NATIONAL BOARD OF ACCREDITATION

Manual for Accreditation of

Undergraduate Engineering Programs

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Foreword

National Board of Accreditation (NBA) in its present form has come into existence as an autonomous body with effect from 7th January 2010, under the aegis of AICTE, with the objective of assurance of quality and relevance of education, especially in technical disciplines, i.e., engineering & technology, management, architecture, pharmacy, hospitality and mass communication, through the mechanism of accreditation of programs offered by technical institutions.

NBA had decided to switch over to outcome-based system of accreditation in order to make it substantially equivalent to the one followed by the permanent signatories of Washington Accord. The broad objective is to have a new accreditation process which could assure that the graduates of undergraduate engineering programs accredited by NBA have sound knowledge of fundamentals of science and mathematics, skills for solving engineering problems and zeal for continuous learning among others.

With this in view, NBA had constituted a committee under the chairmanship of Prof. Rajeev Kumar with Prof. A.K. Gupta, Prof. S. Narayanan, Prof. Raj Senani and Prof. T. Ramesh as members to prepare draft document for the accreditation of undergraduate engineering programs. The document drafted by this committee was looked into by another committee comprising of Prof. D.V. Singh, Prof. Ranjan Bhattacharya and Prof. Ashwini Kumar and they have given their valuable inputs to the document. The document so evolved was deliberated among stake-holders and tested through mock drills.

NBA is deeply indebted to Prof. B.C. Majumdar, Chairman, NBA and the Mentors of Washington Accord for NBA-India, Prof. Raman Menon Unnikrishnan, Dean, College of Engineering and Computer Science, California State University, Fullerton, California, USA and Prof. Kai Sang Lock, Chairman, Engineering Accreditation Board, Institution of Engineers, Singapore for their suggestions and valuable guidance for the finalization of the manual.

This document is open to suggestions from all the stakeholders for bringing any further improvements in the efforts of NBA to have such accreditation parameters and processes that would further improve its quality assurance mechanism for undergraduate engineering programs.

(Dr. D.K. Paliwal)
Member Secretary, NBA

March, 2012

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1.0 Introduction

1.1 Background

Indian higher education system is the third largest system in the world. In an increasingly technologically dependent world, expansion of higher education sector is imperative in an emerging economy such as India as evidenced by the phenomenal growth and development in technical education during the past two decades. The number of institutions has multiplied exponentially, from a modest number around 30 colleges in 1950-51, to more than 20,000 colleges and from 20 universities to more than 500 universities awarding degrees, which include all types of institutions, namely, central, state, private, govt. aided, deemed to be universities and other institutes of national importance. The challenge is to ensure its quality to the stakeholders along with the expansion. To meet this challenge, the issue of quality needs to be addressed, debated and taken forward in a systematic manner.

There are debates across continents as to who sets the standards for quality. The accreditation system prevailing in various countries provides a measure of educational quality. Accreditation is the principal means of quality assurance in higher education and reflects the fact that in achieving recognition, the institution or program of study is committed and open to external review to meet certain minimum specified standards and also seeks ways to enhance the quality of education.

There is a great deal of discussion in the country about the various approaches to quality measurement, especially, in the context of unprecedented expansion of higher educational institutions and programs, introduction of newer disciplines, entry and operation of foreign institutions in a variety of forms, and desire for global recognition through international accords (WTO/ Mutual Recognition, Washington Accord and Other National Protocols). With significant expansion of higher educational institutions in India, both publicly and privately funded, a mandatory and robust accreditation system is required that could provide a common frame of reference for students and other stakeholders to obtain credible information on academic quality across institutions is required.

Through the accreditation process, an agency or its designated representative evaluates the quality of a higher education institution as a whole or of a specific educational program, in order to formally recognize it as having met certain predetermined minimal criteria or standards. The result of this process is usually the awarding of a status of recognition, and sometimes of a license to conduct educational programs within a time-limited validity.

The process can imply initial as well as periodic self-study and evaluation by external peers. The accreditation process generally involves three steps with specific activities:

(i) a self-evaluation process conducted by the faculty, the administrators and the staff of the institution or academic program, resulting in a report that takes as its reference set of standards and criteria of the accrediting body;

(ii) a site visit, conducted by a team of peers, selected by the accrediting organization, which reviews the evidence, visits the premises and interviews the academic and administrative staff resulting in an assessment report, including a recommendation to the accrediting body; and

(iii) examination of the evidence and recommendation on the basis of the given set of criteria concerning quality and resulting in a final judgment and the communication of the formal decision to the institution and other constituencies, if appropriate.

Presently, accreditation is not mandatory and there is no law to govern the process of accreditation. There are two Central bodies involved in accreditation of institutions; the National Accreditation Assessment Council (NAAC) and the National Board of Accreditation Board (NBA). NAAC was set up in 1994 by the University Grants Commission (UGC) to make quality an essential element through a combination of internal and external quality assessment and accreditation. NBA was constituted as an autonomous body, under section 10(u) of the AICTE Act, 1987. It is expected that with the passage of the legislation to provide for accreditation of higher educational institutions and to create a regulatory authority for the purpose, many of the remaining quality issues will be resolved, for some time to come.

The spirit of continuous improvement is a prerequisite for any quality initiative. Educational institutions are no exception to this. ISO 9000 and such initiatives focus on meeting customer expectations and making a wholehearted effort to exceed the same. The process of accreditation is an effort in this direction, to meet the quality goals in education.

1.2 National Board of Accreditation

The New Education Policy of 1986 recognized the need for a Statutory Body at the National level responsible for overseeing the growth and quality of Technical Education in the country. Accordingly, All India Council for Technical Education (AICTE) was established by an Act of Parliament in 1987. National Board of Accreditation (NBA) was originally constituted in September 1994, in order to assess the qualitative competence of educational institutions from Diploma level to Post-Graduate level in Engineering and Technology, Management, Pharmacy, Architecture and related disciplines. NBA conducts evaluation of programs of technical institution on the basis of laid down norms.

NBA in its present form has come into existence as on autonomous body with effect from 7th January 2010, under the aegis of AICTE, with the objective of assurance of quality and relevance of technical education through the mechanism of accreditation of programs offered by the technical institutions.

1.3 Vision of NBA

The vision of NBA is ***"to be a world class accrediting agency by ensuring highest degree of credibility in assurance of quality and relevance of professional education and come to the expectations of its stake-holders viz. academicians, corporate, educational institutions, government, industry, regulators, students and their parents".***

1.4 Mission of NBA

NBA is working with the Mission, ***"to stimulate the quality of teaching, self evaluation and accountability in higher education , which help institutions realize their academic objectives and adopt teaching practices that enable them to produce high quality professionals and to assess and accredit the programs offered by colleges and/or institutions imparting technical and professional education."***

1.5 Objectives of NBA

The following are the broad objectives of NBA

- To periodically conduct evaluation of technical institutions or programs on the basis of guidelines, norms and standards specified by it.
- To develop quality conscious systems of technical education where excellence, relevance to market needs and participation by all stake holders are prime and major determinants.
- To dedicate for building a technical education system, as facilitators of human resources, that will match the national goals of growth by competence, contribution to economy through competitiveness and compatibility with societal development.
- To provide the quality benchmarks targeted at global and national stockpile of human capital in all fields of technical education.

In line with the above, NBA has the mandate to fulfill the following specific objective of assessing and accrediting the academic programs. Assessment and accreditation shall be based on various criteria. This may include but not limited to institutional mission and objectives; Organization and governance; infrastructural facilities; quality of teaching and learning; curriculum design and review; support services (library, laboratory, instrumentation, computer facilities etc.); and any other aspect as decided by the General Council (G.C.) and/or Executive Committee (EC).

The main objectives of assessment and accreditation shall be to:

a. Assess and grade the courses and programs offered by institutions, their various units, faculty, departments etc.
b. Stimulate the academic environment and quality of teaching and research in these institutions;
c. Contribute to the sphere of knowledge in its discipline;
d. Motivate colleges and/or institutions of technical and professional education for research, and adopt teaching practices that groom their students for the innovation and development of leadership qualities;
e. Encourage innovations, self evaluation and accountability in higher education;
f. Promote necessary changes, innovations and reforms in all aspects of the working of colleges/ institutions of technical and professional education for the above purpose; and
g. Help institutions realize their academic objectives.

NBA shall ensure that the criteria referred to above for assessment and accreditation are:

i) Reviewed periodically, revised and updated, as and when considered necessary, on the basis of experiences gained through their application and accordingly the techniques and modalities used for assessment are modified;

ii) Objective and, to the extent possible, quantifiable; and

iii) Publicized widely, particularly, in the academic community.

NBA will facilitate to enhance the quality of technical education and help in establishing relevancy of technical education as per the needs of the industry and society at large.

2.0 About this Manual

This manual essentially deals with the accreditation process of Under Graduate Engineering Programs. There are three separate documents that have been enclosed here, they are namely,

1. Self Assessment Report (SAR) with guidelines for preparation of SAR
2. Evaluation – Guidelines for Team Chair and Evaluators
3. Evaluation- Report to be filled up by the visiting team members

Attempts have been made to explain these documents as far as possible in this accreditation manual. Most of these documents are quite straightforward and quantifiable, however, there are few criteria / sections are subjective in nature. For these criteria the perception, experience, knowledge and judgment of an individual play the most significant role.

The document titled as "Self Assessment Report (SAR) "is basically for the Institutions. Institutions offering Engineering Programs in Under Graduate level need to prepare the report as per the format of the SAR. The blank format of the SAR as appended at the last part of this document needs to be filled up by the institutions according to the information asked for. No deviation from this format will be accepted. No change in order or modification of the format will be entertained.

The document titled as "Evaluation-Guidelines" is essentially a guideline for the Evaluators. In this document attempts have been made to frame a guideline for the evaluation of the SAR submitted by the Institutions.

The document titled as "Evaluation – Report "is the blank report format for the evaluators. Once the SAR is evaluated, the evaluators will place the scores in the blank report format along with their observations.

3.0 Why this New Stride?

Indian education system essentially based on the idea that the good students who were admitted through rigorous screening process at the time of admission will become good graduates provided they have access to good faculty and good infrastructure. This education system has been functioning extremely well as there were limited number of institutions in the country and access to these institutions were through very tough competitive examinations. Moreover, Indian students are dedicated and hardworking. But in recent times there has been huge increase in the number of engineering colleges and in order to ensure the quality of the output, the graduates of all these colleges, National Board of Accreditation, New Delhi has prepared the new document and process for accreditation which is essentially outcome based evaluation system.

3.1 Washington Accord (WA)

The Washington Accord was signed in 1989 and it is an international agreement among bodies responsible for accrediting engineering degree programs.

In fact, it recognizes the substantial equivalence of programs accredited by those bodies and recommends that graduates of programs accredited by any of the signatory bodies be recognized by the other bodies as having met the academic requirements for entry to the practice of engineering.

WA covers only professional engineering undergraduate degrees. Engineering technology and postgraduate level programs are not covered by the Accord.

3.2 Membership in WA

All the signatories have full rights of participation in the Accord. The qualifications accredited or recognized by other signatories are recognized by each signatory as being substantially equivalent to accredited or recognized qualification within its own jurisdiction.

A national authority, agency or institution representative of engineering profession with recognized authority may accredit engineering programs.

3.3 Signatories of WA

The following countries are the signatories of WA"

- Australia – Represented by Engineers Australia (1989)
- Canada – Represented by Engineers Canada (1989)
- Chinese Taipei – Represented by Institute of Engineering Education Taiwan (2007)
- Hong Kong China – Represented by the Hong Kong Institute of Engineers (1995)
- Ireland – Represented by Engineers Ireland (1989)

- Japan – Represented by Japan Accreditation Board for Engineering Education (2005)
- Korea –Represented by Accreditation Board of Engineering Education of Korea (2007)
- Malaysia - Represented by Board of Engineers Malaysia (2009)
- New Zealand – Represented by Institution of Professional Engineers NZ (1989)
- Singapore – Represented by Institution of Engineers Singapore (2006)
- South Africa – Represented by Engineering Council of South Africa (1999)
- Turkey – Represented by MUDEK (2011)
- United Kingdom – Represented by Engineering Council UK (1989)
- United States – Represented by Accreditation Board for Engineering and Technology (1989)

3.4 Provisional Status of WA

All organizations holding provisional status have been identified as having accreditation procedures for the qualification that are potentially suitable for the purpose of the accord.

