1. INSTITUTE VISION AND MISSION

Vision of the Institute

To be a world class Engineering and Management Institution in leading technological and socio-economic development of the country by enhancing the global competitiveness of technical manpower and by ensuring high quality technical education through dissemination of knowledge, insights and intellectual contributions.

Mission of the Institute

To provide Value-based Technical Education and mould the Character of Younger Generation

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Process for defining the Vision and Mission of the Department

➢ The process starts with the formation of Department Advisory Board (DAB) which consists of Members of the Management, Administrators, HoDs, Senior faculty members, Industry and Academic experts to acquire inputs for the formulation of draft Vision and Mission statements for the departments.

➢ Further, a Programme Assessment Committee (PAC) involving HoDs and faculty members is formed in the departments to prepare the draft statements of department Vision and Mission in the department concerned perception.

➢ The HoDs collect feedback from the students of all the years. The draft vision and mission statements are developed by the PAC.

➢ Further, the suggestions are also collected from Parents, Alumni, Industry and Academic experts in DAB to ensure the correlation between the departments Vision and Mission statements and the Institute Vision and Mission statements.

➢ The statements are also benchmarked with other leading institutions and validated. The final Vision and Mission statements for the Departments are arrived with the consensus of all stakeholders.

➢ Board of Studies (BoS) finally approves the Departments' Vision and Mission statements.

➢ It is communicated to the entire learning community and stake holders about the departments' goals to be achieved in the years to come. These statements are reviewed periodically for any further changes.

