to the department's goals and align with institutional and accreditation standards.

4.1 Teaching Staff and Assistants

- Faculty should have extensive knowledge and expertise to conduct their work effectively.
- Before hiring, ensure that the faculty has the necessary qualifications.
- Before starting, inform newly recruited faculty of their responsibilities and program information.
- Conduct an annual evaluation of the department faculty based on predefined criteria that align with the department goals.
- Support professional development and teaching skills.
- Encourage participation in conferences, seminars, and certification programs.

The quality of hiring faculty can be assessed by:

- Records setting standards for employment and descriptions of preparatory programs for newcomers.
- Reports on the involvement of faculty members in professional development activities relevant to their specialties.
- The student-faculty ratio.

4.2 Administration Staff

Operational Efficiency

- **Clear Procedures:** Develop documented processes for admissions, exams, and general administration.
- **Data Management:** Implement robust systems for managing records of students, faculty, and departmental activities.

Enhancement of Skills

- Offer continuous training in computational skills and software that meets the department's requirements

4.3 Technical Staff

Lab Management

- **Equipment Maintenance:** Regularly inspect and maintain lab equipment to ensure reliability and safety.
- **Inventory Control:** Keep updated records of lab inventory and procure materials proactively.
- **Safety Protocols:** Enforce safety regulations and provide training for students and staff.

Support for Teaching and Research

- **Technical Assistance:** Support faculty and students with experimental setups, simulations, and technical troubleshooting.
- **Innovation Support:** Help integrate new technologies and tools into teaching and research.

Skill Enhancement

- Provide ongoing training in emerging technologies, such as computational tools, advanced instrumentation, and software relevant to physics.

4.4 Quality Assurance Processes

- **Performance Indicators:** Define and monitor key performance indicators (KPIs) for faculty, staff, and students.
- **Collaborate:** Foster communication and cooperation among faculty, administration, and staff.
- **Facilitate:** Designate staff and committees to oversee and ensure alignment with quality assurance objectives.
- **Internal Audits:** Regularly assess the department's teaching, administrative, and technical services.
- **Feedback Mechanisms:** Establish systems for gathering feedback from students, faculty, and external reviewers.
- **Continuous Improvement:** Use audit and feedback results to implement action plans for improvement.
- **Accreditation Readiness:** Prepare for and engage in external accreditation reviews by organizations relevant to physics education and research.

By integrating these measures, the Department of Physics and Astronomy can ensure excellence in teaching, administration, and technical operations, enhancing its reputation and outcomes. The quality cycle in Teaching, administration and technical staff is shown in the figure (4.1).



Figure (4.1) Quality cycle for Teaching, Administration and Technical staff.

CHAPTER 5: QUALITY ASSURANCE IN STUDENTS AFFAIR

Quality assurance in student affairs is a systematic approach aimed at enhancing the overall experience and support provided to students throughout their academic journey. It encompasses various services, including academic advising, counseling, and health services. Quality assurance not only fosters student success and well-being but also strengthens the institution's credibility and reputation in both undergrad and higher education. Ultimately, it aims to create a supportive environment where all students can thrive academically, socially, and personally.

5.1 Admissions

Quality assurance in student affairs ensures that the admission process is fair, transparent, and effective in attracting and selecting qualified candidates.

- a. **Use of Technology:** Utilizing software and tools that enhance the admissions process while also safeguarding data integrity and security.
- b. **Ethical Practices:** Committing to ethical standards in admissions to minimize bias and ensure that all applicants are assessed fairly.
- c. **A minimum GPA:**
 - **Academic Preparedness:** A minimum GPA acts as a measure of a student's readiness for academic challenges. It enables the department to assess whether applicants possess the essential knowledge and skills necessary for success.
 - **Standardization:** Setting a minimum GPA establishes a uniform criterion for evaluating applicants, which streamlines the

admissions process and ensures consistent expectations across the board.

- **Competitive Landscape:** The department receives significantly more applications than it can accommodate. A minimum GPA helps to filter the applicant pool, focusing on those who have shown strong academic performance.
- d. **Diversity of Experience:** Although GPA is crucial, universities typically consider it alongside other factors—such as extracurricular activities, personal statements, and letters of recommendation—to cultivate a diverse and well-rounded student body.