These organizations are further developing the procedures with the goal of achieving the signatory status in due course.

3.5 Provisional Members of WA

- Bangladesh – Represented by Board of Accreditation for Engineering and Technical Education
- Germany – Represented by German Accreditation Agency for Study Programs in Engineering and Informatics
- India – Represented by National Board of Accreditation of All India Council for Technical Education
- Pakistan – Represented by Pakistan Engineering Council
- Russia – Represented by Russian Association for Engineering Education
- Sri Lanka – Represented by Institution of Engineers Sri Lanka

3.6 Recognition of Equivalence of Accredited Engineering Programs

All the signatories have arrived at an agreement that the criteria, policies and procedures used by them for accrediting engineering Under Graduate programs should be comparable to each other.

Accreditation decisions rendered by one signatory are acceptable to other signatory. It is also agreed upon among the signatories that they will implement the best practices for academic preparation of Engineers. The signatories will have mutual monitoring and information exchange, including regular communication and sharing of information concerning their accreditation criteria, systems, procedures, manuals, publications and lists of accredited programs. The signatories are also invited to observe accreditation visits, meetings of any boards and / or commissions responsible for implementing key aspects of the accreditation process, and meetings of the governing bodies of the signatories.

3.7 Obligations of WA

Each signatory will make every reasonable effort to ensure that the bodies responsible for registering or licensing professional engineers to practice in its country or territory accept the substantial equivalence of engineering academic programs accredited by the signatories to this agreement.

The accord applies only to accreditations conducted by the signatories within their respective national or territorial boundaries.

3.8 Duties of Signatories

The duties of the Signatories are listed below.

- The signatories will participate in general Meetings and Workshops.
- The signatories will be reviewed after every six years.
- The signatories will provide evaluators for reviewing of other signatories and reviewing of provisional members applying to be signatory.
- The signatories will also mentor provisional members.

3.9 Path to become a WA Signatory

India became Provisional member of WA in 2007. In order to become a WA signatory a robust accreditation system needs be implemented by National Board of Accreditation (NBA), New Delhi with support from all stakeholders.

During the period of provisional membership, WA has assigned mentors so that substantial equivalence can be gained in terms of the accreditation standard to the graduate attributes and the policies and processes for accreditation to be substantially equivalent. Reviewers will be deputed by WA for the periodic review of the provisional member for admission to signatory. All existing signatories must agree 100% for admission of provisional member as signatory.

3.10 WA Graduate attributes profile

Graduates attributes form a set of individually assessable outcomes that are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level.

The graduate attributes are exemplars of the attributes expected of graduate from an accredited program. The graduate attributes are intended to assist signatories and provisional members to develop outcome based accreditation criteria for use by their respective jurisdictions. Also the graduate attributes guide bodies developing their accreditation systems with a view to seeking signatory status. The WA graduate profile is as following:

1. Engineering Knowledge: Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
2. Problem Analysis: Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

3. Design/ Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
4. Conduct investigations of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
5. Modern Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. The Engineer and Society: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.
7. Environment and Sustainability: Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
9. Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams and in multi disciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
11. Project Management and Finance: Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long Learning: Recognize the need for and have the preparation and ability to engage in independent and life- long learning in the broadest context of technological change.

Any signatory needs to provide an overview of its learning outcomes and confirm that compliance of programs with the attribute is in fact being evaluated in the accreditation process.

The program outcomes (POs) of the new document for UG engineering accreditation as considered are in line with the WA graduate attributes.

4.0 General Guidelines for the preparation of Self Assessment Report by the Institutions

Instructions for preparing the SAR are given in SAR along with the each criterion. The definition of Program Educational Objectives (PEOs) and Program Outcomes (POs) are given in Part III of this manual.
The Institutions are requested to submit the SAR in soft copies. Any additional document should be submitted in appendix (only statements and lists not the entire documents). Resumes of the faculty members may be enclosed in the appendix (at most 3 pages per faculty).

While framing the PEOs the following points should be kept in mind:

- PEOs should be consistent with the mission of the Institution
- Stake holders and faculty members should participate in framing the PEOs
- The number of PEOs should be manageable
- It should be based on the needs of the constituencies
- It should be achievable by the program
- It should be specific to the program and not too broad
- It should not be too narrow and similar to Program Outcomes.

4.1 Achievement of PEOs

There should be enough evidence and documentation to show the achievement of PEOs as set by the Institution with the help of the assessment and evaluation process that have been developed. Also show that this continuous process leads to revision / refinement of PEOs.

4.2 Outcome Based Education

The major emphasis of this accreditation process is to measure the outcomes of the program that is being accredited. Program outcomes are essentially a range of skills and knowledge that a student will have at the time of graduation from the program. These outcomes are also aligned with graduate attributes of Washington Accord. The mandatory a-k outcomes as listed in part III are from ABET's guidelines. However, an Institution is free at add more outcomes if they feel so. The outcomes as listed in the SAR are observable, measurable and prepare graduates to attain the PEOs.

4.3 Measurement of Program Outcomes

Program outcomes basically describe knowledge, skills and behavior of students as they progress through the program as well as by the time of graduation. Assessment of these outcomes may be done by direct and indirect methods. Direct methods of assessment are essentially accomplished by the direct examination or observation of student knowledge or skills against measurable performance indicators. On the other hands, indirect methods of assessment of outcome are based on ascertaining opinion or self-reports.

4.4 Development of Rubrics

A rubric basically articulates the expectations for student performance. It is a set of criteria for assessing student work or performance. Rubrics are particularly suited to learning outcomes that are complex or not easily quantifiable for which there are no clear 'right' or 'wrong' answers or which are not evaluated with standardized tests or surveys. Assessment of writing, oral communication or critical thinking often requires rubrics. The development of different Rubrics and the achievement of the Outcomes need to be clearly stated in the SAR (preferably in appendix). However, the detailed documentation for the development of Rubrics must be available to the Visiting Team.

4.5 Continuous Improvement

The program must develop a documented process for the periodic review of PEOs and POs. The results of this review are systematically utilized to improve the program. The continuous improvements in PEOs and POs need to be validated with proper documentation.

4.6 Curriculum Development and Refinement

The Institution must ensure that the curriculum that has been developed at the time of inception of the program must be refined in the subsequent years in order make it consistent with the PEOs and POs. The affiliated colleges which follow the curriculum of the affiliating University, they need to document how they are addressing the issue of curriculum refinement.

4.7 Faculty Members for the Program

The program must have sufficient number of qualified faculty members to accommodate the needs of the different components of the curriculum of the program. Besides class room teaching they need to cover activities such as interaction with students, mentoring, counseling, faculty development initiatives, professional society developments, industry – institute interactions, administrative work and training and placement of students. They should also provide guidance and engage themselves in the process of accreditation for the continuous improvement of the educational objectives and outcomes of the program.

4.8 Infrastructural Facilities

The Institution must provide adequate infrastructural facilities to support the achievement of student outcomes. The laboratories must be equipped with computing resources, equipment and tools relevant to the program. Equipment of the laboratories should be properly maintained and upgraded so that the students can attain the student outcomes. There should be appropriate guidance for the students for using the equipment, tools, computers and laboratories.

4.9 Guidelines to the Visiting Team

The Visiting Team needs to focus on the following items while evaluating the criteria of the SAR submitted by the Institution.

1. Prior to coming to the Institution the team Chair and team members must have studied the SAR and discussed among themselves.

2. Team Chair and members must assembly previous evening and discuss about the visit details and content of SAR.
3. Don't spend too much time in socializing.
4. Maintain schedule during the visit.
5. Large group meetings should be avoided. It is better to sample faculty, sample student and sample supporting staff.
6. Don't involve in any debate. On the other hand, quietly explore what you intend to do.
7. Don't advice.
8. Meet student in the classroom and ask the faculty to leave the room for some time.
9. Visiting team must evaluate whether PEOs are framed in line with mission of the Institution and involving the stake holders.
10. Whether PEOs can be mapped with the POs.
11. Whether the PEOs validated over the years or need revision.
12. Whether there is any continuous improvement in PEOs.
13. Whether POs are mapped with constituencies.
14. Whether direct and indirect method have been used to show the attainment of the POs.
15. Whether Rubrics have been developed to show the attainment of some of the POs which are otherwise difficult to validate.
16. Improvement in curriculum for mapping POs and PEOs.
17. Mapping of POs with course / Course module outcome.
18. Stake-holders involvement in the process of PEOs and POs.

4.10 A Tentative Schedule for the Visit:

Day 0 : Visiting Team meet in the evening to discuss about the SAR and the Schedule.
Day 1 : Principal's Overview
Campus Visit
Team Chair & Evaluators in the Department/ Institution: for meeting faculties (sample faculty), students (sample student) & checking documents, etc.
Lunch
Evaluators in the department for visiting laboratories, sponsored research project work, student project etc.
Visit to support areas
Team meeting in the evening
Day 2 : Evaluators in the Department
Lunch
Meeting with other stake-holders (sampling)
Report writing in the evening
Day 3 : Exit Meeting

4.11 Do's and Don'ts for filling-in the SAR:

Do's:
SAR must

- be concise, pointed and adequate in length and breadth for the purpose of accreditation.
- provide relevant information as per format specified for individual Program
- be printed on one side of paper with double spacing, using font 12times new roman, with at least one inch (2.54 cms) margin on all sides
- be enclosed with vague photocopies of the documents
- ensure that care is taken while compiling the data and the data provided is authentic
- present data properly in appendices with charts, graphics and visuals wherever applicable
- provide relevant data for the past three years, unless it is specified otherwise in the respective Program manual.

The documents should be submitted as hard copy in soft bound form and mailed to NBA, New Delhi. Soft copy should be uploaded on the NBA website.

Don'ts:

- Original documents attached with SAR.
- Publications such as Books, Journals, Newsletters, Thesis, etc.

4.12 360^{O} Feedback:

360 degree feedback has been used by learning and development professionals for many years to help individuals and organizations improve their performance and effectiveness. It is a powerful tool that helps in becoming more effective by understanding how everyone else sees others, their performance, behavior and attitudes. Appraisal 360 works by gathering the opinions of a number of people. A series of carefully structured questions prompt one to assess skills in a number of key areas. A number of other people are then asked to give their perception by answering a set of questions, which are then compiled into a feedback report. It is envisaged that such feedback will help in bringing transparency and objectivity in the evaluation process which will help in improving quality of the accreditation process, the cherished goal of all the stakeholders.

Feedback on the process:

Before developing the feedback formats, the Roles and Responsibilities of various actors in the Accreditation Process are articulated below:

Chairperson of the committee:

- To articulate the vision behind the accreditation process
- To Impress on the members about the strict following up of the guidelines expected in the accreditation process
- To Guide and steer the entire process
- To provide insights and experiential inputs to all members
- To help in understanding the requirements expected from the process

Evaluator members of the committee:

- To factually verify all the information from various cross sections of the institute
- To conduct the proceedings in a professional manner
- To facilitate in such a way as to conduct the entire process in a fair and transparent manner

It is expected that the Evaluator member has done the home work and comes prepared with the background information required for the process

Institution and their representatives:

- Clarify the purpose/mission/vision of the institution and how the academic Programs have evolved

The feedback that is received from all the concerned parties mentioned above will be collated to bring out a clear picture of accreditation process that has taken place and to understand the discrepancies and deviations. The deviations will be recorded for future reference and may be addressed appropriately whenever necessary. The grievances of the institution arising out of the deviations will be addressed by the appellate committee/NBA. The feedback can form a supporting documentation for the same. NBA reserves the right to deal with the information arising out of the feedback, as deemed fit.

5.0 Self Assessment Report (SAR)

SAR is having four parts.

- **Part I** essentially deals with the Institutional Summary. Part I contains Criteria I, II and III.
- **Part II** deals with Department / Program Summary. Part II contains Criteria IV to X.
- **Part III** deals with Curriculum, Syllabi, Program Educational Objectives (PEOs) and Program Outcomes (POs) of the Under Graduate Engineering program.
- **Part IV** contains the list of documents / records to be made available during the visit.

5.1 Abbreviations

Several abbreviations have been used in this documents.