The process for defining departments Vision and Mission is illustrated in the flow chart given below:

```
                          ┌──────────────────┐
                          │ Vision and Mission│◄┄┄┄┄┄┄┄┄┄┄┄┐
                          │  of the Institute │            ┆
                          └──────────────────┘            ┆
┌─────────────────────┐              │         ┌────────────────────────┐
│  Students           │              ▼         │  Alumni                │
│                     │   ┌──────────────────┐ │                        │
│  Faculty and        │──►│ Collect Stake    │◄│  Industry and          │
│  Supporting Staff   │   │ holders Feedback │ │  Employers             │
│                     │   └──────────────────┘ │                        │
│  Management         │              │         │  Professional Bodies   │
└─────────────────────┘              │         │                        │
   Internal stakeholders             │         │  Parents               │
                                     │         └────────────────────────┘
                                     ▼          External stakeholders
┌─────────────────────┐   ┌──────────────────┐
│ Program Assessment  │──►│ Formulate        │
│ Committee (PAC)     │   │ Department Vision │
│                     │   │ and Mission      │
│ Department Advisory │──►└──────────────────┘
│ Board (DAB)         │             │
│                     │             ▼
│ Board of Studies    │   ┌──────────────────┐
│ (BoS)               │   │ Review and Modify│
│                     │   └──────────────────┘
│ Academic            │             │
│ Counciland          │──►    ◄ Satisfactory ► ── No
│ Governing Body      │             │ Yes
└─────────────────────┘   ┌──────────────────┐
  Administrative /        │ Accept and Approve│
  Management System       └──────────────────┘
                                     │
                          ┌──────────────────┐
                          │ Disseminate Vision│
                          │ and Mission of the│
                          │ Department        │
                          └──────────────────┘
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Process for defining the Vision and Mission of the Department
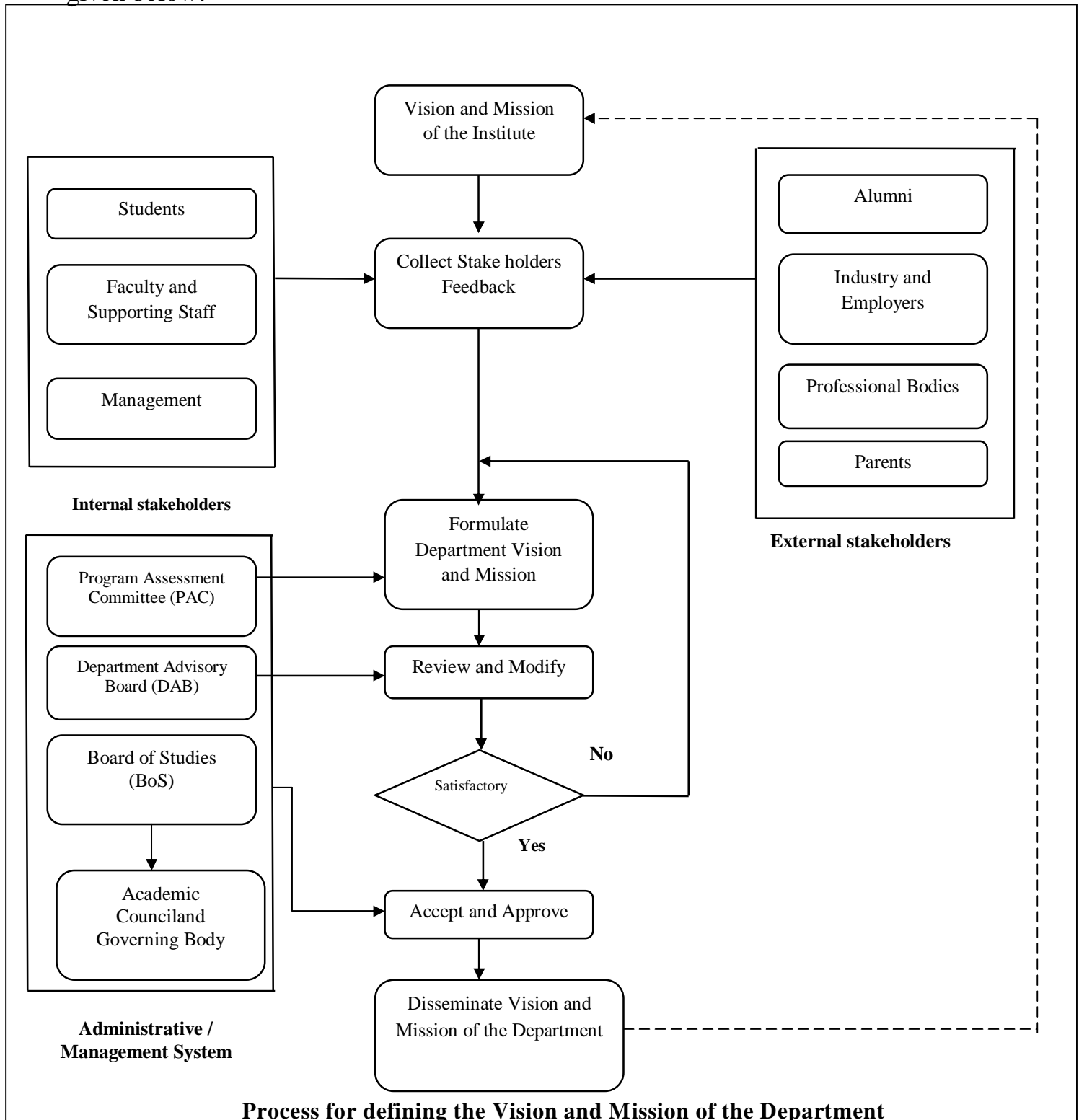
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2. PROGRAM EDUCATIONAL OBJECTIVES, PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

2.1 PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The Educational Objectives of an Engineering degree program are the statements that describe the expected achievements of graduates in their career, and what the graduates are expected to perform and achieve during the first few years after graduation.

Process for defining the PEOs of the Department

➢ The process of establishing Program Educational Objectives (PEOs) starts with acquiring inputs from stakeholders by forming a team to formulate the statements, targets and to evaluate the requirement.

➢ The PAC of the departments prepares the inputs for PEOs. The PEOs are drafted based on the summary of views obtained during consultation with the stake holders.

➢ The newly drafted PEOs are discussed in the brainstorming sessions involving the entire faculty team to define PEOs in line with the departments Vision and Mission statements.

