CRITERION - 7

S NO.	CONTINUOUS IMPROVEMENT	MARKS (50)	PAGE NUMBER
7.1	Actions taken based on the results of evaluation of each of the POs and PSOs	20	300
7.2	Academic Audit and actions taken thereof during the period of Assessment	10	317
7.3	Improvement In Placement, Higher Studies And Entrepreneur ship	10	318
7.4	Improvement in the quality of students admitted to the program	10	319

7.1 Actions taken based on the results of evaluation of each of the POs and PSOs and POs Attainment levels & actions for improvement for batch (2017-2021)

<table>
<tr><th>POs</th><th>Target Level</th><th>Attainment Level</th><th>Observation</th></tr>
<tr><td colspan="4">PO 1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.</td></tr>
<tr><td>PO 1</td><td>1.95</td><td>2.44</td><td>Attainment is above target. Increase the threshold and range for attainment to increase the target level.</td></tr>
<tr><td colspan="4">Action 1: Introduce animation, simulation and video based lectures.
Action 2: Tutorials based on application of fundamental engineering knowledge will be included
Action 3: Remedial classes to be conducted after identifying weak students. Active cooperative learning to be strengthened.</td></tr>
<tr><td colspan="4">PO 2: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences</td></tr>
<tr><td>PO 2</td><td>1.95</td><td>2.25</td><td>Attainment is above target. Increase the threshold and range for attainment to increase the target level.</td></tr>
<tr><td colspan="4">Action 1: Conduct periodical workshops on core engineering areas
Action 2: Introduce Mini project as a part of evaluation in identified laboratory courses.
Action 3: Guide Students to perform proper literature survey for analyzing and solving complex engineering problems.
Action 4: Give project to students, which helps them to improve their knowledge of using proper literature for solving problems
Action 5: Arrange Industrial visits for the students to gain the knowledge on complex engineering problems
Action 6: Engage tutorial to improve the problem solving skills of the student.
Action 7: Give Individual and group assignments.</td></tr>
<tr><td colspan="4">PO3: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.</td></tr>
<tr><td>PO 3</td><td>1.95</td><td>2.27</td><td>Attainment is above target. Increase the threshold and range for attainment to increase the target level.</td></tr>
<tr><td colspan="4">Action 1: Introduce Open Lab to design and develop products towards societal benefits.</td></tr>
</table>

Action 2: Encourage students to take part in product development contests. **Action 3**: Motivate students to include all standard parameters and constraints according to National and International safety norms and to address environmental concerns.			
PO 4: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.			
PO 4	**1.95**	**2.16**	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
Action 1: Introduce laboratory component in the core courses. **Action 2:** Encourage Students to go for training/internship in industries/premier institutions.			
PO 5: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.			
PO 5	**1.95**	**2.26**	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
Action 1: Include the recent advancements in modern tool like Python, IoT, dSpace, etc. **Action 2:** Encourage students to use the modern tool/research facilities available in department for the projects and Open Lab **Action 3:** Arrange Workshops on modern tools and its applications.			
PO 6: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.			
PO 6	**1.95**	**2.08**	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
Action 1: Make Industrial Visits for identified courses **Action 2:** Introduce Live in Labs which gives solution for societal needs.			
PO 7: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
PO 7	**1.95**	**1.87**	Target level has not been achieved. The impact of the professional engineering solutions in societal and environmental contexts is not understood by students.
Action 1: Encourage students to involve them in societal activities through Live in Labs **Action 2:** Introduce mini projects in environmental science course. **Action 3:** NSS Activities will be arranged			