5.2 Grading

Quality assurance in grading within student affairs is crucial for maintaining the integrity and credibility of educational assessments. This process ensures that grading practices are fair, consistent, and aligned with the institution's academic standards.

a. Clear Grading Policies

Establishing transparent grading policies is essential for clarity and consistency. These policies should define grading scales, criteria, and procedures for different types of assessments. By providing students with clear expectations, institutions can minimize confusion and enhance trust in the grading process.

b. Standardized Assessment Practices

Implementing standardized assessment practices helps ensure fairness in grading across courses and departments. This may involve using common rubrics for assignments and exams, which allows for uniform evaluation criteria that all instructors can follow.

c. Diverse Assessment Methods

Incorporating a variety of assessment methods—such as exams, projects, presentations, and field trip—allows for a comprehensive evaluation of student learning. This diversity accommodates different learning styles and ensures that all aspects of student performance are considered in the grading process.

d. Timely Feedback

Providing timely and constructive feedback is essential for student development. Feedback should be specific and actionable, helping students understand their strengths and areas for improvement. This not only supports academic growth but also fosters a positive learning environment.

e. Appeals and Grievance Processes

Having a transparent appeals process for students to contest grades ensures accountability and fairness. Clear procedures for addressing grade disputes help maintain trust in the grading system and provide a platform for students to voice their concerns.

5.3 Student Counseling

Quality assurance in student counseling is essential for delivering effective support services that address the diverse needs of students.

a. Standardized Practices

Establishing standardized protocols for counseling services ensures consistency in the quality of care provided. This includes clear guidelines on assessment, intervention strategies, and ethical practices.

b. Trained Professionals

Hiring and retaining qualified counselors with appropriate training and certifications is crucial. Continuous professional development keeps staff updated on regulations and best practices.

c. Assessment and Feedback

Consistently evaluating the effectiveness of counseling services through student feedback, satisfaction surveys, and outcome measurements helps identify strengths and areas for improvement. This data can guide program enhancements.

d. Confidentiality and Ethical Standards

Ensuring strict adherence to confidentiality and ethical standards builds trust between students and counselors. This includes training staff on privacy regulations and ethical dilemmas they may encounter.

e. Accessibility and Inclusivity

Quality assurance efforts should focus on making counseling services accessible to all students, including those from diverse backgrounds. This may involve providing services in multiple languages, offering virtual counseling options, and ensuring physical accessibility.

f. Data-Driven Decision Making

Utilizing data analytics to assess the effectiveness of counseling programs allows for informed decision-making.

5.4 Medical services

Quality assurance in student affairs related to medical services is vital for ensuring that students receive safe, effective, and equitable healthcare.

a. Standardized Protocols

Implementing standardized medical protocols helps maintain consistency in care delivery. This includes clear guidelines for diagnosis, treatment, and follow-up procedures, ensuring that all students receive the same level of care.

b. Qualified Healthcare Professionals

Recruiting and retaining licensed medical professionals with relevant training and experience is crucial. Continuous professional development and training in the latest medical practices and campus-specific issues enhance the quality of care provided.

c. Patient Feedback and Satisfaction Surveys

Regularly gathering feedback from students through satisfaction surveys allows for the assessment of the quality of medical services. This feedback can highlight strengths and identify areas for improvement.

d. Accessibility and Inclusivity

Quality assurance efforts should focus on making medical services accessible to all students, including those with disabilities and from diverse backgrounds. This may involve providing translation services, extending clinic hours, and offering online options.

5.5 Viva for Postgraduate Students

Quality assurance in student affairs related to viva examinations for postgraduate students is crucial for maintaining the integrity and fairness of the assessment process.

a. Clear Guidelines and Criteria

Establishing clear guidelines and criteria for the viva process ensures that all students understand what to expect. This includes outlining the

evaluation criteria, expected competencies, and the structure of the examination.

b. Professional examiners

Examiners should possess the necessary academic qualifications and expertise in their respective fields. Their advanced knowledge and experience enable them to assess candidates effectively, ensuring that evaluations are rigorous and relevant.

c. Standardized Procedures

Implementing standardized procedures for conducting Vivas helps ensure consistency across different departments and disciplines. This can include the format of questioning, time limits, and the overall examination environment.

d. Student Preparation Resources

Providing resources and support for students to prepare for their viva can enhance their confidence and performance. This may include workshops, mock vivas, and access to informational materials.

e. Feedback Mechanisms

Creating mechanisms for students to provide feedback on the viva process allows for ongoing assessment of its effectiveness. This feedback can help identify areas for improvement and ensure that students' experiences are considered.

f. Monitoring and Evaluation

Regularly monitoring and evaluating the viva process can help maintain high standards. This includes reviewing outcomes, examiner performance, and student feedback to identify trends and areas for enhancement.

g. Appeals Process

Establishing a clear appeals process allows students to address any concerns they may have regarding the viva outcome. This ensures transparency and fairness in the assessment process.