➢ The PEOs are fine-tuned based on stakeholder's feedback that is received when the faculty meet stakeholders on various occasions like delivering Expert Lectures, Visiting Industries, Campus Placement Interviews, Conferences/ Workshops/ Seminars, Viva-voce Examinations, Parents Meeting, Alumni Interaction, etc.

➢ The drafted PEOs are benchmarked with the PEOs of leading Colleges/ Universities and validated. The finalized PEOs are implemented after obtaining approval from the Departments' Advisory Board. Identification and designing of courses with defined objectives are done once the PEOs are finalized.

➢ The Core and Elective courses are introduced to achieve all the Program Educational Objectives. Thus, the confirmed PEOs are published in the Curriculum.

➢ Review on the achievement of PEOs is carried out often through stakeholders' survey (Students/ Faculty/ Alumni/ Employers/ Members of Governing Council / Academic Council and BoS).

➢ The departments evaluate the results and come up with the action plans for the continual quality improvement of the program.
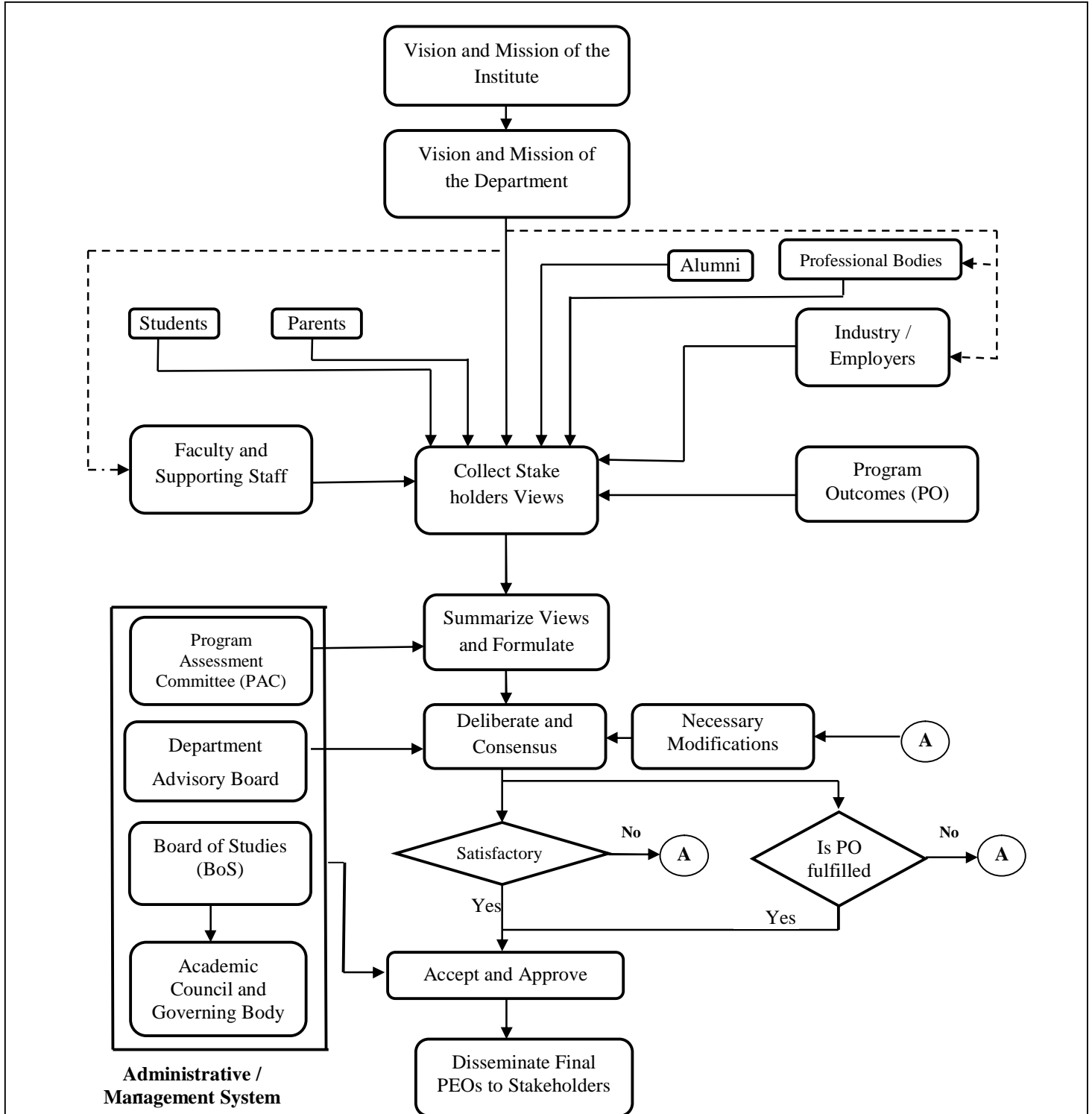
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Process for defining the PEOs of the Department

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2.2 PROGRAM OUTCOMES (POs)

Student outcomes are statements that describe what students are expected to know or be able to do by the time they complete an academic program. Program outcomes examine what a program or process does, achieves, or accomplishes for its improvement and/or in support of institutional or divisional goals: generally numbers, needs, or satisfaction driven. They address quality, quantity, fiscal sustainability, facilities and infrastructure and growth.

The Vision, Mission, PEOs of the Departments along with the 12 Graduate Attributes that are given by the NBA & NAAC are used in defining the POs.

PO1: Engineering Knowledge

PO2: Problem Analysis

PO3: Design/Development of Solutions

PO4: Conduct Investigations of Complex Problems

PO5: Modern Tool Usage

PO6: The Engineer and Society

PO7: Environment and Sustainability

PO8: Ethics

PO9: Individual and Team Work

PO10: Communication

PO11: Project Management and Finance

PO12: Life-long Learning

2.3 PROGRAM SPECIFIC OUTCOMES (PSOs)

These are the statements that define outcomes of a. program which make students realize the fact that the knowledge and techniques learnt in this course has direct implications for the betterment of society and its sustainability. Outcomes are specific, measurable statements that let the learner know when they have reached their goals. Outcome statements describe specific changes in Knowledge, Attitudes, Skills, and Behaviors that one expect to occur as a result of one's actions.
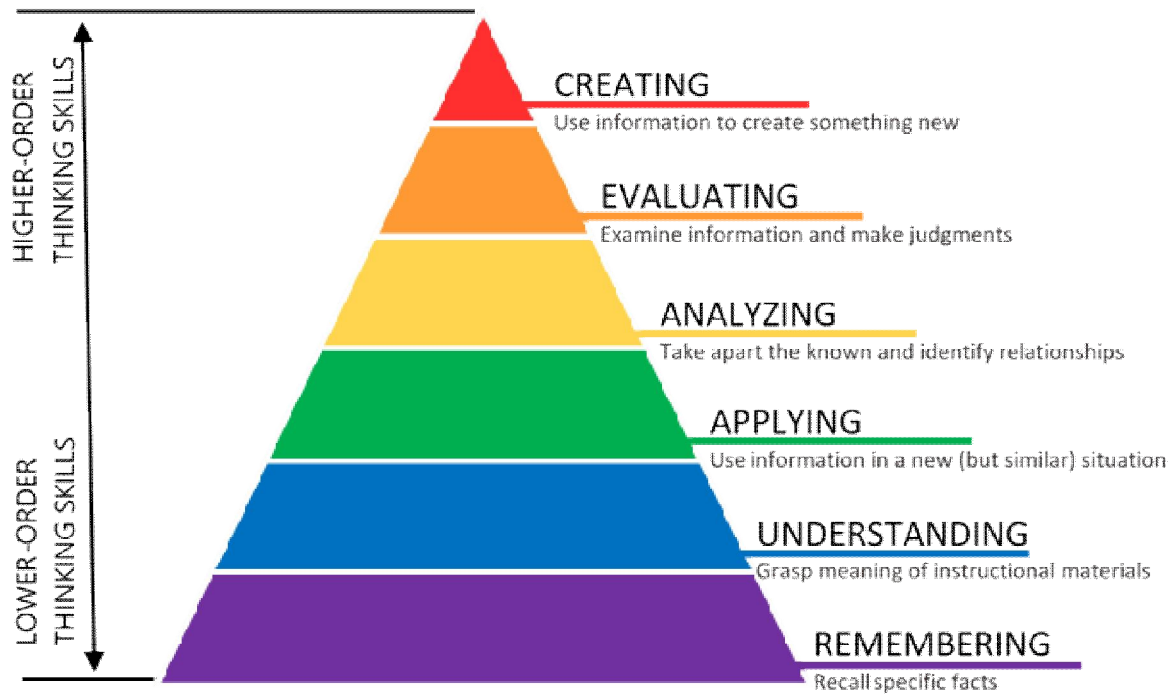
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3. BLOOM'S TAXONOMY

Bloom's Taxonomy was developed to promote higher forms of thinking in education such as analyzing and evaluating concepts, processes, procedures, and principles rather than simply memorizing facts. It is a framework for educational achievement in which each level depends on the one below, often drawn as a pyramid. The model is used in instructional design primarily for creating effective learning objectives.

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4. CO-PO AND CO-PSO MAPPING OF COURSES