CAY	:	Current Academic Year	e.g., __2010 – 11___
CAY*m*1	:	Current Academic Year *minus* one	e.g., __2009 – 10___
CAY*m*2	:	Current Academic Year *minus* two	e.g., __2008 – 09___
LYG	:	Latest Year of Graduation	e.g., __2007 – 08___
LYG*m*1	:	Latest Year of Graduation *minus* one	e.g., __2006 – 07___
CFY	:	Current Financial Year	e.g., __2010 – 11___
CFY*m*1	:	Current Financial Year *minus* one	e.g., __2009 – 10___
PEO	:	Program Educational Objectives	
PO	:	Program Outcomes	
SI	:	Success Index	
FYSTR	:	First Year Student Teacher Ratio	

Notes:

1. It would be greatly appreciated if precise and specific details, as requested in this format, are provided in tabular form and/or using bullets as far as possible. No detailed description should be included anywhere; do not include any detail/information which is not asked for. In case, you wish to add any data/information which is not asked for, kindly add in the appendix.
2. Include data for three consecutive years, unless otherwise specified. It is suggested that all the data are to be listed in tabular form wherever applicable.
3. Information sought is mostly meant to be the "*Average*" over sufficient samples, as applicable.
4. In this manuscript, "Institution" is used interchangeably for college/Institute/ University and "Head of the Institution" for Principal/Director/Vice-Chancellor.
5. There should not be any change of the Format of the SAR. The items listed under any sub- section of SAR are sample entries only. One can add more number of relevant items under these sub-sections. You may also place your comment / justification wherever applicable.
6. Instructions are given for filling up each criterion / sub-section of criterion.

5.2 Declaration

The Head of the Institution needs to make a declaration as per the format given below:

This Self Assessment Report (SAR) is prepared for the Current Academic Year (_____) and the Current Financial Year (_____) on behalf of the Institution.

I certify that the information provided in this SAR is extracted from the records and to the best of my knowledge, is correct and complete.

I understand that any false statement/information of consequence may lead to rejection of the application for accreditation for a period of two or more years. I also understand that the National Board of Accreditation (NBA) or its sub-committees will have the right to decide on the basis of the submitted SAR whether the Institution should be considered for an accreditation visit.

If the information provided in the SAR is found to be wrong during the visit or subsequent to grant of accreditation, NBA has right to withdraw the grant of accreditation and no accreditation will be allowed for a period of next two years or more.

Place:
Date:

Signature, Name and Designation of the
Head of the Institution with seal

Part I

Institutional Summary
(Criterion I to III)

The Part I deals essentially with Institutional Summary and contains first three criteria namely Criteria I, Criteria II and Criteria III. The numbering scheme that has been followed here are as follows:

X. Y. Z

X represents criteria number such as I, II etc.

Y represents Institute(I) or Program (P) specific data

Z represents sections and sub-section

I.0.1 Name and Address of the Institution and affiliating University:

(Instruction: The name, address of the Institution and the name of the University which has given affiliation to this college are to be listed here.)

I.0.2. Name, Designation, Telephone, Mobile Numbers and E-mail IDs of the contact person for NBA.

(Instruction: The name of the contact person with other details have to be placed here.)

I.0.3. History of the Institution (including dates of introduction and number of seats of various Programs of study along with NBA accreditation, if any), in tabular form:

Year	**Description**
.....	Institution started with the following Programs (Intake strength) . . . . .
.....(date)	NBA-AICTE Accreditation visits and accreditation granted, if any . . . .
.....	Addition of new Programs, increase in intake strength of the existing Programs and/or accreditation status . . . .

(Instruction: History of the Institution and its chronological development along with the past accreditation records need to be listed here.)

I.0.4. Ownership Status: Govt.(Central/State) / Trust / Society (Govt. / NGO / Private) / Private/ Other

(Instruction: Ownership status of the Institute has to be listed here.)

I.0.5. Financial Status: Govt.(Central/State) / Grants-in-aid / Not-for-profit / Private-Self financing / Other.....

(Instruction: Financial status of the Institute has to be mentioned here.)

I.0.6. Nature of Trust / Society : .....

Also list other Institutions/colleges run by the Trust/Society :.....

(Instruction: Way of functioning and activities of the trust /society have to be listed here.)

I.0.7. External Sources of Funds :

Name of the External Source	CFY	CFYm1	CFYm2

(Instruction: The different sources of the external funds over the last three financial years are to be listed here.)

I.0.8. Internally Acquired Funds :

Name of the Internal Source	CFY	CFYm1	CFYm2
Student's Fee			

(Instruction: The different sources of the internal funds over the last three financial years are to be listed here.)

I.0.9. Scholarships or any Financial Assistance provided to Students ?

(Instruction: If any scholarship or financial assistance is provided to the students then the details of these assistances over the last three financial years have to be listed here. Also mention the basis for the award of such scholarship).

I.0.10 Basis/Criterion for Admission to the Institution:

All India entrance / State level entrance / University entrance / 12th level mark sheet/ other

(Instruction: The Basis / Criteria for student intake have to be listed here.)

I.0.11. Total Number of Engineering Students

Total Number of other Students, if any

(Instruction: Total number of engineering students, both boys and girls, have to be listed here. The data may be categorized in a tabular form as UG, PG, Engineering, other program, if applicable.)

I.0.12. Total Number of Employees

(Instruction: Total number of employees, both male and female, have to be listed here. The data may be categorized in a tabular form as Teaching and Supporting staffs.)

I.0.13. Minimum and Maximum Number of Faculty and Staff on roll in the Engineering Institution, during the CAY and the previous CAYs (1st July to 30th June):

Items	CAY		CAYm1		CAYm2	
	Min	Max	Min	Max	Min	Max
Teaching Faculty in Engineering						
Teaching Faculty in Science & Humanities						
Non-teaching Staff						

(Instruction: Staff Strength both Teaching and Non-Teaching over the last three academic years have to be listed here.)

All the above mentioned data are required to evaluate the subsequent sections of the following criteria.

Criterion I

Organization and Governance, Resources, Institutional Support, Development and Planning (100)

This criteria essentially deals with the Governance of the Institution, the physical infrastructure of the Institution, its maintenance and safety norms etc.

I-I.1 Campus Infrastructure and Facility (20)

I-I.1.1 Land, built-up area and academic infrastructure **(4)**

- Physical resource available

A. Exclusive for this Institution	Land ..... acres	Built-up floor space ..... sq.m.
B. Shared with other institutions in this campus, if any	Land ..... acres	Built-up floor space ..... sq.m.

(Instruction: The campus infrastructure in terms of the land and built-up floor space has to be listed here. Any shared facility must clearly be mentioned.)

I-I.1.2 Maintenance of academic infrastructure and facilities **(4)**
(Instruction: Specify distinct features)

I-I.1.3 Ambience, green cover, water harvesting, environment preservation, barrier-free structure, etc. **(4)**
(Instruction: Specify distinct features)

I-I.1.4 Hostel (Boys and girls), Transportation facility and canteen **(4)**

Hostel for Boys:

Hostel for Girls:

Availability of transport facilities:

Availability of canteen facilities:

I-I.1.5 Electricity, power backup, telecom facility, drinking water and security **(4)**
(Specific details in respect of installed capacity, quality, availability, etc.)

I-I.2 Organization, Governance and Transparency (20)

I-I.2.1 Governing body, administrative setup and functions of various bodies **(5)**

(Instruction: List Governing, Senate and all other Academic and Administrative bodies, their memberships, functions and responsibilities, frequency of the meetings and attendance therein, in tabular form. A few sample minutes of the meetings and action taken reports should be annexed.)

I-I.2.2 Defined rules, procedures, recruitment and promotional policies etc **(5)**

(Instruction: List of the published rules, policies and procedures, year of publications, awareness among the employees/students, availability on web etc.)

I-I.2.3 Decentralization in working including delegation of financial power and grievance redressal system **(5)**

(Instruction: List of faculty members who are administrators/decision makers for various responsibilities. Specify the mechanism and composition of grievance redressal system, including faculty association, staff-union, if any.)

I-I.2.4 Transparency and availability of correct/unambiguous information **(5)**

(Instruction: Availability and dissemination of information through the web.Information provisioning in accordance with Right To Information Act, 2005).

I-I.3 Budget Allocation, Utilization and Public Accounting (15)

Summary of current financial year's budget and the actual expenditures incurred (exclusively for the institution) for three preceding financial years

Item	Budgeted in CFY	Expense in CFY (till...)	Expenses in in CFY m1	Expenses in CFY m2
Acquisition of land; new buildings and infrastructural built-up				
Library				
Laboratory Equipment				
Laboratory consumables				
Teaching and Non-Teaching staff salary				
Travel				
Other, specify.....				
Total				

(Instructions: The above mentioned list of items are not exhaustive. One may add other relevant items if applicable.)

I-I.3.1 Adequacy of budget allocation **(5)**
(Instructions: Here the Institution needs to justify that the budget allocated over the years was adequate.)

I-I.3.2 Utilization of allocated funds **(5)**
(Instructions: Here the Institute has to state how the budget was utilized during the last three years.)

I-I.3.3 Availability of the audited statements through Institute's web-site **(5)**
(Instructions: Here the Institute has to post the audited statements on their web site.)

I-I.4 Library (20)

I-I.4.1 Library space and ambience, timings and usage, availability of a qualified librarian and other staff, Library automation, online access, networking **(4)**
(Instruction: Provide information on the following items).

Carpet area of library (in sq m)
Reading space (in sq m)
Number of seats in reading space
Number of users (issue book) per day
Number of users (reading space) per day
Timings: During working day, weekend and vacation
Number of library staff
Number of library staff with degree in Library Management
Computerization for search, indexing, issue/return records
Bar-coding used
Lib services on internet/intranet
INDEST or other similar membership
Archives

I-I.4.2 Titles and volumes per title **(4)**

Number of titles ..... Number of volumes .....

	Number of New Titles added	Number of New editions added	Number of New Volumes added
CFYm2			
CFYm1			
CFY			

I-I.4.3 Scholarly journal subscription **(4)**

Year	Number of Technical Magazines/Periodicals	Number of total Techincal Journals subscribed		Scholarly journal titles (in originals, reprints
		In Hard copy	In Soft copy	
CFYm2				
CFYm1				
CFY				

I-I.4.4 Digital library **(4)**

Availability of Digital Library contents:

If available, then mention number of Courses, number of e-Books etc.

Availability of an exclusive Server:

Availability over Intranet/Internet:

Availability of exclusive space/room:

Number of Users per day:

I-I.4.5 Library expenditure on books, magazines/journals, and miscellaneous contents **(4)**

Year	Expenditures				Comments
	Book	Magazine / Journals (for hard copy subscription)	Magazine / Journals (for soft copy subscription)	Misc. Contents	
CFYm2					
CFYm1					
CFY					

I-I.5 Internet (5)

Name of the Internet Provider:

Available Bandwidth:

Access Speed:

Availability of internet in an exclusive lab:

Availability in most computing labs:

Availability in departments and other units:

Availability in faculty rooms:

Institute's own Email facility to faculty/students:

Security/privacy to Email/Internet users:

(Instuructions: The Institute may report the availability of internet in the campus and its quality of service.)

I-I.6 Safety Norms and Checks (10)

I-I.6.1 Checks for wiring and electrical installations for leakage and earthing **(3)**

I-I.6.2 Fire fighting measurements : Effective safety arrangements with emergency/ multiple exits and ventila tion/exhausts in auditoriums and large class rooms/labs, fire fighting equipment and training, availability of water, and such other facilities **(3)**

I-I.6.3 Safety of Civil Structure **(2)**

I-I.6.4 Handling of hazardous chemicals and such other activities **(2)**

(Insturctions: The Instituttion may provide evidences that they are taking enough measures for the safety of the civil structures, fire, electrical installations, wiring and safety of handling and disposal of hazardous substances. Moreover, the institution needs to show the effectiveness of the measures that they have developed to accomplish these tasks.)

I-I.7 Counseling and Emergency Medical Care and First-aid (10)

I-I.7.1 Availability of psychological and psychiatric counseling **(5)**

Specify the counselor(s), their qualifications and availability:

Specify number of cases handled on per month basis:

(Instructions: The institution needs to report the counselling facility as available in the campus and its usage.)

I-I.7.2 Medical staff to provide first-aid/medical help in emergency, and availability of ambulance services **(5)**

Number of Medical practitioners available

Number of nursing staffs available

Medical facility within the Institution and also near the Institution

Availability of ambulance services

(Instruction: The Institution may report the medical facilities as well as emergency services available in the campus.)