<table>
<tr><td colspan="4">PO 8: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.</td></tr>
<tr><td>PO 8</td><td>1.95</td><td>2.08</td><td>Attainment is above target. Increase the threshold and range for attainment to increase the target level.</td></tr>
<tr><td colspan="4">Action 1:Check Plagiarism for all project reports and technical papers
Action 2: Introduce Human Value courses/Programmes.
Action 3 : Arrange Career guidance program, corporate lectures and motivational talks will be arranged to gain knowledge of professional ethics and responsibilities</td></tr>
<tr><td colspan="4">PO 9: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</td></tr>
<tr><td>PO 9</td><td>1.95</td><td>2.06</td><td>Attainment is above target. Increase the threshold and range for attainment to increase the target level.</td></tr>
<tr><td colspan="4">Action 1: Introduce Open Lab which will be a group activity.
Action 2: Introduce Mini Project in the laboratory courses.
Action 3: Encourage Students for participation in social activities like blood donation camp, Yoga Camp, NSS activities in group</td></tr>
<tr><td colspan="4">PO 10: 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</td></tr>
<tr><td>PO 10</td><td>1.95</td><td>2.08</td><td>Attainment is above target. Increase the threshold and range for attainment to increase the target level.</td></tr>
<tr><td colspan="4">Action 1: Introduce group discussions, presentation and soft skill training.
Action 2: Encourage Students to present papers in National/ International conferences.</td></tr>
<tr><td colspan="4">PO 11: Demonstrate knowledge and understanding of the 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</td></tr>
<tr><td>PO 11</td><td>1.95</td><td>2.44</td><td>Attainment is above target. Increase the threshold and range for attainment to increase the target level.</td></tr>
<tr><td colspan="4">Action 1: Continuous monitoring of project management in open lab and project.
Action 2: Introduce compulsory management course.
Action 3: The cost estimation will be included as a part of project assessment, this will improve the knowledge regarding project management and finance</td></tr>
<tr><td colspan="4">PO 12: 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.</td></tr>
</table>

PO 12	**1.95**	**2.05**	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
Action 1: Continuous monitoring of project management in open lab and project**.** **Action 2:** Introduce compulsory certification course. **Action 3:** The cost estimation will be included as a part of project assessment, this will improve the knowledge regarding project management and finance.			

PSOs Attainment levels & actions for improvement (2017-2021)

	Target Level	**Attainment Level**	**Observation**
PSO 1: To analyze, design and develop computing solutions by applying foundational concepts of Computer Science and Engineering			
PSO 1	**1.95**	**1.96**	Attainment is above target. Increase the threshold and range for attainment to increase the target level
Action 1: Identify future technologies and include as an elective courses. **Action 2:** Encourage students to select open elective courses offered by other departments.			
PSO 2: To apply software engineering principles and practices for developing quality software for scientific and business applications.			
PSO 2	**1.95**	**1.95**	Attained target level.
Action 1: Motivate to attend workshops, certification courses, symposium etc			
PSO 3: To adapt to emerging Information and Communication Technologies (ICT) to innovate ideas and solutions to existing/novel problems.			
PSO3	**1.95**	**1.77**	Attainment decreased against target level
Action 1: Motivate to attend Hackathon, Symposium **Action 2: To develop Mini Project** **Action 3: Motivate to actively take part in Project Expo.**			

PSOs and POs Attainment levels & actions for improvement for batch (2016-2020)

POs	Target Level	Attainment Level	Observation
PO 1: Engineering knowledge: **Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.**			
PO 1	**1.92**	**2.34**	Target level has been achieved. Computer Science and Engineering curriculum requires the strong foundation of theoretical and practical knowledge of science and mathematics, which the students study during their entire programme, especially in their first year.
Action 1: Visit industries that are working in core areas of computer science and engineering. Understand the design & construction processes to boost the technical knowledge. This also helped to understand work ethics followed inindustries. **Action 2:** It is aimed that the Course Projects, final year Project Works and Camps relate the knowledge of applied and basic sciences to engineering applications in order to solve different types of complex engineeringproblems. **Action 3:** We inspire students to participate in technical events, other events where their basic knowledge shouldconvert to application matching with defined level of their standards. **Action4:** Extra classes were conducted to improve fundamentals of engineering mathematics, science and engineering fundamentals for weak students			
PO 2: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences			
PO 2	**1.92**	**2.01**	Target level has been achieved. However following observations were made: ● The problem solving and analyzing skills gained through, primarily, first and second year courses helps the students toapply the principles in real time applications and understand engineering science. This has shown an improvement due tovarious actions. ● Exposure of the students to real world problems is less hencestudents are

			not able to visualize and relate to academic subjects. ● Research exposure to the students is less.

ACTION 1: Students are encouraged to observe, their homes and surroundings to gain insight into real lifeengineering problems and think of possible approaches/solutions to these problems.

ACTION 2: Gained knowledge on complex engineering problems and solution on Industrial Visit.

ACTION 3: Latest Literature is made available and easily accessible to the students and application orientedproject works are got conducted.