5.6 Graduation:

Quality assurance in student affairs during the graduation process is vital to ensuring a smooth and positive experience for graduates. This encompasses various components that enhance the integrity, organization, and overall satisfaction of students as they transition from academia to their professional lives.

a. Clear Graduation Requirements

Establishing and communicating clear graduation requirements is essential. This includes specific criteria related to coursework, credits, and any additional obligations (such as internships or capstone projects) that students must fulfill to graduate. Clear guidelines help students understand what is expected of them and reduce confusion.

b. Effective Communication

Maintaining open and effective communication with students regarding graduation procedures is crucial. Regular updates about deadlines, ceremonies, and requirements help keep students informed and engaged throughout the process.

c. Graduation Ceremonies

Planning accessible graduation ceremonies is essential to ensure that all students can participate in this significant milestone. This includes considering the needs of students with disabilities, providing translation services, and accommodating diverse cultural practices.

d. Feedback Mechanisms

Implementing feedback mechanisms allows students to share their experiences and perspectives regarding the graduation process. Surveys can help identify areas for improvement and inform future practices, ensuring that the process remains student-centered.

CHAPTER 6: RESOURCES, FACILITIES AND EQUIPMENT ASSURANCE SYSTEM

6.1 Learning Resources

The university has established clear procedures to guarantee that the facilities necessary for student learning are appropriate and sufficient for each program. This entails conducting comprehensive inspections of the library, laboratories, and computer facilities to guarantee their quality. They have implemented policies regarding information security and IT utilization. Learning resource management is regulated by the Deanship of Library Affairs.

To ensure that all the standard requirements are met:

- Learning materials need to be appropriate, comprehensive, and accessible to students.
- Faculty members are required to promptly offer information regarding requirements.
- The review process involves both staff and students.
- References and materials must be accessible online along with guidance for their use.

The quality of learning resources can be evaluated by:

- Users provide satisfactory results.
- Availability of resources.
- A timetable for students and faculty to use these amenities.
- Developing orientation and training programs for new students.

6.2 Facilities and equipment

To meet standard requirements:

- provide necessary learning equipment and facilities in education labs as well as research labs.
- Optimize the use of the equipment and facilities by conducting effectiveness surveys.

Quality of equipment and facilities can be evaluated by:

- Organizing documents.
- Users' surveys revealed satisfactory outcomes.
- Assess the status and timeline for those facilities and equipment.
- Set strict rules for using expensive equipment and facilities.
- Reports on any difficulties with equipment and facilities.

6.3 Safety, Emergency Evacuation and Maintenance

- **Fire detection and control systems:** Install and maintain smoke detectors and fire alarms throughout the building to effectively detect and suppress fires.
- **Emergency communication systems:** Install emergency communication systems to transmit alerts and instructions to people during emergencies.
- **Backup and emergency power systems:** Guarantee the availability of backup power systems, such as generators, to support critical equipment in labs during power outages or emergencies.

- **Security systems:** Implement security systems that are suitable for the situation, such as surveillance cameras, access control systems, and alarms, to detect and prevent security threats.
- **Maintenance:** The department is directly informed of all laboratory and equipment issues by submitting the Maintenance Request Form.

Safety Policies and Procedures:

- **Emergency response plan:** Develop a comprehensive emergency response plan that defines the procedures for various types of emergencies, such as evacuation protocols, communication channels, and individual duties and responsibilities.
- **Drills and training:** Conduct routine evacuation drills and training sessions to ensure that occupants are well-versed in the correct use of safety equipment, emergency procedures, and evacuation routes.
- **Programs for safety education:** Offer educational resources, training sessions, and educational materials to inform occupants about the significance of reporting safety concerns, evacuation routes, and safety procedures in labs and classrooms.
- **Inspections and maintenance:** Implement consistent inspection and maintenance schedules for safety systems and equipment to guarantee their correct operation and commitment to safety regulations.
- **Mechanisms for reporting:** Encourage occupants to promptly report potential hazards or issues by implementing a clear and accessible reporting system for safety concerns and incidents.