Criterion II

Teaching and Learning Processes (100)

II-I.1 Academic Process (15)

II-I.1.1 Availability of published time-table with sufficient hours for lectures, labs, self-learning and extra-curricular activities **(5)**

II-I.1.2 Availability of published schedule in academic calendar for assignments/tests/examinations and distribution of corrected scripts in academic calendar **(5)**

Items in Academic Calendar	Conduct during the period or in the academic week	Performance Feedback / Distribution of Scripts during the period or in the academic week
Assignments…		
Tests…		
Mid-sem. Examination		
End-sem. Examination		
Other activities		

(Instruction: The institution needs to mention the publication of academic calendar for assignments/ tests/examinations and distribution of corrected scripts.)

II-I.1.3 Attendance Monitoring : Reward for good attendance and penalty for poor **(5)**

The system of attendance monitoring and analysis with cases of rewards and penalty to students even to faculty may be stated here.

(Instruction: The Institution needs to mention here the measures taken by the Institution for the monitoring of attendance of students and faculty members. Also mention the effectiveness of such system).

II-I.2 Academic Support Units and Common facilities for First Year Courses (20)

II-I.2.1 Basic Science/Engineering laboratories (Adequacy of space, number of students per batch, quality and availability of measuring instruments, laboratory manuals, list of experiments) **(10)**

Lab Description	Space, Number of Students	Software used	Type of experiments	Quality of instruments	Lab Manuals

(Instruction: The Institution needs to mention the details for the basic science / engineering laboratories for the first year courses. The descriptors as listed above are not exhaustive).

II-I.2.2 Central computing laboratory **(4)**

Computing Lab	Space	Number of Computers	Variety of SWs	Usage / Timings	Lab Assistance?

(Instruction: The Institution may provide the details of the central computing laboratory. The descriptors as listed above are not exhaustive).

II-I.2.3 Manufacturing practices (Mechanical/Electrical) Workshop **(4)**

Workshop Description	Space, Number of Students	Number of experiments	Quality of instruments	Lab Manuals

(Instruction: The Institution may provide the details of the workshops. The descriptors as listed above are not exhaustive).

II-I.2.4 Language Laboratory **(2)**

Language Lab	Space, Number of Students	Software Used	Type of experiments	Quality of instruments	Guidance

(Instruction: The Institution may provide the details of the language laboratory. The descriptors as listed above are not exhaustive).

II-I.3 Tutorial Classes/ Remedial Classes/ Mentoring (15)

II-I.3.1 Tutorial classes to address personal level doubts and queries : size of tutorial classes, hours per subject in timetable **(5)**

Provision of Tutorial classes in time-table ? YES NO

Tutorial Sheets provided : YES NO

Tutorial classes taken by : Faculty / Teaching Assistants / Senior Students / Other .....

Number of tutorial classes per subject per week:

Number of students per tutorial class :

Number of subjects with tutorials : 1st year..... 2nd year..... 3rd year..... 4th year.....

(Instruction: Here the institution may report the details of the tutorial classes that are being conducted on various subjects and also state the impact of such tutorial classes).

II-I.3.2 Remedial classes and additional make-up tests to help academically weaker students **(5)**

Schedule of classes/tests

List of remedial classes

Provision of Remedial Classes in Time Table ? YES / NO

Number of subjects having Remedial Classes per semester

Number of students having Remedial Classes in a semester

Number of hours of Remedial classes per-subject per week

Provision of Makeup Tests in Academic Calendar? YES / NO

Number of subjects having Makeup Tests :

Number of students having Makeup Tests :

Number of hours of Makeup Tests :

(Instruction: Here the institution may report the details of the remedial classes and additional Makeup tests that are being conducted for academically weaker students on various subjects and also state the impact of these classes and tests).

II-I.3.3 Mentoring system to help at individual levels **(5)**

Type of Mentoring: Professional guidance / Career advancement / Course work specific / Lab specific / Total development

Number of faculty Mentors

Number of students per Mentor

Frequency of Meeting:

(Instructions: Here the institution may report the details of the mentoring system that has been developed for the students for various purposes and also state the efficacy of such system).

II-I.4 Teaching Evaluation Process: Feedback System (15)

II-I.4.1 Design of proforma and process for feedback evaluation **(5)**

Number of Feedback items :

Number of Feedback levels :

Space for descriptive feedback/suggestion etc. :	YES / NO
Any consistency check :	YES / NO
Any performance/attendance profile :	YES / NO
Frequency of feedback collection :	Once / twice in a semester
Feedback collection :	Hard-copy / Web-based

(Instruction: The institution needs to mention the details of the feedback system. Copies of the different feedback forms may be annexed.)

II-I.4.2 Feedback analysis and reward / corrective measures taken, if any **(5)**

Feedback collected for all courses: YES / NO

Specify the feedback collection process :

Percentage of students participating :

Specify the feedback analysis process :

What metrics are calculated?

What is inferred from the metrics?

How are the comments used ?

Basis of reward/corrective measures, if any

Were extraneous factors, like hard-/soft-attitude of the instructor considered ?

Was result considered?

Number of awards in

Number of corrective actions in the last three years

(Instructions: The institution needs to design an effective feedback questionnaire. They need to justify that the feedback mechanism they have developed really helps in evaluating teaching and finally contributing to the quality of teaching).

II-I.4.3 Feedback mechanism from alumni, parents and industry, if any **(5)**

Specify the mechanism of feedback collection and analysis :

Number of feedback received in the last three years :

Specify typical corrective actions taken, if any :

(Instruction: The institution needs to state the mechanism that has been developed for the feedback of alumni, parent and industry and also mention the effectiveness of such mechanism.)

II-I.5 Self Learning and Learning beyond Syllabus (15)

II-I.5.1 Generation of self-learning facilities, and availability of materials for learning beyond syllabus **(5)**

II-I.5.2 Possibility, motivation and scope for self-learning/learning-beyond-syllabus **(5)**

II-I.5.3 Flexibility in academics with scope for self learning **(5)**

(Instruction: The Institution needs to specify the scope for self learning/learning beyond syllabus and creation of facilities for self learning / learning beyond syllabus.)

II-I.6 Career Guidance, Training, Placement and Entrepreneurship Cell (10)

II-I.6.1 Effective career guidance services including counseling for higher studies **(4)**

II-I.6.2 Training and placement facility with training and placement officer (TPO), industry interaction for training / internship / placement **(4)**

II-I.6.3 Entrepreneurship cell and incubation facility **(2)**

(Instruction: The Institution may specify the facility, management and impact of such systems)

II-I.7 Co-curricular and Extra Curricular Activities (10)

II-I.7.1 Co-curricular and extra-curricular activities, e.g., NCC/ NSS, cultural activities etc. **(5)**

II-I.7.2 Sports grounds, facilities and qualified sports instructors **(5)**

(Instruction: The Institution may specify the facilities available and their usage in brief)

Criterion III

Students' Admission and First Year Performance (75)

This criterion is about intake of students in the UG program and their first year performance. Since the curricula for the first year is common to all the UG programs, it is evaluated separately.

III-I.1 Students Admission (15)

III-I.1.1 Admission Intake **(5)**

Item	CAY	CAYm1	CAYm2	CAYm3
Sanctioned Intake Strength in the Institute (N)				
Number of students, admitted on merit (N1)				
Number of students, admitted on management quota/otherwise (N2)				
Number of total admitted students in the Institute (N1 + N2)				

(Instruction: The intake of the students during the last three years against the sanctioned capacity may be reported here.)

III-I.1.2 Admission Quality **(10)**

Divide the total admitted ranks (or percentage-marks) into 5 or a few more meaningful ranges

Rank Range	CAY	CAYm1	CAYm2	CAYm3
Above 98 percentile				
95 – 98 percentile				
90 – 95 percentile				
80 – 90 percentile				
.....				
.....				
Admitted without rank				

(Instruction: The admission quality of the students in terms of their ranks in the entrance examination may be presented here.)

Tabular data for estimating Student Teacher Ratio and Faculty Qualification for FIRST YEAR

Common Courses

List of faculty members teaching first year courses:

Name of Faculty	Qualification	Designation	Date of joining institution	Dept with which associated	Distribution of teaching load (%age)		
					1st Year	UG	PG

(Instruction: The Institution may list here the faculty members engaged in first year teaching along with other relevant data.)

III-I.2 Assessment of First-Year Student Teacher Ratio (FYSTR) (20)

Three years of data for first year courses to calculate the Student Teacher Ratio (FYSTR):

Year	Number of students (Approved intake strength)	Number of faculty members (considering fractional load)	FYSTR	Assessment = (20*25*0.8) / FYSTR (Max. is 20)
CAYm2				
CAYm1				
CAY				
			Average Assessment	

III-I.3 Assessment of Faculty Qualification teaching First-Year Common Courses (FYFQ) (20)

Assessment of Qualification = 2*(10 * x + 6 * y + 4 * z) / N Where

- x = Number of Faculty Members with Ph.D.
- y = Number of Faculty Members with M. E / M. Tech./NET-Qualified/M. Phil
- z = Number of Faculty Members with B. E / B. Tech./M.Sc./M.C.A./M.A
- N = Total Number of Faculty Members (considering fractional load) or Number of Faculty needed for FYSTR of 25, whichever is higher.

Year	x	y	z	N	Assessment of faculty qualification
CAYm2					
CAYm1					
CAY					
				Average Assessment of Faculty Qualification (FYFQ)	

III-I.4 Academic Performance in First Year Common Courses (20)

Academic Performance = 20 * FYSI

where FYSI = First Year Success Index

= (No. of students who have cleared all the subjects in a single attempt
+ 0.5 * Number of students who cleared all but one subject in a single attempt)
DIVIDED BY
(Total Number of students admitted in the first year)

Item	CAYm1	CAYm2	CAYm3
Number of students admitted in First Year (N)			
Number of students who have cleared all subjects in single attempt (x)			
Number of students who have cleared all subject but one subject in single attempt (y)			
First Year Success Index (FYSI) = (x + 0.5y) / N			

Average FYSI = ...

Academic Performance = 20 * Average FYSI = ...

PART II

Department / Program Summary
(Criterion IV to X)

D.0.1 Name and Address of the Department

D.0.2 Name, Designation, Telephone Numbers and E-mail address of the contact person for NBA :

D.0.3 History of the Department including dates of introduction and number of seats of various programs of study along with NBA accreditation, if any.

Program of Study	Description
UG in.....	Started with .....seats in ..... Intake increased to ..... in ..... Intake increased to ..... in .....
UG in.....	....
MCA.....	
PG in	

D.0.4 List of the Programs / Departments which share human resources and/or the facilities of this Department / Program (in %)

(Instruction: The Institution needs to mention the different programs being run in the department which share the human resources and facilities with this department / program being accredited.)

D.0.5. Total Number of Students

D.0.6. Total Number of Employees

D.0.7. Minimum and Maximum number of faculty and staff on roll during the current and previous two academic years (1st July to 30th June) in the Department :

Items	CAY		CAYm1		CAYm2	
	Min	Max	Min	Max	Min	Max
Teaching Faculty in the Department						
Teaching Faculty with the Program						
Non-teaching Staff						

D.0.8. Summary of Budget for the CFY and the Actual Expenditures Incurred in the CFYm1 and CFYm2 (exclusively for this Program in the Department)

Items	Budgeted in CFY	Actual expenses in CFY (till...)	Budgeted in CFYm1	Actual Expenses in CFYm1	Budgeted in CFYm2	Actual Expenses in CFYm2
Laboratory Equipments						
Software purchase						
Laboratory consumables						
Maintenance and spares						
Travel						
Miscellaneous expenses for academic activities						
Total						

Criterion IV

Students' Performance in the Program (75)

Admission Intake in the Program

Item	CAY	CAYm1	CAYm2	CAYm3
Sanctioned Intake Strength in the program (N)				
Number of total admitted students in first year *minus* Number of students migrated to other Programs at the end of 1st year (N1)				
Number of laterally admitted students in 2nd year in the same batch (N2)				
Number of total admitted students in the program (N1 + N2)				

IV-P.1 Success Rate (20)

Provide data for the past 7 batches of students (Successfully completed implies Zero Backlogs)

Year of Entry (in reverse chronological order)	Number of Students Admitted in 1st year + Admitted laterally in 2nd year (N1 + N2)	Numbers of students who have successfully completed			
		1st year	2nd year	3rd year	4th year
CAY					
CAYm1					
CAYm2					
CAYm3					
CAYm4 (LYG)					
CAYm5 (LYGm1)					
CAYm6 (LYGm2)					

Success Rate = 20 * Mean of Success Index (SI) for past 3 batches

SI = (Number of students who cleared the program in the minimum period of course duration)

DIVIDED BY

(Number of students admitted in the first year of that batch and laterally admitted in 2nd year)

Item	LYG (CAYm4)	LYGm1 (CAYm5)	LYGm2 (CAYM6)
Number of students admitted in the corresponding First Year + laterally admitted in 2nd year			
Number of students who have graduated in 4 years			
Success Index (SI)			

Average SI = ...