ACTION4: Access to research journal in library for the students for reading journal papers for latestresearch.

ACTION5: Students are motivated to participate in science project exhibition for developing an analytical mind which can work towards problem solving

PO3: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 3	**1.92**	**2.09**	Target level has been achieved. Most of the projects developed by the student as course/ mini projects/ major projects (final year) are considering the social and environmental issues. This is all the more true as now the students are encouraged more to do so.

ACTION1: Students are motivated to include all standard parameters and constraints according to National andInternational safety norms and to address environmental concerns.

ACTION2: Courses, that inculcate the ability to Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations, are included and continuously updated

ACTION3: Students are encouraged and motivated to take up project works that include and pertain to public health and safety, and the cultural, societal, and environmental considerations

PO 4: Use research-based knowledge and research methods including design of experiments,

analysis and interpretation of data, and synthesis of the information to provide valid conclusions.			
PO 4	**1.92**	**2.07**	Target level been achieved. It is observed that most of theproject works are research based where students have to design experiments analyse and synthesise the data, produce results and derive specific conclusions. Courses have been included and syllabi updated to include and inculcate the analysis and research skills.
ACTION1: Academic workshops are coming into picture to apply more knowledge in terms of conduction ofexperiments and analysis of results at required level. **ACTION2:** Courses are included and syllabi updated to include and inculcate the analysis and research skills			
PO 5: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.			
PO 5	**1.92**	**2.11**	Target level been achieved. It is observed that Up- gradations of tools and resources are necessary to meet the industry standards and research. This has been a thrust area on which action has been taken and appreciable improvement has been achieved.
ACTION1: Modern labs are developed to learn/ demonstrate the use of Modern software tools to specify fulfillment of requirement in engineering applications in new industrial era. **ACTION2:** Procurement of modern and state-of-the-art equipment in the laboratories and students exposed to applicability and use of these by making them work on these modern tools. **ACTION3:** Students are taught with modern modes and methods of teaching like using LCD Projectors and with interactive and digital boards and learning in smart class rooms equipped with real time lecturewebcast/broadcast facilities.			

<table>
<tr><td colspan="4">PO 6: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.</td></tr>
<tr><td>PO 6</td><td>1.92</td><td>2.00</td><td>Target level has been achieved. however following observation were made:
The courses of Computer Science and Engineering are addressing the needs of safety and social concerns regarding engineering practices in real life.
The students are found to be less active as far as social activities were concerned; also they were unaware about the basic safety issues with engineering point of view.
Students are now giving more importance to these dimensions</td></tr>
<tr><td colspan="4">ACTION1: To understand the safety concerns and social aspects, students visited industry to expand theirpractical knowledge with the effect of improved practices in engineering.
ACTION2: Students are encouraged to teach students, from in and outside campus, especially children who arefrom economically aweaker sections.
ACTION3: Encouraged students to take part in NSS activities, Blood Donation Camps etc.
ACTION4: Awareness programs on road safety, yoga etc has been organised in college.</td></tr>
<tr><td colspan="4">PO 7: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.</td></tr>
<tr><td>PO 7</td><td>1.92</td><td>1.9</td><td>Target level has not been achieved.</td></tr>
<tr><td colspan="4">ACTION1: Students are encouraged to indulge in projects, in which global and environmental issues areimproved, with respect to consumption of energy and utilization of renewable energy resources.
ACTION2: Courses, that deal with environmental and sustainability issues, have been introduced with the aimof understanding the impact of professional engineering solutions in societal and environmental contexts and understanding the need for bringing about sustainability in overall development.</td></tr>
</table>