CHAPTER 7: RESEARCH ASSURANCE SYSTEM

7.1 Postgraduate Research Quality

Research is a fundamental element of the postgraduate program. We – at the Physics and Astronomy department - accurately follow Chapter 9 in the executive rules of graduate's studies regulations which has been updated 8th of Rabi' al-Awwal 1446 H (05/09/2024).

link: <https://graduatestudies.ksu.edu.sa/en/node/615>

7.1.1 Beginning of research:

- Postgraduate students can start research projects once they complete at least 50% of the required academic unit of program's courses with an overall GPA should not less than B. This requirement is set to ensure that students have the necessary knowledge and skills to conduct high-quality research.
- Research interest (or topic) is selected via postgraduate students. The department graduates studies committee announces a range of scientific topics provided by research groups via special electronic form where each student can read and choose the preferred topic.
- The formal registration of the project is required. This is done via preparing a research plan by postgraduate student in the selected research topic under supervision from his\her instructors, which they are not less than two. The plan needs to be approved by both the departments and college's councils, but the final formal approval is from the student affairs committee in the Deanship of Graduate Studies. The procedure of submitting the research plan is illustrated here link:

7.1.2 Supervision:

- The effective completion of postgraduate research activity depends mostly on academic supervision. Designing the research project, guiding the postgraduate student in his or her work, preserving the general direction of the research, setting and maintaining suitable targets for academic standards, and preparing the student for submission of their final thesis for examination depend critically on the supervisor(s). Every registered postgraduate research student in the physics department will have a supervising team usually consisting of at least one co-supervisor and a principal supervisor.
- The department follows article 46 in the executive rules of graduates' studies regulation to decide the research supervisors. The main points are, (a) supervisor needs to be among faculty members, (b) holding a PhD and (c) has - at least- two published papers in respected peer-review journals. (d) Professor or Associate Professor can only be assigned for PhD project supervision.
- In the case that the supervisor must be from another institution, a department's council approval is needed with the conditions listed in article 47.
- The number of students under each supervisor is determined via Article 53 and Physics and Astronomy department follow this.

7.1.3 Progresses report:

- Supervisor needs to submit a progress report about his\her postgraduate student at the end of each term to department's

council, explaining the progress of student and the difficulty - if any - and how this could affect his\her thesis.

- The department graduates studies committee, after approval from department council, send a warning letter to students who lack seriousness toward their project. In case that the student not response to the warning, twice, the department has a right to dismiss him /her after series of approvals from department's council, college council and postgraduate's council. Formal documents need to be submitted using the following form: link: <https://graduatestudies.ksu.edu.sa/ar/node/1617> .
- A final progress report should be submitted to the lead of the program via supervisor once the student finished his\her thesis. A copy of thesis needs also to be submitted with a citation report.

7.1.4 Viva

- Although the viva committee is initially determined via student's supervisor, the approval of the department's council is required. Before this step, the supervisor needs to ensure that, (a) his\her student finished all the required courses as well as his\her thesis requirement. (b) For PhD students, passing the comprehensive exam and publishing -at least - one paper of his\her work - in peer-review journal - are required before viva.
- It is the responsibility of the department to ensure the integrity of viva committee.
- It is the responsibility of department's postgraduate committee,
- to ensure that student has his\her viva after the approval of Graduate Studies council with time limit of no more than three month of their approval.
- (b) to announce the day of viva through the department website and email.

- Viva needs to be public to ensure its integrity.
- After viva, supervisor needs to submit a viva report to the head of the department within one week from viva.

The quality cycle of postgraduate research is shown in figure (7.1)



Figure (7.1) Quality cycle of postgraduate research.

7.3 Undergraduate Research Quality

Although Research is not the main core of undergraduate program, we – at the Physics and Astronomy department - trained our students to be able to run advanced research with a team.

7.3.1 Courses for research:

Two main courses in Curriculum used for research: Phys 490 and Phys 499. The first is designed to provide students with research skills and the latter is a project research course where students are involved in

small research topics. More details can be found in the teaching and learning section.

7.3.2 Beginning of research:

- Passing Phys 490 is required to register for a research project (Phys 499). A formal registration of the project is required before selecting a research topic.
- Research interest (or topic) is selected via undergraduate students. The coordinator of the research project course announces a range of scientific topics provided by faculty members of department via special electronic form where student can read and select.
- Student starts his\her project under supervision of instructor. The project starts with brainstorming between a student and his\her instructor.

7.3.3 Evaluations of research project:

- The instructor assesses the student work and progress using emulation form that decide by college's council (This form is attached in appendix)
- In the case the student shows lack of seriousness towards his\her project, the instructor informs the coordinator who takes an action with the lead of department.
- After submitting his\her essay, the student is assessed both orally and via his written report and poster by different committees designated by the coordinator.
- At the end of the research project for all students, the coordinator provides a short report about the students' results.