Success Rate = 20 * Average SI = ...

IV-P.2 Academic Performance (20)

IV-P.2 (a) Academic Performance (10)

Academic Performance = API

Where API = Academic Performance Index

= Mean of Cumulative Grade Point Average of all successful Students on a 10 point CGPA System

OR

= Mean of the percentage of marks of all successful students / 10

Assessment = API

Av.Assessment=

(If API is in a converged state, then Assessment= 10)

IV-P.2 (b) Improvement in Academic Performance (10)

Assessment= 3.0*(API as in above – API at the time of admission)

Max, Assessment = 10

(Instruction: API at the time of Admission must be based on a 10 scale. Average assessment for the last three CAYs needs to be computed.)

IV-P.3 Placement and Higher Studies (20)

Assessment Points = 20 * (x + 1.25 * y) / N

Where x = Number of students placed,

y = Number of students admitted for higher studies with valid qualifying scores/ranks,

N = Total number of students who were admitted in the batch including lateral entry.

subject to Max. Assessment Points = 20.

Item	LYG	LYGm1	LYGm2
Number of Admitted students corresponding to LYG including lateral entry (N)			
Number of students who obtained jobs as per the record of placement office (x1)			
Number of students who found employment otherwise at the end of the final year (x2)			
x = x1+ x2			
Number of students who opted for higher studies with valid qualifying scores/ranks (y)			
Assessment Point			

Average Assessment Points = _____

IV-P.4 Professional Activities (15)

IV-P.4.1 Professional Societies/ Chapters and organizing engineering events **(3)**

(Instruction: The Institution may provide data for past 3 years).

IV-P.4.2 Organization of Paper Contests, Design Contests etc. and their achievements **(3)**

(Instruction: The Institution may provide data for past 3 years).

IV-P.4.3 Publication of Technical Magazines, newsletters, etc. **(3)**

(Instruction: The Institution may list the above publications along with the names of the Editors, Publishers, etc.).

IV-P.4.4 Entrepreneurship initiatives, Product Designs, Innovations (**3**)

(Instruction: The Institution may specify the efforts and achievements.)

IV-P.4.5 Publications and Awards in inter institute events by students of the program of study (**3**)

(Instruction: The Institution may provide a Table indicating those publications, which fetched awards to students in the events/conferences organized by other institutes. A tabulated list of all other student publications may be included in appendix.)

Criterion V

Faculty (150)

List of Faculty: Exclusively for the Program / Shared with other Programs

Name of the Faculty	Qualification, University and year of graduation	Designation and Date of joining the Institution	Distribution of teaching load (%)			Number of research publications in journals and conferences since joining	IPRs	R&D and Consultancy work with amount	Holding an incubation unit	Inter-action with outside world
			1stY	UG	PG					

(Instruction: The Institution may complete the above table for the calculation of the **Student Teacher Ratio (STR)**. Teaching loads of the faculty member contributing to the UG program only (2nd, 3rd& 4th year) are considered to calculate the **STR**.)

V-P.1 Student Teacher Ratio (STR) (20) :

STR is desired to be 15 or superior

Assessment = 20 * 15 * 0.8 / STR ; subject to Max. Assessment of 20
STR = Student Teacher Ratio
= (x + y + z) / N1
x = Number of students in 2nd year of the program
y = Number of students in 3rd year of the program
z = Number of students in 4th year of the program
N1 = Total Number Faculty Members in the program (by considering fractional load)

Year	x	y	z	x+y+z	N1	STR	Assessment (Max. is 20)
CAYm2							
CAYm1							
CAY							
					Average Assessment		

For Item Nos. V-P. 2 to V-P. 8, the denominator term (N) is computed as follows:—

N = Maximum {N1, N2},
N1 = Total Number of Faculty Members in the Program (considering the fractional load),
N2 = Number of Faculty positions needed for Student Teacher Ratio (STR) of 15.

Year	N1	N2	N = Max. (N1,N2)
CAYm2			
CAYm1			
CAY			

V-P.2 Faculty Cadre Ratio (20)

Assessment = 20 * CRI
Where CRI = Cadre Ratio Index
= 2.25 (2x + y) / N; subject to Max. CRI = 1.0
where x = Number of professors in the Program
y = Number of associate professors in the Program

Year	x	y	N	CRI	Assessment
CAYm2					
CAYm1					
CAY					
				Average Assessment	

V-P.3 Faculty Qualifications (30)

Assessment = 3 * FQI
Where FQI = Faculty Qualification Index
= (10 * x + 6 * y + 4 * z) / N
Where x = Number of Faculty Members with Ph. D.
y = Number of Faculty Members with M. E / M. Tech
z = Number of Faculty Members with B. E / B. Tech./M.Sc.

	x	y	N	FQI	Assessment
CAYm2					
CAYm1					
CAY					
				Average Assessment	

V-P.4 Faculty Retention (20)

Assessment = 4 * RPI / N
Where RPI = Retention Point Index
= Points assigned to all Faculty

Where Points assigned to a faculty = 1 point for each year of experience at the Institute but not exceeding 5.

Item	CAYm2	CAYm1	CAY
Number of faculty with less than ly (x0)			
Number of faculty with 1y <= period <2y (x1)			
Number of faculty with 2y <= period <3y (x2)			
Number of faculty with 3y <= period <4y (x3)			
Number of faculty with 4y <= period <5y (x4)			
Number of faculty with more than 5y (x5)			
N			
RPI = x1 + 2x2 + 3x3 + 4x4 + 5x5			
Assessment			
		Average Assessment	

V-P.5 Faculty Research Publications (20)

Assessment of FRP = 4 * Sum of the Research Publication Points scored by each Faculty member *DIVIDED BY* (N)

Guidelines: A faculty member scores at most 5 Research publication points depending upon the *quality* of the research papers and books published in the past 3 years.

The research papers considered are those (i) which can be located on Internet and/or are included in hard-copy volumes/ proceedings, published by reputed publishers, and (ii) the faculty member's affiliation, in the published papers/books, is of the current institution.

Include a list of all such publications and IPRs along with details of DOI, publisher, month/year, etc.

Name of faculty (contributing to FRP)	FRP Points (Max. 5 per faculty)		
	CAYm2	CAYm1	CAY
Sum			
N (Number of faculty positions required for an STR of 15)			
Assessment FRP = 4x Sum/N			
		Average Assessment	

V-P.6 Faculty Intellectual Property Rights (10)

Assessment of FIPR = 2 * Sum of the FIPR points scored by each Faculty member *DIVIDED BY* (N)

Guidelines: A faculty member scores at most 5 FIPR points. FIPR includes awarded national/international patents, design and copyrights.

Name of faculty (contributing to FIRP)	FIRP Points (Max. 5 per faculty)		
	CAYm2	CAYm1	CAY
.....			
.....			
.....			
Sum			
N			
Assessment FIPR = 2x Sum/N			
		Average Assessment	

V-P.7 Funded R & D Projects and Consultancy Work (20)

FRDC = Faculty R&D and Consultancey work

Assessment of R&D and Consultancy Projects = 4 * Sum of FPPC by each faculty *DIVIDED BY* (N)

Guidelines : A faculty member gets atmost 5 points, depending upon the amount. A suggestive scheme is given below for a minimum amount of Rs. 1 lakh:-

5 points for funding by National Agency,

4 points for funding by State Agency,

3 points for funding by private sector, and

2 points for funding by the sponsoring Trust/Society.

Name of faculty (contributing to FPPC)	FPPC Points (Max. 5 per faculty)		
	CAYm2	CAYm1	CAY
.....			
.....			
Sum			
N			
Assessment FPPC = 4x Sum/N	Average Assessment		

V-P.8 Faculty Interactions with Outside World (10)

FIP = Faculty Interaction Points

Assessment = 2 * Sum of FIP by each faculty *DIVIDED BY* (N)

Guidelines: A faculty member gets at the most 5 Interaction Points, depending upon the type of Institution or R&D Lab or Industry, as given below:

5 points for interaction with a reputed Institution abroad, Institution of Eminence in India or National Research Labs,

3 points for interaction with Institution/Industry (not covered) above,

2 points for interaction with State Level Institutions and others.

Points to be awarded, for those activities, which result in joint efforts in publication of books/research paper, pursuing externally funded R&D / consultancy projects and / or development of semester-long course / teaching modules.

Name of faculty (contributing to FIP)	FIP Points		
	CAYm2	CAYm1	CAY
.....			
.....			
Sum			
N			
Assessment FIP = 2x Sum/N			
Average Assessment			

Criterion VI

Facilities and Technical Support (75)

Description of Class rooms, faculty rooms, seminar and conference halls: (Entries in the following table are sampler entries)

Room Description	Usage	Shared / Exclusive	Capacity	Rooms Equipped with PC, Internet, Book rack, meeting space…
Class Room Number	Class room for 2nd Year			
Tutorial Rooms				
Seminar Room Number				
Meeting Room Number				
Faculty Rooms (n)				

VI-P.1 Class Rooms in the Department (20)

VI-P.1.1 Adequate number of rooms for lectures (core/electives), seminars, tutorials, etc for the program **(10)**

Assessment based on the information provided in the above table.

VI-P.1.2 Teaching aids – black/white-board, multimedia projectors, etc. **(5)**

VI-P.1.3 Acoustics, class room size, conditions of chairs/benches, air circulation, lighting, exits, ambiance, and such other amenities/facilities **(5)**

Assessment based on the information provided in the above table and the inspection thereof.

VI-P.2 Faculty Rooms in the Department (15)

VI-P.2.1 Availability of individual faculty rooms **(5)**

Assessment based on the information provided in the above table

VI-P.2.2 Room equipped with white/black board, computer, internet, and such other amenities/facilities **(5)**

Assessment based on the information provided in the above table

VI-P.2.3 Usage of room for discussion/counseling with students **(5)**

Assessment based on the information provided in the above table and the inspection thereof

The following table is required for the subsequent criteria.

Lab Description in the Curriculum	Exclusive use / Shared	Space, Number of	Number of Experiments Students	Qualify of Instruments	Lab Manuals

VI-P.3 Laboratories in the Department to meet the Curriculum requirements as well as the PEOs (25)

VI-P.3.1 Adequate, well equipped labs to meet the curriculum requirements as well as PEOs **(10)**

Assessment based on the information provided in the above table.

VI-P.3.2 Availability of computing facilities in the department **(5)**

Assessment based on the information provided in the above table

VI-P.3.3 Availability of laboratories with technical support within and beyond working hours **(5)**

Assessment based on the information provided in the above table

VI-P.3.4 Equipments to run experiments and their maintenance, Number of students per experimental set up, Size of the laboratories, overall ambience etc. **(5)**

Assessment based on the information provided in the above table

VI-P.4 Technical Manpower Support in the Department (15)

Name of the Technical Staff	Designation (Pay-scale)	Exclusive / Shared Work	Date of Joining	Qualification		Other Technical skills gained	Responsibility
				At Joining	Now		

VI-P.4.1 Availability of adequate and qualified technical supporting staff for program specific labs **(10)**

Assessment based on the information provided in the above table

VI-P.4.2 Incentives, skill upgradation and professional advancement **(5)**

Assessment based on the information provided in the above table

Criterion VII

Continuous Improvements (75)

This criterion essentially evaluates the fluctuations of the different indices that have already been discussed in earlier sections.