ACTION3: The activity like Tree Plantation has organized to encourage the students for understandingthe responsibility towards environment.			
PO 8: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.			
PO 8	**1.92**	**2.02**	Target level has been achieved. The students are doing better in improving the overall expertise in field of engineering by proper communications and ethical/ moral knowledge.
ACTION 1: Students are motivated and made aware about the demands of engineering profession, dutiestowards society & fellow human beings and importance of honesty and ethics. **ACTION 2:** Lectures and awareness/ motivational programmes are conducted. Career readiness program, corporate lectures and motivational talks are arranged to overcome the above observations. **ACTION 3:** To encourage students to Participation in Co-Curricular activities and Games and promote commitment to ethical principles and an understanding of sportsmanship and that participation is more importantthan winning.			
PO 9: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO 9	**1.92**	**2.07**	Target level has been achieved. The students seem ready forworking both as individuals and in a team work. This aspect is constantly encouraged in every aspect and stage of programme
ACTION1: Institute has initiated Program which provides a platform to work in individual as well as a group in the fields of Engineering. It helps the students to groom the skills like leadership or as an effective team member.There are a number of societies and clubs where the students learn to work both as individuals and in a team work environment. **ACTION2:** The laboratory work of the students is conducted by framing student groups so that students learn to work in a team environment. **ACTION3:** The final year project work is conducted by first making student groups in which students with different abilities are included (decided on the basis of CGPA). These groups are allotted to faculty members as per the area-preference given by the students. This helps students to learn to work with team members of different capabilities and background.			
PO 10: 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			
PO 10	**1.92**	**2.02**	Target level has been achieved. The communication, presentation and report writing skills are to be further improved among the students. Efforts are underway. Good improvement has been made.

ACTION1: Soft skills training is imparted to students to enhance various aspects of communication/technicaltalks by group discussions, presentations and new learning outcomes**.**
ACTION2: Regular instructions are communicated to the students about preparing project reports and makingpresentations.
ACTION3: Students that are seen to be weak in communication skills are encouraged to undergo relevant courses and are also referred to language lab for improving their communication skills.

PO 11: Demonstrate knowledge and understanding of the 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

PO 11	**1.92**	**2.02**	Target level has been achieved. Few courses of curriculum give knowledge of management principle and to manage the project in multidisciplinary environments. It is being given due importance now.

ACTION1: The awareness is created among the student regarding the management principles and managing projects. The relevant courses are revised and upgraded regularly to cater to latest techniques and trends in thearea.
ACTION2: Projects will be completed in collaboration with industry.
ACTION3: The internship training is imparted to students in collaboration with industry.

PO 12: 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.

PO 12	**1.92**	**1.88**	Target level has not been achieved. The pre final year and final year courses of the program are demonstrating the resource for contemporary issues and lifelong learning.. This is being viewed as one of the thrust areas to improve. Efforts are on to improve the attainment level.

ACTION1: Students are made to recognize the importance of lifelong learning through pep/ motivational talks and programmes. Using ICT facilities, such as PPTs, live demonstration of topics imparted using video lecture and real time webcast and lecture contents including new technological developmental tools and knowledge of new products, gives students and lifelong knowledge to be further improved upon.
ACTION2: Existence of chapters of professional bodies/ societies like CSI, ISTE, ICM etc and events under thebanner of these societies gives students opportunity to have a lifelong learning. The students are encouraged to take membership of these societies.
ACTION3: The students are involved in the activities of alumni association and are encouraged to take membership of Association at the time of passing out

PSOs Attainment levels & actions for improvement (2016-2020)

PSOs	Target Level	Attainment Level	Observation
PSO 1: To analyze, design and develop computing solutions by applying foundational concepts of Computer Science and Engineering			
PSO 1	**1.92**	**1.78**	Target level has not been achieved. Efforts are made to publish/ exhibit/ innovate through conferences/ journals/ workshops purchase state of the art equipment and softwares etc. to analyze, design and develop computing solutions by applying foundational concepts of Computer Science and Engineering.
ACTION1: Academic workshops and conferences are coming into picture to apply more knowledge in terms ofconduction of experiments and analysis as required. **ACTION2:** Training programmes for use of softwares are conducted for students. **ACTION3:** Courses of lab works in which students learn to use softwares are included in the curriculum. The syllabi of these courses are regularly updated. **ACTION4:** Project works are encouraged that involve the usage of technical resources such as software's towards for solving technical problems..			
PSO 2: To apply software engineering principles and practices for developing quality software for scientific and business applications.			
PSO 2	**1.92**	**1.92**	Target level has been achieved. The courses of the program aredemonstrating the resource fullness for contemporary issues. The project titles of the final year and pre-final year students areaddressing the real-life problems. The efforts are made to improve good results.
ACTION1: Students are motivated to take up the real life problems during their project work so that they can design, analyze and find solution which gives exposure to latest technologies			

PSOs and POs Attainment levels & actions for improvement for batch (2015-2019)