All the courses of each department together must cover all the POs and PSOs. For a course, the Cos and POs are mapped through the CO-PO matrix and to PSOs through the CO-PSO matrix which exhibits correlation between the courses and the POs & PSOs.

The correlation levels 1, 2 or 3 are defined as

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

Level of Outcomes

There are four levels of outcome such as Course Outcome (CO), Program Outcome (PO), Program Specific Outcome (PSO) and Program Educational Objective (PEO). Course Outcomes are the statements that declare what students should be able to do at the end of a course. NBA defines Program Outcomes as mentioned in Annexure I (Graduates Attributes) and Program Specific Outcomes as defined by the Program. The Program Outcomes reflect the ability of graduates to demonstrate knowledge in fundamentals of Basic Sciences, Humanities and Social Sciences, Engineering Sciences, Open Electives and apply these principles in understanding. Further, practically, apply the knowledge in Program Core Courses, Employability Enhancement Courses, Program Specific Electives and Projects which enable the graduates to be competent at the time of graduation. The graduates must adhere to professional and ethical responsibilities in the pursuit of their careers and also for the benefit of the society. These outcomes alsoenable the graduates to pursue Higher Studies and engage in R&D for a successful professional career.
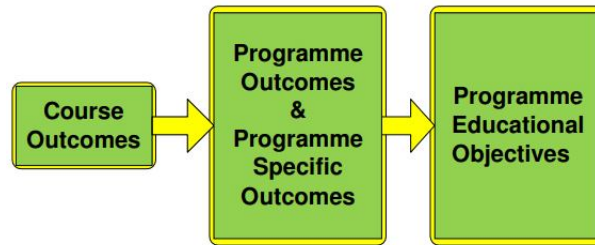
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Program Specific Outcomes are the statements that assert what the graduands of a specific engineering program should do what they are able to do. Program Educational Objectives are the broad statements which describe in detail about the career and professional accomplishments after significant years of graduation that the program prepares the graduands to achieve.

5. ASSESSMENT PROCESS

5.1 Assessment of Course Outcome and Attainment Process

All courses have their own COs to be mapped to the relevant POs and PSOs. Once the outcomes for a course are decided, the assessment methods are designed to assess the attainment of the stated outcomes. Assessment of CO is computed at the end of every semester. The assessment tools are

➢ Continuous Assessment Test

➢ End Semester Examinations

Course level assessment is carried out through Continuous Assessment Tests, Assignments, Online Tests, Project Based Learning, Practical Examinations and Viva -Voce. Each Course has clearly defined objectives, set of measurable outcomes which contributes to one or more of the program outcomes.
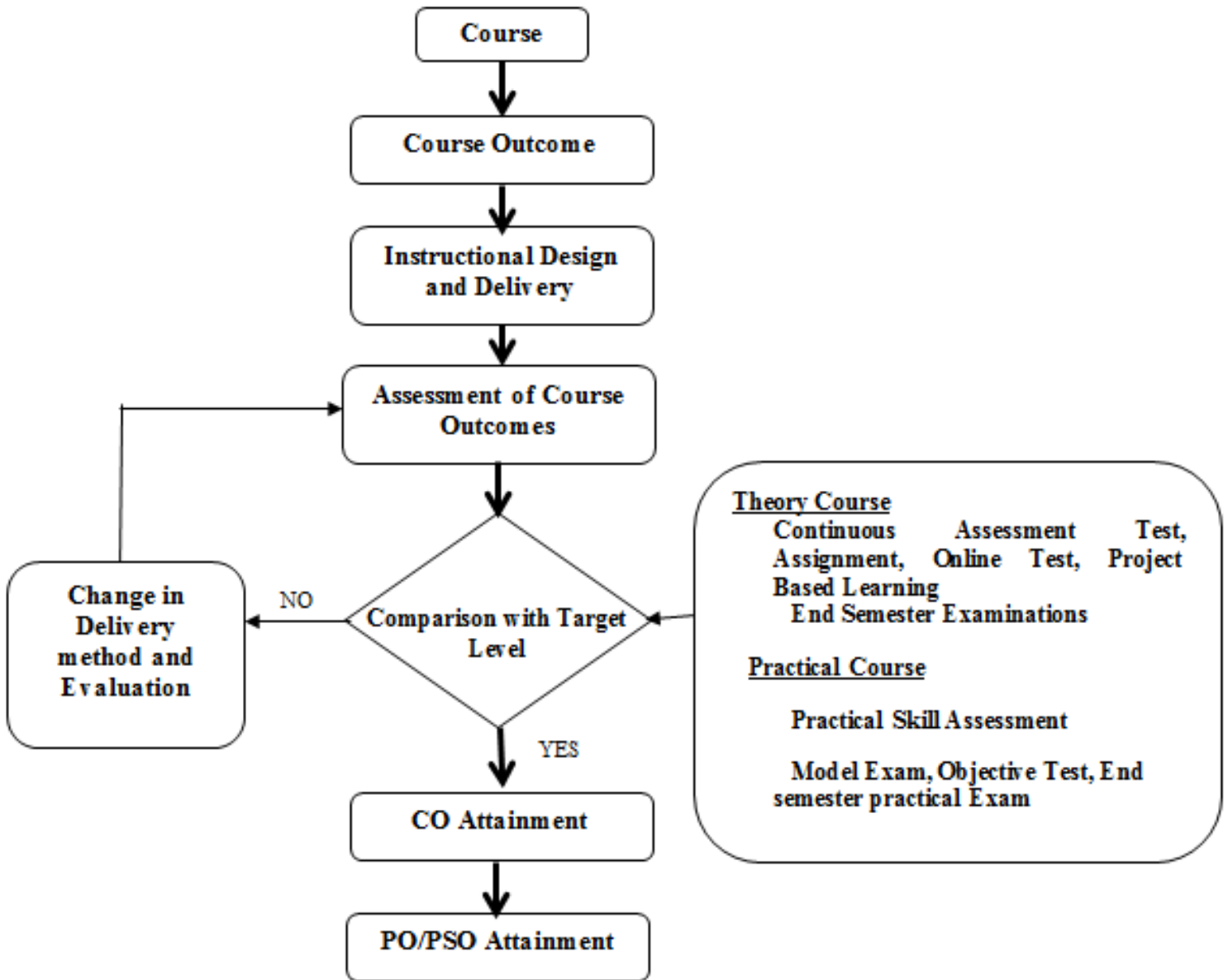
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```
                          ┌──────────────┐
                          │    Course    │
                          └──────┬───────┘
                                 ▼
                          ┌──────────────┐
                          │Course Outcome│
                          └──────┬───────┘
                                 ▼
                       ┌──────────────────┐
                       │Instructional Design│
                       │   and Delivery   │
                       └──────┬───────────┘
                                 ▼
                       ┌──────────────────┐
               ┌──────▶│Assessment of Course│
               │       │    Outcomes      │
               │       └──────┬───────────┘
               │              ▼
```