VII-P.1 Improvement in Success Index of Students (10)

From IV-P. 1

Items	LYG	LYGm1	LYGm2	Assessment
Success Index				

VII-P.2 Improvement in Academic Performance Index of Students (10)

From IV-P. 2

Items	LYG	LYGm1	LYGm2	Assessment
API				

VII-P.3 Improvement in Student Teacher Ratio (10)

From V-P. 1

Items	LYG	LYGm1	LYGm2	Assessment
STR				

VII-P.4 Enhancement of Faculty Qualification Index (10)

From V-P. 3

Items	LYG	LYGm1	LYGm2	Assessment
FQI				

VII-P.5 Improvement in Faculty Research Publications, R & D Work and Consultancy Work (10)

From V-P. 5 and V-P. 7

Items	LYG	LYGm1	LYGm2	Assessment
FRP				
FPPC				

VII-P.6 Continuing Education (10)

In this criterion the Institution needs to specify the contributory efforts made by the faculty members by developing the course/lab modules, conducting short-term courses/workshops etc., for continuing education during the last 3 years.

Module Description	Any other contributory Inst./ Industry	Developed / organized by	Duration	Resource Persons	Target Audience	Usage and citation etc.
.....						
.....						

Assessment =

VII-P.7 New Facility Created (10)

Specify new facilities created during the last 3 years for strengthening the curriculum and/or meeting the PEOs:

Module Description	Any other contributory Inst./ Industry	Developed / organized by	Duration	Resource Persons	Target Audience	Usage and citation etc.
In CAYm2						
.....						
In CAYm1						
.....						
In CAY						

Assessment =

VII-P.8 Overall Improvements since Last Accreditation, if any, otherwise, since establishment (5)

Specify the overall improvements:

Specify the strengths/ weakness	Improvement brought in	Contributed by	List the PEO(s), which are strengthened	Comments, if any
In CAYm2				
.....				
In CAYm1				
.....				
In CAY				

Assessment =

Criterion VIII

Curriculum (100)

List all the course modules along with their Objectives and Outcomes (Ref. Part III):

Course	Units		Science / HSS / Professional Core, Elective	PEOs specified by Affiliating Institution	Additional theory / lab / assignments/ tests needed to meet objectives	Comments
	Theory	Lab				
.....						
.....						
.....						

(Instructions: This criterion evaluates the effectiveness of the overall curriculum. The institution needs to list all the courses / course modules right from the first year through the final year and specify their objectives and outcomes. Specify the deficiencies which are being compensated by "beyond syllabus".)

VIII-P.1 Contents of Basic Science, Humanities and Professional Courses – Core, Elective, and Breadth (30)

Assessment must evaluate the balance in the composition of basic science, humanities, professional courses and their distribution in core and elective and breadth offerings, so that the PEOs are satisfied.

If such components are not included in the curriculum provided by the affiliated university then the Institution should make additional efforts to impart such knowledge by covering such aspects through "contents beyond syllabi".

VIII-P.2 Content Delivery (30)

The Institution needs to justify the effectiveness of teaching content and its delivery for the satisfaction of Program Educational Objectives.

VIII-P.3 Laboratory and Project Work (20)

The Institution needs to justify the balance among laboratory/project work and theory for the satisfaction of PEOs.

If enough lab/design/experimentation components are not included in the curriculum provided by the affiliating university then the Institution may take additional efforts to impart such knowledge by covering such aspects through "contents beyond syllabi".

VIII-P.4 Additional Contents to Bridge Curriculum Gaps (20)

The Institution needs to justify the program specific contents which are added to bridge curriculum gaps across the courses in order to achieve Program Outcomes and Program Educational Objectives.

Criterion IX

Program Educational Objectives (PEOs) (150)

List all the course modules along with their PEOs:

		PEOS Assessment (Poor / Average / Good / Excellent)				Comments (e.g. needs reworking, strengthening etc.)			
Course	Units (Theory – Tutorial – Lab)	Theory	Lab	Assignments / Tests / Exams	Project / Independent Study	Theory	Lab	Assignments / Tests / Exams	Project / Independent Study
	.....								
	.....								
	.....								
	.....								

IX-P.1 PEOs Mapping with Curriculum (30)

Here the assessment needs to be based on the Program Educational Objectives defined for a course or a set of courses, and their mapping with the curriculum.

IX-P.2 PEOs Mapping with Content Delivery – Theory and Labs (30)

Here the assessment needs to be based on the Program Educational Objectives defined for a course or a set of courses, and their mapping with (i) content delivery and (ii) knowledge gained through theory classes and laboratory work.

The Institution needs to produce sample course files, handouts, lab assignments etc. showing course deliveries mapped to the identified PEOs. In case of an affiliated institution, there may be a provision for teaching additional topics and holding supplementary tests/examinations in order to achieve the identified PEOs.

IX-P.3 PEOs Mapping with Evaluation (Examinations/Tests/Assignments) (30)

Here the assessment needs to be based on the PEOs defined for a course or a set of courses, and their mapping with examinations, class tests, and take-home work (assignments and independent study).

The Institution needs to produce sample examination/tests question papers, assignment sheets along with model solutions to assess how the PEOs are achieved through such evaluations. In case of an affiliated institution, there may be a provision for additional/supplementary tests/examinations in order to cater to additional subject topics, required for achieving the identified PEOs.

IX-P.4 PEOs Mapping with Final Year Project work (30)

Assessment of final year students' projects must be done considering criteria such as – (i) their quality, (ii) the state-of-the-art technology used in execution, (iii) their relevance to industry and academics, (iv) the use and development of theoretical and experimental methods, and (v) the coverage of border areas of the program.

Include a list of five best and average projects from each of the three years – CAY, CAYm1 and CAYm2 – along with their contributions.

Name of the Student(s)	Project Title	Area of Specialization	Project Supervisor(s)	Contribution / Achievements / Research Output	Matching with stated PEOs	Publication
In CAYm2						
.....						
In CAYm1						
.....						
In CAY						
.....						

IX-P.5 Continuous Improvement in the Process of PEOs Mapping and Assessment (30)

Viewing the process of PEOs' mapping to the above mentioned criteria as a continuously improving process over the years, attempts needs to be taken to document the effectiveness of the mapping processes. This continuous process may also refine/revise the targeted PEOs and their mappings.

Criterion X

Program Outcomes and Assessment (100)

X-P.1 Demostration of Attainment of the Mandatory *a*-to-*k* outcomes (Ref. Part III) (50)

Here the evaluation is based on attainment of mandatory a-k outcomes.

X-P.1.1 Evaluation of outcomes by students' attainment **(15)**

Academic and professional attainments by students which are satisfying the Program Outcomes (at least some of those) need to be evaluated as per documented processes.

X-P.1.2 Evaluation of outcomes due to faculty contributions and Achievements **(15)**

Academic and professional contributions of the faculty leading to *a-to-k*-outcomes and their achievements need to be evaluated as per documented processes.

X-P.1.3 Evaluation of outcomes from placement **(10)**

Program outcomes need to be evaluated through placement data (type of jobs, nature of companies, higher studies etc.)

X-P.1.4 Evaluation of achievements as disseminated in media/public forum **(10)**

Evaluation of achievements, as published in the media/public forum of repute (excluding the internal publications of the Institute, its media partners) need to be done based on their impact.

X-P.2 Evaluation of Outcomes by External Stakeholders (30)

X-P.2.1 Documented process and evaluation by Industries **(10)**

Program outcomes need to be evaluated based on documented processes for repeatedly assessing the outcomes by the relevant industries.

X-P.2.2 Documented process and assessment from Alumni **(10)**

Program outcomes need to be evaluated based on documented processes for repeatedly assessing the outcomes by the qualified and relevant alumni.

X-P.2.3 Documented process and assessment from Professional Bodies **(10)**

Evaluation needs to be based on documented processes for repeatedly assessing the outcomes by the applicable and recognized national/international professional bodies.

X-P.3 Effectiveness and Efficiency of the Mechanism/Procedure for Continuous Review and Outcome Measurements (20)

The Institution needs to review the outcome measurement processes and document the effectiveness and efficiency of the mechanism/procedures.

PART III

Program Educational Outcomes and Program Outcomes

The following excerpts are taken from the **ABET's Criteria for Accrediting Engineering Programs**:—

Program Educational Objectives (PEOs)

Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing the graduates to achieve.

Program Outcomes

Program outcomes are narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviours that students acquire in their matriculation through the program.

Engineering programs must demonstrate that their students attain the following outcomes:

(a) an ability to apply knowledge of mathematics, science, and engineering,

(b) an ability to design and conduct experiments, as well as to analyze and interpret data,

(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability,

(d) an ability to function on multidisciplinary teams,

(e) an ability to identify, formulate, and solve engineering problems,

(f) an understanding of professional and ethical responsibility,

(g) an ability to communicate effectively,

(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context,

(i) a recognition of the need for, and an ability to engage in life-long learning,

(j) a knowledge of contemporary issues, and

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program outcomes are outcomes (a) through (k) plus any additional outcomes that may be articulated by the program. Program outcomes must foster attainment of program educational objectives.

Assessment

Assessment is one or more processes that identify, collect, and prepare data to evaluate the achievement of program outcomes and program educational objectives.

Evaluation

Evaluation is one or more processes for interpreting the data and evidence accumulated through assessment practices. Evaluation determines the extent to which program outcomes or program educational objectives are being achieved and results in decisions and actions to improve the program.

There must be an assessment and evaluation process that periodically documents and demonstrates the degree to which the program outcomes are attained.

PART IV

List of Documents / Records to be made available during the Visit

(Records of three years to be made available, wherever applicable)

The list below is just a guideline. The Institution may prepare their own list of documents in support of the SAR that they are submitting. The soft copy of these documents in the form of statements and list only may be appended with SAR.

Institute Specific

I.1. Land papers, built-plan and approval etc.

I.2. Composition of GC/GB, Senate and other Academic and Administrative bodies, their functions and responsibilities. List of all the meetings held in the past 3 years along with the attendance records. Representative minutes and action-taken reports of a few meetings of such bodies along with the list of current faculty members who are members of such bodies.

I.3. Rules, policies and procedures published by the Institution including service book and academic regulations and other along with the proof that the employees/students are aware of the rules and procedures.

I.4. Budgeted allocation and utilization : Audited statement of accounts

I.5. Informative web site

I.6. Library resources – books and journal holdings,

I.7. Listing of core, computing and manufacturing etc. labs

I.8. Records of T & P and career and guidance cells

I.9. Records of safety checks and critical installations

I.10. Medical care records and usages of ambulance etc.

I.11. Academic calendar, schedule of tutorial and makeup classes

I.12. Handouts/files along with Outcomes; list of additional topics to meet the outcomes.

I.13. Set of question papers, assignments, evaluation schemes etc.

I.14. Feedback form, analysis of feedback and corrective actions

I.15. Documented feedback received from the stake-holders (e.g., Industries, Parents, Alumni, Financiers etc.) of the Institution

I.16. List of faculty who teach first year courses along with their qualifications

I.17. Results of the First Year students.

Program Specific

Each program for which an institution seeks accreditation or reaccreditation must have in place:

P.1 NBA accreditation reports of the past visits, if any

P.2 Department budget and allocations of the (past 3 years data)

P.3 Admission – seats filled and ranks (last 3 years data)

P.4 List/Number of students who clear the program in 4years (last 3 years data)

P.5 Average Grade point (CGPA) (last 3 years data of students' CGPA/ percentage)

P.6 Placement and higher studies data (last 3 years data)

P.7 Professional society activities, events, conferences organized etc.

P.8 List of students' papers along with hard-copies of the publications; professional society publications/ magazines, etc.

P.9 Sample best and average project reports/theses

P.10 Details of faculty student ratio

P.11 Faculty details with their service books, salary details, sample appointment letters, promotion and award letters/certificates

P.12 Faculty list with designation, qualification, joining date, publication, R & D, interaction details

P.13 List of faculty publications along with DOIs and publication/citation details

P.14 List of R & D and consultancy projects along with approvals and project completion reports

P.15 List and proofs of faculty interaction with outside world

P.16 List of class rooms, faculty rooms,

P.17 List of program specific labs and computing facility within department.

P.18 List of non-teaching staff with their appointment letters etc

P.19 List of short-term courses, workshop arranged and course-modules developed

P.20 Records of new program specific facility created, if any

P.21 Records of overall program specific improvements, if any

P.22 Curriculum, PEOs and Outcomes,

P.23 Mapping of Outcomes with PEOs

P.24 Mapping of courses/course modules with Outcomes

P.25 Course files, plan of course delivery, question papers, assignments, list of experiments etc.