<table>
<tr><th>POs</th><th>Target Level</th><th>Attainment Level</th><th>Observation</th></tr>
<tr><td colspan="4">PO 1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.</td></tr>
<tr><td>PO 1</td><td>1.89</td><td>2.29</td><td>Target level has been achieved. However following observations were made:
Computer Science and engineering curriculum requires the strong foundation of theoretical and practical knowledge of science and mathematics, which the students study during their entire programme, especially in their first year.
Improvement in correlating the theoretical concepts with applications is required.</td></tr>
<tr><td colspan="4">Action1: Visit companies industries that are working in core areas of computer science and engineering. Understand the concepts to boost the technical knowledge. This also helped to understand work ethics followed in industries.
Action 2: It is aimed that the Course Projects, final year Project Works relate the knowledge of applied and basic sciences to engineering applications in order to solve different types of complex engineering problems.
Action 3: We inspire students to participate in technical events, other events where their basic knowledge should convert to application matching with defined level of their standards.
Action4:Extra classes were conducted to improve fundamentals of engineering mathematics, science and engineering fundamentals for weak students</td></tr>
<tr><td colspan="4">PO 2: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences</td></tr>
<tr><td>PO 2</td><td>1.89</td><td>2.02</td><td>Target level has been achieved. However following observations were made:
The problem solving and analyzing skills gained through, primarily, first and second year courses helps the students to apply the principles in real time applications and understand engineering science.
Exposure of the students to real world problems is less hence students are not able to visualize and relate to academic subjects.</td></tr>
<tr><td colspan="4">ACTION1: Students are encouraged to observe, the industry and surroundings to gain insight in to real life engineering problems and think of possible approaches/solutions to these problems.</td></tr>
</table>

ACTION 2: Gained knowledge on complex engineering problems and solution on visiting field/ industry.

ACTION3: Latest Literature is made available and easily accessible to the students and application oriented project works are got conducted.

ACTION4: Access to research journal in library for the students for reading journal papers for latest research.

ACTION5: Students are motivated to participate in science project exhibition for developing an analytical mind which can work towards problem solving.

PO3: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 3	**1.89**	**2.10**	Target level has been achieved. Most of the projects developed by the student as course / hobby projects / major projects (final year) are considering the social and environmental issues. This is all the more true a show the students are encouraged more to do so.

ACTION1: Students are motivated to include all standard parameters and constraints according to National and International safety norms and to address environmental concerns.

ACTION2: Courses, that inculcate the ability to Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations, are included and continuously updated

ACTION3: Students are encouraged and motivated to take up project works that include and pertain to public health and safety, and the cultural, societal, and environmental considerations.

PO 4: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 4	**1.89**	**2.13**	Target level has been achieved. However following observations were made: • Most of the project works are research based where students have to design experiments analyse and synthesize the data, produce results and derive specific conclusions. • Sometimes the studies do not end with valid conclusions .Courses required being included and syllabi updated to include and inculcate the analysis and research skills.

ACTION1: Academic workshops are coming into picture to apply more knowledge in terms of conduction of experiments and analysis of results at required level.

ACTION2: Courses are included and syllabi updated to include and inculcate the analysis and research skills.

<table>
<tr><td colspan="4">PO 5: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.</td></tr>
<tr><td>PO 5</td><td>1.89</td><td>2.11</td><td>Target level has been achieved. It is observed that Up-gradations of software tools and resources are necessary to meet the industry standards and research. This has been a thrust area on which action has been taken and appreciable improvement has been achieved.</td></tr>
<tr><td colspan="4">ACTION1: Modern labs are developed to learn/ demonstrate the use of Modern software tools to specify fulfillment of requirement in engineering applications in new industrial era.
ACTION2: Procurement of modern and state-of-the-art software in the laboratories and students exposed to the applicability and use of these by making them work on these modern tools.
ACTION3: Students are taught with modern modes and methods of teaching like using LCD Projectors and with interactive and digital boards and learning in smart classrooms equipped with real time lecture webcast/broadcast facilities.</td></tr>
<tr><td colspan="4">PO 6: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.</td></tr>
<tr><td>PO 6</td><td>1.89</td><td>1.83</td><td>Target level has not been achieved. however following observation were made:
The courses of Computer Science and Engineering are addressing the needs of, safety and social concerns regarding engineering practices in real life.
The students are found to be less active as far as social activities were concerned; also they were unaware about the basic health and safety issues with engineering point of view.
Students need to be given more importance to these dimensions</td></tr>
<tr><td colspan="4">ACTION1: To understand the safety concerns and social aspects, students visited industry to expand their practical knowledge with the effect of improved practices in engineering.
ACTION2: Students are encouraged to teach students, from in and outside campus, especially children who are from economically weaker sections.</td></tr>
<tr><td colspan="4">PO 7: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.</td></tr>
<tr><td>PO 7</td><td>1.89</td><td>1.84</td><td>Target level has not been achieved. The issues of global and environmental awareness among the student have improved over the last one year.</td></tr>
</table>