The quality cycle of undergraduate research is depicted in figure (7.2).

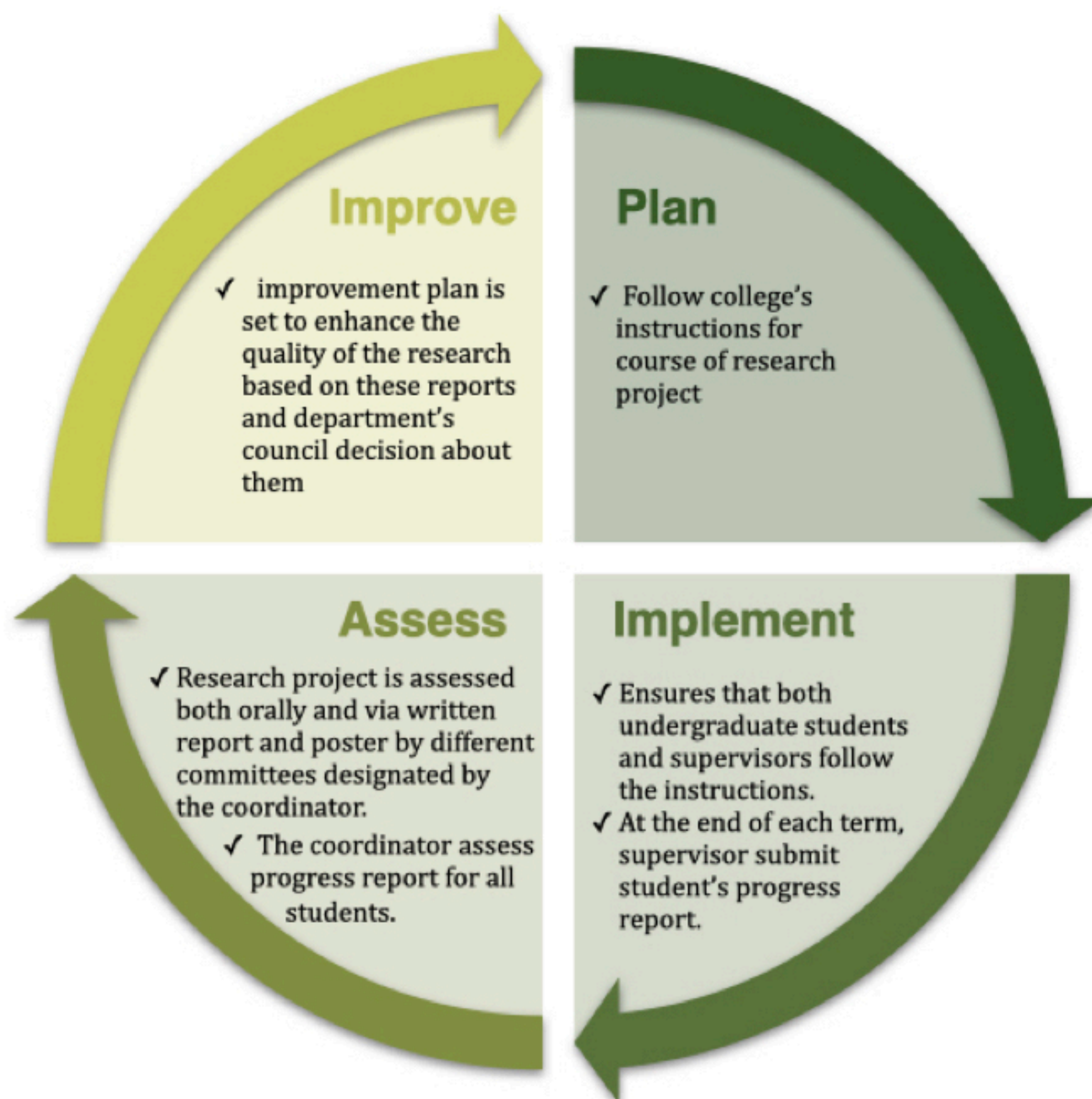


Figure (7.2) Quality cycle of undergraduate research.

Appendix

Students' Experience Survey

Course Evaluation Survey

Student Satisfaction Survey (SSS)

Exit Survey for Graduating Students

Alumni Satisfaction Survey

Employers' Evaluation of Graduates

Thesis Course Evaluation Survey

Staff Satisfaction Survey

Assessment template and rubrics of Student Report, poster and presentation of Research Project.