Theory Course
   Continuous Assessment Test, Assignment, Online Test, Project Based Learning
   End Semester Examinations

Practical Course

   Practical Skill Assessment

   Model Exam, Objective Test, End semester practical Exam

Change in Delivery method and Evaluation — NO — Comparison with Target Level — YES — CO Attainment — PO/PSO Attainment

Assessment method to assess the attainment of the Course Outcomes

For R17, Overall CO Attainment is calculated using the following

Overall Attainment= 80% of Direct Attainment + 20% of Indirect Attainment

---

CO-PO Mapping:

The courses under different modules are identified and its credits are fixed. The Course Outcomes (COs) for each course under different modules are articulated in consultation with Board of Studies Chairman and stake holders. Also, the correlation of COs with POs and PSOs are established for all the identified courses.

Assessment Tools:

1. **Direct Assessment Tools**

   The Assessment of Course Outcomes for theory subjects are based on

   ➢ Continuous Assessment Tests
   ➢ Assignments
   ➢ Online Tests
   ➢ End Semester Examinations

Laboratory courses' outcomes are evaluated based on the students' performance in regular Laboratory Classes, Model Examination and End Semester Examination performance. The course outcomes for project work I and II are evaluated based on the presentations in Project Reviews and End Semester Viva Voce Examinations.