P.26. Rubrics developed to validate the POs .

P.27. Continuous improvements in PEOs

P.28. Improvements in curriculum for mapping POs and PEOs

P.29. Direct and indirect method to show attainment of POs

P.30. Stake-holders involvement in the process of improvement of PEOs and POs

Evaluation Guidelines

Criterion I: Organization and Governance, Resources, Institutional Support, Development and Planning (100)

Minimum Qualifying Points : 60

Item No.	Item Description	Points	Evaluation Guidelines
I-I.1	Campus infrastructure and facility	20	Assessment : **4 points** for each item - Land, built-up area and academic infrastructure - Maintenance of academic infrastructure and facilities - Ambience, green cover, water harvesting, environment preservation, barrier-free structure, etc. - Hostel (Boys and girls), transportation facility and canteen - Electricity, power backup, telecom facility, drinking water and security.
I-I.2	Organization, governance and transparency	20	Assessment : **5 points** for each item - Governing body, administrative setup and functions of various bodies; - Defined rules, procedures, recruitment and promotional policies etc.; - Decentralization in working and grievance redressal system; - Transparency and availability of correct/unambiguous information.
I-I.3	Budget allocation, utilization and public accounting	15	Assessment : **5 points** for each item - Adequacy of budget allocation; - Utilization of allocated funds; - Publicly available the detailed audited statements of all the receipts and expenditures
I-I.4	Library	20	Assessment : **4 points** for each item - Library space and ambience, Timings and usage, Availability of a qualified librarian and other staff, Library automation, online access and networking; - Titles and volumes per title; - Scholarly journal subscriptions; - Digital library; - Library expenditures on books, magazines/journals and miscellaneous contents
I-I.5	Internet	5	- Sufficient and effective internet access facility with security privacy.

I-I.6	Safety norms and checks	10	- Checks for wiring and electrical installations for leakage and earthing : **3 points** - Fire fighting measurements : Effective safety arrangements with emergency/multiple exits and ventilation/exhausts in auditoriums and large class rooms/labs, Fire fighting equipments and training, Availability of water and such other facilities. : **3 points** - Safety of civil structures/buildings/catwalks/hostels etc.: **2 points** - Handling of hazardous chemicals and such other hazards.: **2 points**
I-I.7	Counseling and emergency medical care and first-aid	10	- Availability of psychological and psychiatric counseling: **5 points** - Medical staff to provide first-aid and medical help in emergency, - Availability of ambulance services : **5 points**

Criterion II: Teaching and Learning Processes (100)

Minimum Qualifying Points: 60

Item No.	Item Description	Points	Evaluation Guidelines
II-I.1	Academic process	15	- Published time-table with sufficient hours for lectures, labs, self-learning and extra-curricular activities : **5 points** - Published schedule in academic calendar for assignments/mid-semester tests, distribution of corrected scripts : **5 points** - Attendance monitoring, reward for good attendance and penalty for poor : **5 points**
I-I.2	Academic support units and common facilities	20	Assessment : Adequacy of space, number of students per batch, quality and availability of measuring instruments, laboratory manuals, list of experiments - Basic science/engineering laboratories : **10 points** - Central computing laboratory : **4 points** - Manufacturing practices workshop : **4 points** - Language laboratory : **2 points**
II-I.3	Tutorial classes/ remedial classes/ mentoring	15	- Tutorial classes to address personal level doubts, size of tutorial classes : **5 points** - Remedial classes and additional make-up tests to help academically weaker students: **5 points** - Mentoring system to help at individual levels : **5 points**

II-I.4	Teaching evaluation process: Feedback system	15	- Design of proforma and process for feedback evaluation : **5 points** - Feedback analysis and reward/corrective measures taken, if any : **5 points** - Feedback mechanism from alumni, parents and industry, if any : **5 points**
II-I.5	Self Learning and Learning beyond syllabus	15	- Flexibility in academics with scope for self-learning - provisions for advanced level and reading courses: **5 points** - Generation of self-learning facilities, and availability of materials for learning beyond syllabus: **5 points** - Possibility, motivation and scope for learning-beyond-syllabus : **5 points**
II-I.6	Career guidance, Training, placement and Entrepreneurship cell	10	Assessment : Effectiveness, Efficiency and Productivity - Career guidance services including counseling for higher studies: **4 points** - Training and placement facility with training and placement officer (TPO), industry interaction for training/internship/ placement : **4 points** - Entrepreneurship cell and incubation facility : **2 points**
II-I.7	Co-curricular and extra curricular activities	10	- Co-curricular and extra-curricular activities, e.g., NCC/ NSS, cultural activities etc. : **5 points** - Sports grounds, facilities and qualified sports instructors : **5 points**

Criterion III: Students' Entry and First Year Performance (75)

Minimum Qualifying Points : 45 [Based on past 3 years record]

Item No.	Item Description	Points	Evaluation Guidelines
III-I.1	Students admission	15	Assessment is based on the seats filled through Entrance Examination and/or based 12th Standard Examination scores - Admission Intake : **5 points** - Admission Quality : **10 points**
III-I.2	Student Teacher Ratio for First Year Common Courses	20	Student-Teacher Ratio for First Year Common Courses (FYSTR) of 25 or superior Assessment = 20 * 25 * 0.8 / FYSTR ; subject to max. assessment at 20 For this and the item below, the faculty members to be considered are those who teach or take tutorial for first year common courses of Science, Engineering and Humanities. Fraction of the teaching load is accounted for.
III-I.3	Faculty Qualifications for First Year Common Courses	20	Assessment of Faculty Qualification = 2 * (10 * x + 6 * y + 4 * z) / N Where x = No. of Faculty Members with Ph. D y = No. of Faculty Members with M. E / M. Tech. / NET-Qualified z = No. of Faculty Members with B. E /B.Tech/ M.Sc./M.C.A./ M.A N = Total No. Faculty Members (considering fractional load) or Number of Faculty needed for FYSTR of 25, whichever is higher
III-I.4	Academic Performance in First Year Common Courses	20	Academic Performance = 20 * FYSI Where FYSI = First Year Success Index = (No. of students who cleared all subjects in a single attempt + No. of students cleared all but one subject in a single attempt) *DIVIDED BY* (Total no. of students admitted in the first year)

Criterion IV: Students' Performance in the Program (75)

Minimum Qualifying Points : 45 [Based on past 3 years record]

Item No.	Item Description	Points	Evaluation Guidelines
IV-P.1	Success Rate	20	Success Rate = 20 * Mean of Success Index (SI) for past three batches SI = (No. of students who cleared the Program in the minimum period of course duration) *DIVIDED BY* (No. of students admitted in the first year and laterally admitted students in that batch)
IV-P.2	Academic performance	20	Academic Performance = 2 * API Where API = Academic Performance Index = Mean of Cumulative Grade Point Average of all the Students on a 10 point CGPA System OR = Mean of the percentage of marks of all students *DIVIDED BY* 10
IV-P.3	Placement and higher studies	20	Assessment Points = 20 * (x + 1.25 * y) / N Where x = Number of students placed, y = Number of students admitted for higher studies, N = Number of students admitted in the first year and laterally admitted students in that batch subject to Max. Assessment Points = 20 Percentage of students to be considered based on First Year and Lateral entry. Assessment : **3 points** for each item
IV-P.4	Professional activities	15	- Professional societies/ chapters and organizing engineering events, - Organization of paper contests, design contests etc. and their achievements, - Publication of technical magazines, newsletters etc., - Entrepreneurship initiatives, product designs, innovations, and - Publications and awards in inter institute events.

Criterion V: Faculty (150)

Minimum Qualifying Points : 90 [Based on past 3 years of the records]

Item No.	Item Description	Points	Evaluation Guidelines
V-P.1	Student-Teacher Ratio (STR)	20	Assessment = 20 * 15 * 0.8 / STR ; subject to Max. assessment at 20 Where STR = (x + y + z) / N1 x = Number of students in 2nd year of the Program y = Number of students in 3rd year of the Program z = Number of students in 4th year of the Program N1 = Total Number of Faculty Members in the Program (considering the fractional load)

For Item Nos. V-P.2 to V-P.8, the denominator term (N) is computed as follows:—

N = Maximum {N1, N2},
Where N1 = Total Number of Faculty Members in the Program (considering the fractional load),
N2 = Number of Faculty positions needed for Student-Teacher Ratio (STR) of 15.

V-P.2	Faculty Cadre ratio	20	Assessment = 20 * CRI Cadre Ratio Index (CRI) = 2.25 (2x + y) / N; based on 1:2:6 subject to Max. CRI = 1.0; x = Number of professors in the Program y = Number of associate professors in the Program
IV-P.3	Faculty Qualifications	30	Assessment = 3* FQI Faculty Qualification Index (FQI) = (10 * x + 6 * y + 4 * z) / N x = Number of Faculty Members with Ph. D. y = Number of Faculty Members with M. E / M. Tech z = Number of Faculty Members with B. E / B. Tech /M.Sc.
V-P.4	Faculty Retention	20	Assessment = 4 * RPI / N Retention Point Index (RPI) = Sum of the Retention Points to all Faculty 1 Retention Point for each year of experience at the Institution, subject to max. of 5 points to a faculty.

V-P.5	Faculty Research Publications	20	Faculty Points in Research Publications (FRP) Assessment of FRP = 4 * Sum of the Research Publication Points scored by each Faculty member *DIVIDED BY* (N) Guidelines: A faculty member scores at most 5 Research publication points, each year, depending upon the *quality* of the research papers published in the past 3 years. The research papers considered are those (i) which can be located on internet and/or are included in hard-copy volumes/ proceedings, published by well known publishers, and (ii) the faculty member's affiliation, in the published paper, is of the current institution.
V-P.6	Faculty Intellectual Property Rights (IPR)	10	Faculty Points in IPR (FIPR) Assessment of FIPR = 2 * Sum of the FIPR points scored by each Faculty member *DIVIDED BY* (N) Guidelines: A faculty member scores at most 5 FIPR points, each year. IPR includes awarded national/international patents, books and copyrights.
V-P.7	Faculty R & D and Consultancy Work	20	Faculty Points in R & D and consultancy work (FRDC) Assessment of R&D and Consultancy Projects = 4 * Sum of FRDC by each faculty *DIVIDED BY* (N) Guidelines : A faculty member gets at most 5 points, each year, depending upon the amount of the funds and/or the contributions made. A suggestive scheme is given below for a minimum amount of Rs. 1 lakh:— 5 points for funding by National Agency, 4 points for funding by State Agency, 3 points for funding by private sector, and 2 points for funding by the sponsoring Trust/Society.
V-P.8	Faculty Interactions with Outside World	10	Faculty Points for Interaction with Outside World (FIP) Assessment = 2 * Sum of FIP by each faculty *DIVIDED BY* (N)

			Guidelines : A faculty member gets at the most 5 Interaction Points, each year, depending upon the type of Institution or R&D Lab or Industry, as given below: - 5 points for interaction with a well known Institution abroad, Institution of Eminence in India or National Research Labs, - 3 points for interaction with Institution/Industry (not covered) above, - 2 points for interaction with State Level Institutions and others.