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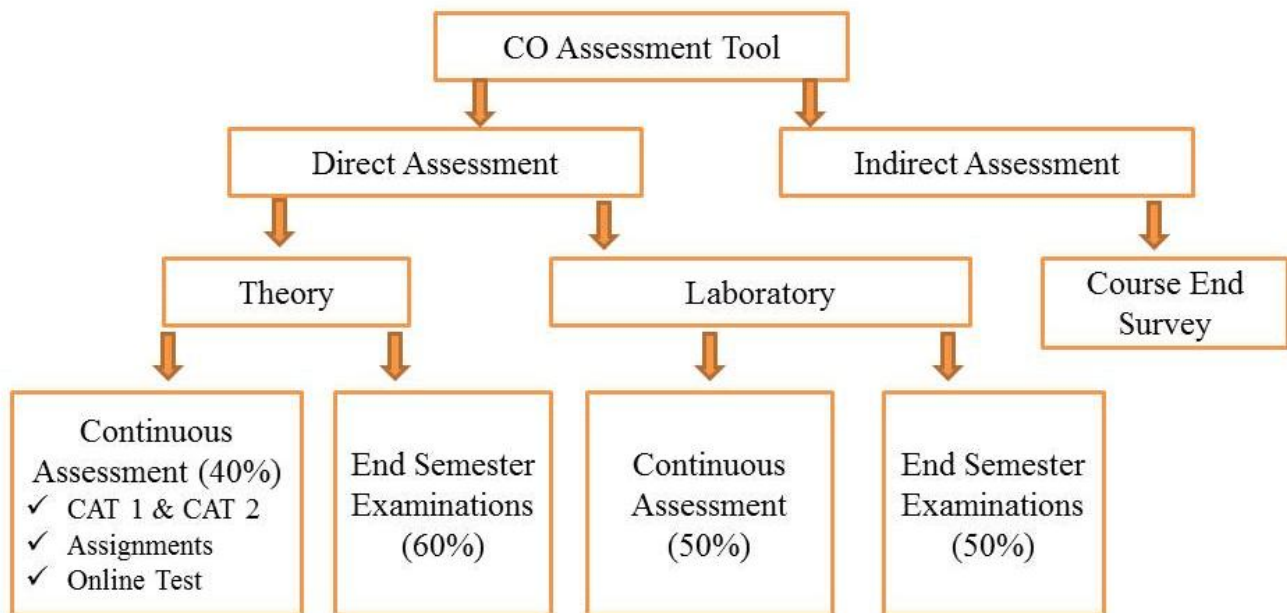**(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)**
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Continuous Assessment Test

The Continuous Assessment is conducted twice in a semester. The respective Course Coordinators submit the Question Papers to the HoDs for approval. The HoDs assess the quality of the question papers in terms of Syllabus Coverage, Application of Bloom's Taxonomy and Relevance to COs. Department wise examination coordinators are nominated to collect two sets of question paper along with answer key and submit the same to the Exam Cell. Based on the marks scored by the students, PO/CO attainment is calculated to understand the learning level of the students. Then, a review is conducted by the HoDs to find the level of attainment of Course Outcomes and Program Outcomes.

Assignments

Assignments are given to enhance the learning competencies of the students. Every semester, two assignments (E-assignment and Written assignment) relevant to the curriculum and COs are given to the students. Grades are given based on their performance.

Online Test

Online tests are given with an objective of preparing the students for the competitive examination. Every semester, three online tests (technical quiz) relevant to the curriculum and COs are conducted to the students. It is a type of Multiple Choice Questions (MCQ) based examination system that covers all units.

The internal marks are calculated based on evaluation done through the software called "Moodle". The questions will be uploaded and evaluation will be carried by the software itself.

End Semester Examination

Semester examination is a metric for assessing whether all the course outcomes are attained or not. Different types of question patterns are followed to assess the outcome level of students.

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Course Outcome Attainment:

Attainment through End Semester Examination:

Attainment level 1: Less than 50% of students scoring more than or equal to 7 grade points out of 10.

Attainment level 2: More than or equal to 65% of students scoring more than or equal to 7 grade points out of 10.

Attainment level 3: More than 80% of students scoring more than or equal to 7 grade points out of 10.

Direct Attainment = 60% Weightage of End Semester Examination + 30% of CAT + 5% of Assignment + 5% of Online test

2. Indirect Assessment Tools

The attainment of program outcomes and program specific outcomes are measured based on direct assessment tools and indirect assessment tools.

Course End Survey:

Course End Survey is collected from every student at the end of the semester for all the courses. The survey is based on the parameters related to the course rated on a four scale basis. The consolidated index value is used in the calculation of indirect attainment for that particular course. The impact of the index value is reflected in overall attainment of the course. If the attainment is not substantial, the following corrective actions are taken to improve the attainment.

- ➢ Revision of Syllabus
- ➢ Conducting Workshops
- ➢ Organizing Seminars
- ➢ Arranging Guest Lectures.