Guidelines :

1. Faculty cadre is 3-tier with interchangeably equivalent designations, as follows:

A. (Professor, Associate Professor, Assistant Professor), or

B. (Professor, Assistant Professor, Sr. Lecturer/Lecturer), or

C. (Professor, Reader, Sr. Lecturer/Lecturer), or

Criterion VI: Facilities and Technical Support (75)

Minimum Qualifying Points: 45

Item No.	Item Description	Points	Evaluation Guidelines
VI-P.1	Class rooms	20	- Adequate number of rooms for lectures (core/electives), seminars, tutorials, etc for the Program : **10 points** - Teaching aids – black/white-board, multimedia projectors, etc. : **5 points** - Acoustics, class room size, conditions of chairs/benches, air circulation, lighting, exits, ambiance, and such other amenities/ facilities: **5 points**
VI-P.2	Faculty rooms	15	- Availability of individual faculty rooms : **5 points** - Room equipped with white/black board, computer, internet, and such other amenities/facilities : **5 points** - Usage of room for discussion/counseling with students : **5 points**
VI-P.3	Laboratories including computing facility	25	- Adequate well equipped laboratories to run all the Program specific curriculum : **10 points** - Availability of computing facilities available exclusively in the department : **5 points** - Availability of labs with technical support within and beyond working hours : **5 points** - Equipments to run experiments and their maintenance, Number of students per experimental set up, Size of the laboratories, overall ambience etc. : **5 points**
VI-P.4	Technical manpower support	15	- Availability of adequate and qualified technical supporting staff for Program specific labs : **10 points** - Incentives, skill-up gradation and professional advancement : **5 points**

Criterion VII: Continuous Improvements (75)

Minimum Qualifying Points : 45 [Based on past 3 years of the records]

Item No.	Item Description	Points	Evaluation Guidelines
VII-P.1	Improvement in Success Index of students	10	Points must be awarded in proportion to the average improvements in computed SI (in IV-P.1) over three years.
VII-P.2	Improvement in academic performance of students	10	Points must be awarded in proportion to the average improvements in computed API (in IV-P.2) over three years.
VII-P.3	Improvement in Student-Teacher Ratio	10	Points must be awarded in proportion to the average improvement in computed STR (in V-P.1) over three years.
VII-P.4	Enhancement of faculty qualifications	10	Points must be awarded in proportion to the average improvement in computed FQI (in V-P.3) over three years.
VII-P.5	Improvement in Faculty Research Publication, R & D and consultancy	10	Points must be awarded in proportion to the combined average improvement in computed FRP (in V-P.5) and FRDC (V-P.7) over three years.
VII-P.6	Continuing education	10	Points must be awarded in proportion to participation in continuing education (contributing to course modules and conducting and attending short-term courses and workshops) Programs to gain and/or disseminate their knowledge in their areas of expertise.
VII-P.7	New facility created	10	New facilities in terms of infrastructure/ equipment/ facilities added to augment the Program.
VII-P.8	Overall improvements since last accreditation, if any, otherwise, since establishment	5	Points must be awarded based on the strengths and weaknesses mentioned in the last accreditation visit, and how those were addressed and/or efforts were made.

Guidelines : Visiting team should ensure that the marks are awarded based on the rate of average improvement taken over the past three years, and not on the absolute values of the indices.

Full marks are to be awarded if the average index is in converged state, else marks to be awarded are in proportion to the ratio of 'the rate of average improvement' to the 'converged value'.

Criterion VIII: Curriculum (100)

Minimum Qualifying Points : 60

Item No.	Item Description	Points	Evaluation Guidelines
VIII-P.1	Contents of basic sciences, HSS, professional core and electives, and breadth	30	Well balanced components of basic sciences, HSS, breadth subjects, professional core and elective subjects. The professional core subjects should encompass all the major areas of the Program. Sufficient number of elective subjects should be actually offered from which the students can choose their field of interests
VIII-P.2	Content delivery	30	- Content delivery - Effective and innovative teaching methods
VIII-P.3	Laboratory and project work	20	Laboratories/ project works should form the core of the curriculum in tune with the theory coverage
VIII-P.4	Additional contents and flexibility to bridge curriculum gaps	20	- Program specific contents which are added to bridge curriculum gaps in order to achieve Program/course objectives - Innovative teaching methods

Criterion IX: Program Educational Objectives (150)

Minimum Qualifying Points: 90

Item No.	Item Description	Points	Evaluation Guidelines
IX-P.1	PEOs mapping with curriculum	30	Assessment must be based on the PEOs defined for a course or a set of courses, and their mapping with the curriculum.
IX-P.2	PEOs mapping with content delivery – theory and labs	30	Assessment must be based on the PEOs defined for a course or a set of courses, and their mapping with (i) content delivery and (ii) knowledge gained through theory classes and laboratory work.
IX-P.3	PEOs mapping with evaluation (examinations/tests /assignments)	30	Assessment must be based on the PEOs defined for a course or a set of courses, and their mapping with examinations, class tests, and take-home work (assignments and independent study).
IX-P.4	PEOs mapping with final year Project work and	30	Assessment of final year students' projects must be done considering criteria such as – (i) their quality, (ii) the state-of-the-art technology used in execution, (iii) their relevance to industry and academics, (iv) the use and development of theoretical and experimental methods, and (v) the coverage of border areas of the Program.
IX-P.5	Continuous improvement in the process of PEOs mapping and assessment	30	Viewing the process of PEOs' mapping to the above mentioned criteria as a continuously improving process over the years, attempts must be made to document the effectivity of the mapping processes. This continuous process may also refine/revise the targeted PEOs and their mappings.

Criterion X: Program Outcomes and Assessment (100)

Minimum Qualifying Points : 60

Item No.	Item Description	Points	Evaluation Guidelines
X-P.1	Demonstration of attainment of the mandatory *a*-to-*k* outcomes	50	- Assessment of outcomes from students' attainment : **15 points** - Assessment of outcomes due to faculty contributions and achievements : **15 points** - Assessment of outcomes from placement: **10 points** - Assessment of achievements as disseminated in media/public for a : **10 points**
X-P.2	Assessment of outcomes by external stakeholders	30	- Documented process and assessment from industries: **10 points** - Documented process and assessment from almuni : **10 points** - Documented process and assessment from professional bodies : **10 points**
X-P.3	Effectivity and efficiency of the mechanism/ procedure for continuous review and outcome measurements	20	Viewing the review and outcome measurement processes as continuously improving, attempts must be made to document the effectivity and efficiency of the mechanism/procedures

General Report about the strengths, weaknesses and deficiencies, if any

Strengths: .....

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Weaknesses: .....

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Deficiencies, if any .....

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Accreditation Criteria

1. The **Program** gets the status '**Accredited**' **for next 5 years** from the date of issue of the letter from NBA, if it gets a minimum score of 750 points and scores minimum qualifying marks (60%) in each of the criteria specified.

2. The **Program** gets the status '**Provisionally Accredited' for next 2 years** from the date of issue of the letter from NBA, if it gets a minimum score of 600 points, irrespective of not obtaining minimum qualifying marks in some of the criteria.

   The Institution may apply after overcoming the weaknesses/deficiencies to upgrade their status to "Full Accreditation" of the Program.

3. The **Program** gets the status '**Not Accredited'** if it gets the score less than 600 points.

Evaluation Report

Evaluation Report for NBA Accreditation of Undergraduate Engineering Programs

Name of the Program .....

Name and address of the Institution .....

Name of the Affiliating University .....

Dates of the Accreditation Visit .....

Name, Designation and Affiliation of Program Evaluator 1 .....

Name, Designation and Affiliation of Program Evaluator 2 .....

Name, Designation and Affiliation of Team Chairperson .....

Signatures

(Program Evaluator1)	(Program Evaluator 2)	(Team Chairperson)

Criterion - I: Organization and Governance, Resources, Institutional Support, Development and Planning

Item No.	Item Description	Max. Points	Points Awarded	Remarks
I-I.1	Campus infrastructure and facility	20		
I-I.2	Organization, governance and transparency	20		
I-I.3	Budget allocation, utilization and public accounting	15		
I-I.4	Library	20		
I-I.5	Internet	5		
I-I.6	Safety norms and checks	10		
I-I.7	Counseling and emergency medical care and first-aid	10		
	Total	**100**		

Criterion - II: Teaching and Learning Processes

Item No.	Item Description	Max. Points	Points Awarded	Remarks
II-I.1	Academic process	15		
II-I.2	Academic support units and common facilities	20		
II-I.3	Tutorial classes/ remedial classes/mentoring	15		
II-I.4	Teaching evaluation process : Feedback system	15		
II-I.5	Self learning and learning beyond syllabus	15		
II-I.6	Career guidance, training, placement and entrepreneurship cell	10		
II-I.7	Co-curricular and extra curricular activities	10		
	Total	**100**		

Criterion - III: Students' Entry and First Year Performance

Item No.	Item Description	Max. Points	Points Awarded	Remarks
III-I.1	Students admission	15		
III-I.2	Student teacher ratio for first year common courses	20		
III-I.3	Faculty qualifications for first year common courses	20		
III-I.4	Academic performance in first year common courses	20		
	Total	**75**		

Criterion - IV: Students' Performance in the Program

Item No.	Item Description	Max. Points	Points Awarded	Remarks
IV-P.1	Success rate	20		
IV-P.2	Academic performance	20		
IV-P.3	Placement and higher studies	20		
IV-P.4	Professional activities	15		
	Total	**75**		

Criterion V: Faculty

Item No.	Item Description	Max. Points	Points Awarded	Remarks
V-P.1	Student teacher Ratio	20		
V-P.2	Faculty cadre Ratio	20		
V-P.3	Faculty qualifications	30		
V-P.4	Faculty retention	20		
V-P.5	Faculty research publications	20		
V-P.6	Faculty intellectual property rights	10		
V-P.7	Faculty R & D and consultancy work	20		
V-P.8	Faculty Interactions with Outside World	10		
	Total	**150**		

Criterion VI: Facilities and Technical Support

Item No.	Item Description	Max. Points	Points Awarded	Remarks
VI-P.1	Class rooms	20		
VI-P.2	Faculty rooms	15		
VI-P.3	Laboratories including computing facility	25		
VI-P.4	Technical manpower support	15		
	Total	**75**		

Criterion VII: Continuous Improvements

Item No.	Item Description	Max. Points	Points Awarded	Remarks
VII-P.1	Improvement in success index of students	10		
VII-P.2	Improvement in academic performance of students	10		
VII-P.3	Improvement in student teacher Ratio	10		
VII-P.4	Enhancement of faculty qualifications	10		
VII-P.5	Improvement in faculty activities in research publication, R & D and consultancy	10		
VII-P.6	Continuing education	10		
VII-P.7	New facility created	10		
VII-P.8	Overall improvements since last accreditation, if any, otherwise, since establishment	5		
	Total	**75**		

Criterion VIII: Curriculum

Item No.	Item Description	Max. Points	Points Awarded	Remarks
VIII-P.1	Contents of basic sciences, HSS, professional core and electives, and breadth	30		
VIII-P.2	Content delivery	30		
VIII-P.3	Laboratory and project work	20		
VIII-P.4	Additional contents and flexibility to bridge curriculum gaps	20		
	Total	**100**		

Criterion IX: Program Educational Objectives

Item No.	Item Description	Max. Points	Points Awarded	Remarks
IX-P.1	PEOs mapping with curriculum	30		
IX-P.2	PEOs mapping with content delivery	30		
IX-P.3	PEOs mapping with evaluation (examinations/ assignments/tests)	30		
IX-P.4	PEOs mapping with final year project work	30		
IX-P.5	Continuous improvement in the process of PEOs mapping and assessment	30		
	Total	**150**		

Criterion X : Program Outcomes

Item No.	Item Description	Max. Points	Points Awarded	Remarks
X-P.1	Demonstration of attainment of the mandatory *a*-to-*k* outcomes	50		
X-P.2	Evaluation of outcomes by external stakeholders	30		
X-P.3	Effectivity and efficiency of the mechanism/procedure for continuous review and outcome measurements	20		
	Total	**100**		

Experts' Report about the Strengths, Weaknesses and Deficiencies, if any

Strengths: .....

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Weaknesses: .....

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Deficiencies, if any .....

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Additional Remarks, if any .....

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Summary Assessment

No.	Criterion Descriptor	Max. Points	Qualifying Points	Points Awarded	Qualified?
I	Organization and Governance, Resources, Institutional Support, Development and Planning	100	60		Yes / No
II	Teaching and Learning Processes	100	60		Yes / No
III	Students' Entry and First Year Performance	75	45		Yes / No
IV	Students' Performance in the Program	75	45		Yes / No
V	Faculty	150	90		Yes / No
VI	Facilities and Technical Support	75	45		Yes / No
VII	Continuous Improvements	75	45		Yes / No
VIII	Curriculum	100	60		Yes / No
IX	Program Educational Objectives	150	90		Yes / No
X	Program Outcomes and Assessment	100	60		Yes / No
	Total	**1000**	**600**		

Specific remarks for those criteria in which points awarded are below qualifying points :

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(Program Evaluator1) (Program Evaluator 2) (Team Chairperson)

Chairperson's Report

Strengths: .....

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Weaknesses: .....

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Deficiencies, if any .....

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Additional Remarks, if any .....

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(Team Chairperson)

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