Indirect Attainment

➢ Attainment level 1:Course End Survey average is greater than 60%

➢ Attainment level 2: Course End Survey average is greater than 75%

➢ Attainment level 3: Course End Survey average is greater than 90%

Overall Attainment = 80% of Direct Attainment + 20% of Indirect Attainment

5.2 Assessment of Program Outcomes and Attainment Process

The Attainment of Program Outcomes and Program Specific Outcomes are measured based on Direct Assessment tools and Indirect Assessment tools. Direct attainment level of PO/PSO is determined by taking average across all courses addressing the PO/PSO. Indirect attainment level of PO/PSO is determined based on the student Exit Surveys, Employer Surveys, Co-curricular activities, Extracurricular activities etc.

Assessment Tools	Direct / Indirect	Remarks
Course Evaluation	Direct	● Courses are evaluated through Continuous Assessment and End Semester Examinations. ● Other modes of evaluation are Assignments / Tutorials, Online Tests and Attendance.
Project Evaluation	Direct	Project Evaluation is conducted periodically and at the end of the semester.
Course End Survey	Indirect	Course End Survey is collected at the end of each semester.
Student Exit Survey	Indirect	Student Exit Survey is collected from the Graduates
Alumni Survey	Indirect	Alumni Survey is collected from Alumni. Alumni Survey and Indirect Alumni Survey are collected at the end of each academic year.
Employer Survey	Indirect	Employer Survey is collected from the employer of Alumni

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6. ADMINISTRATIVE SETUP FOR ENSURING THE ATTAINMENT OF COs, POs AND PSOs

The administrative setup mentioned below is followed to ensure the attainment of COs, POs and PSOs.

- ➢ Course Coordinator
- ➢ Program Assessment Committee
- ➢ Department Advisory Board
- ➢ Board of Studies
- ➢ Academic Council

- ➢ **Course Coordinator**

The sub-committee comprises of subject experts which includes subject handling faculty members and the course coordinators. The suggestions and recommendations made by the sub-committee members are taken into consideration to incorporate modifications in the course content of a particular course. The revised draft copy of the syllabus framed by the sub-committee is forwarded to the SCAA for discussion and recommended to the BoS for approval.

- ➢ **Program Assessment Committee (PAC)**

Program Assessment Committee (PAC) comprising HoDs and Senior faculty members is formed in the departments. Based on results of evaluation of COs for each course, Course Coordinator recommends any modifications in the course content and teaching methods.

The PAC analyzes the direct and indirect survey reports of all the courses along with the feedback from the course coordinators concerned for finalizing the revision to be made in the course content. The responsibilities of the PAC are as follows:

- ➢ To monitor and assess the COs, POs and PSOs.
- ➢ Planning the curricular and co-curricular activities in accordance with PEOs.
- ➢ Course allocation to faculty members within and service departments.
- ➢ Scheduling of the program activities during each semester.
- ➢ Implementation and control of the program activities for attainment of POs and PSOs.
- ➢ Formulation of drafted Vision, Mission and PEO statements of the departments.

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Department Advisory Board (DAB)

Department Advisory Board (DAB) consists of Management Representatives, Administrators, HoD, Senior faculty members, Alumni, Parents, Industry and Academic experts. The DAB supports in formulating the Vision, Mission, PEOs and PSOs. Based on the review of attainment of the POs and PSOs from PAC, necessary changes in curriculum with respect to course content, updating of syllabi, electives, practical components etc. are revised by the sub-committee members and forwarded to the BoS for discussion. Suitable changes suggested by the BoS members are incorporated in the final curriculum and syllabi and submitted for the approval of the Academic Council through Standing Committee.

Boardof Studies (BoS)

Composition of Board of Studies includes:

➢ Head of the Department concerned (Chairman).

➢ The entire faculty of each specialization.

➢ Two subject experts from outside the Parent University nominated by the Academic Council.

➢ One expert nominated by the Vice-Chancellor from a panel of six recommended by the College Principal.

➢ One representative from industry/corporate sector/ allied area relating to placement.

➢ One Postgraduate meritorious alumnus nominated by the Principal.

➢ Board of Studies takes up planning of appropriate programs of study and the implementation of effective teaching. The Board of Studies of a Department in the college

➢ Prepares syllabi for various courses keeping in view the objectives of the College, reviewing and updating syllabi from time to time, introducing new courses of study, determining details of continuous assessment with the interest of the stakeholders and national requirement for consideration and approval of the Academic Council
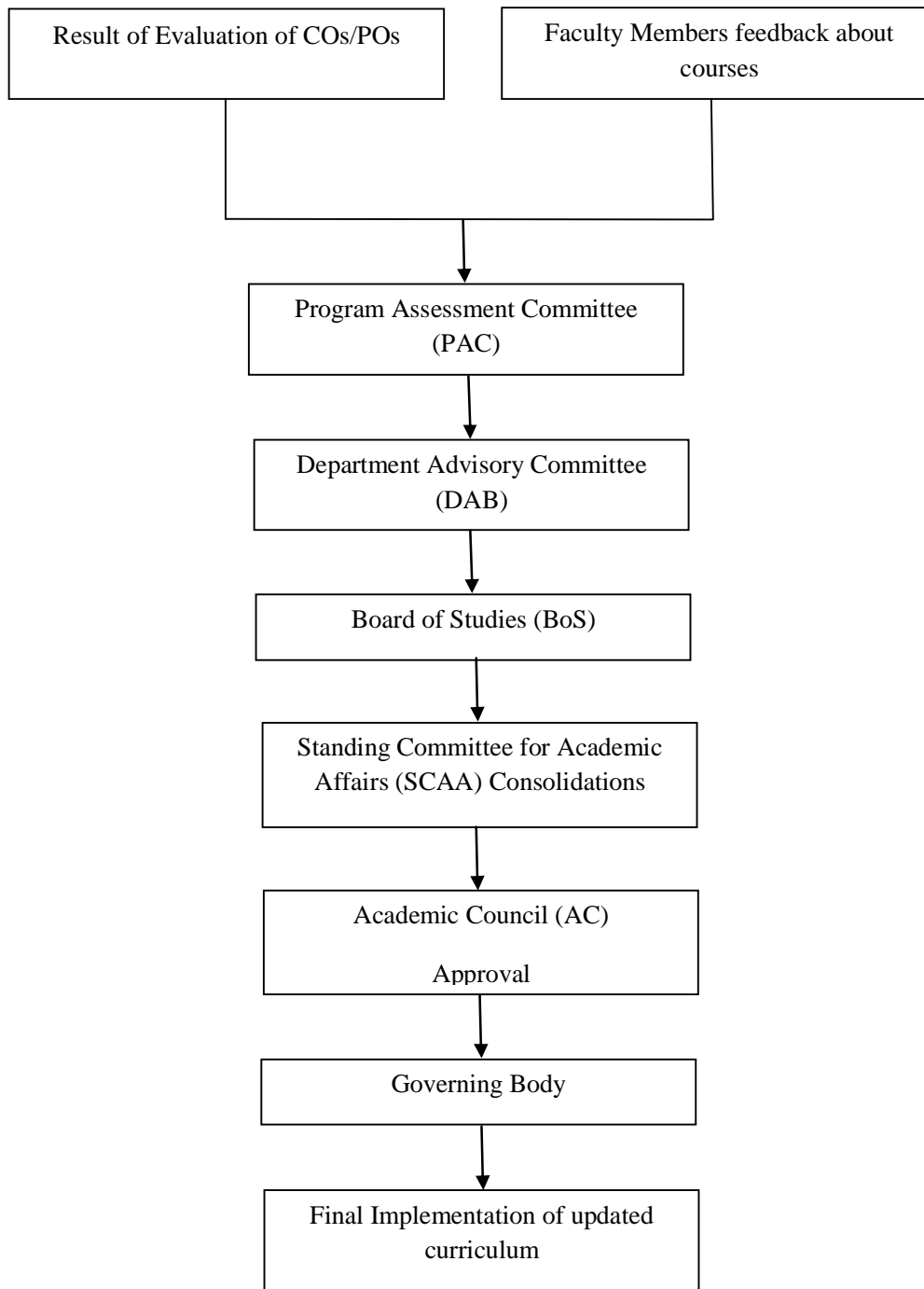
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┌─────────────────────────────┐      ┌─────────────────────────────┐
│ Result of Evaluation of     │      │ Faculty Members feedback    │
│ COs/POs                     │      │ about courses               │
└─────────────────────────────┘      └─────────────────────────────┘


            ┌─────────────────────────────┐
            │ Program Assessment Committee │
            │ (PAC)                        │
            └─────────────────────────────┘

            ┌─────────────────────────────┐
            │ Department Advisory Committee│
            │ (DAB)                        │
            └─────────────────────────────┘

            ┌─────────────────────────────┐
            │ Board of Studies (BoS)       │
            └─────────────────────────────┘

            ┌─────────────────────────────┐
            │ Standing Committee for       │
            │ Academic Affairs (SCAA)      │
            │ Consolidations               │
            └─────────────────────────────┘

            ┌─────────────────────────────┐
            │ Academic Council (AC)        │
            │ Approval                     │
            └─────────────────────────────┘

            ┌─────────────────────────────┐
            │ Governing Body               │
            └─────────────────────────────┘

            ┌─────────────────────────────┐
            │ Final Implementation of      │
            │ updated curriculum           │
            └─────────────────────────────┘
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Process of Curriculum Improvement

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- ➤ Suggests methodologies for innovative teaching and evaluation techniques
- ➤ Suggests panel of names to the Academic Council for appointment of examiners and
- ➤ Coordinates research, teaching, extension and other academic activities in the department/ college.

Standing Committee for Academic Affairs (SCAA)

The Standing Committee consolidates the inputs received from the Board of Studies and submits to the Academic council for its consideration and approval.

Academic Council (AC)

Academic Council scrutinizes and approves the proposals of the Boards of Studies with regard to Courses of Study, Academic Regulations, Curricula, Syllabi and modifications. The Council involves faculty at all levels, experts from outside, including Representatives of University and Government. Academic Council recommends for the installation of new programmes of study to the Governing Body.

Governing Body (GB)

The function of Governing Body is to decide on the overall development of the Institute which includes infrastructure, resource allocation, welfare measures, institute scholarship, medals, prizes and certificates on the recommendations of academic council and approval of new programs for the Institute.