ACTION1: Students are encouraged to indulge in projects, in which global and environmental issues are improved, with respect to consumption of energy and utilization of renewable energy resources.

ACTION2: Courses, that deal with environmental and sustainability issues, have been introduced with the aim of understanding the impact of professional engineering solutions in societal and environmental contexts and understanding the need for bringing about sustainability in overall development.

ACTION3: The activity like Tree Plantation has organized to encourage the students for understanding the responsibility towards environment.

PO 8: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 8	**1.89**	**2.02**	Target level has been achieved. The students are doing better in improving the overall expertise in field of engineering but due to less stress on communications and ethical/ moral knowledge, there is some lagging. Efforts are continuing to take various actions and achieve the target levels.

ACTION1: Students are motivated and made aware about the demands of engineering profession, duties towards society & fellow human beings and importance of honesty and ethics.

ACTION2: Lectures and awareness/motivational programmes are conducted. Career readiness program, corporate lectures and motivational talks are arranged to overcome the above observations.

ACTION3: To encourage students to Participation in Co-Curricular activities and Games and promote commitment to ethical principles and an understanding of sportsmanship and that participation is more important than winning.

PO 9: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 9	**1.89**	**2.05**	Target level has been achieved. The students seem ready for working both as individuals and in a team work. This aspect is constantly encouraged in every aspect and stage of programme

ACTION1: Institute has initiated Program which provides a platform to work in individual as well as a group in the fields of Engineering. It helps the students to groom the skills like leadership or as an effective team member. There are a number of societies and clubs where the students learn to work both as individuals and in a teamwork environment.

ACTION2: The laboratory work of the students is conducted by framing student groups so that students learn to work in a team environment.

ACTION3: The final year project work is conducted by first making student groups in which students with different abilities are included (decided on the basis of CGPA). These groups are allotted to faculty members as per the area-preference given by the students. This helps students to learn to work with team members of different capabilities and background.

<table>
<tr><td colspan="4">PO 10: 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</td></tr>
<tr><td>PO 10</td><td>1.89</td><td>12.04</td><td>Target level has been achieved. The communication, presentation and report writing skills improved among the students. Efforts are underway. Good improvement has been made.</td></tr>
<tr><td colspan="4">ACTION1: Soft skills training is imparted to students to enhance various aspects of communication/technical talks by group discussions, presentations and new learning outcomes.
ACTION2: Regular instructions are communicated to the students about preparing project reports and making presentations.
ACTION3: Students that are seen to be weak in communication skills are encouraged to undergo relevant courses and are also referred to language lab for improving their communication skills.</td></tr>
<tr><td colspan="4">PO 11: Demonstrate knowledge and understanding of the 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</td></tr>
<tr><td>PO 11</td><td>1.89</td><td>1.89</td><td>Target level has been achieved. Few courses of curriculum give knowledge of Management principle and applying managerial principles to his/her work including financial implications and to manage the project in multidisciplinary environments. It is being given due importance now.</td></tr>
<tr><td colspan="4">ACTION1: The awareness is created among the student regarding the management principles and managing projects. The relevant courses are revised and upgraded regularly to cater to latest techniques and trends in the area.</td></tr>
<tr><td colspan="4">PO 12: 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.</td></tr>
<tr><td>PO 12</td><td>1.89</td><td>1.85</td><td>Target level has not been achieved. The pre final year and final year courses of the program are demonstrating the resource for contemporary issues and lifelong learning. This is being viewed as one of the thrust areas to improve. Efforts are on to improve the attainment level.</td></tr>
<tr><td colspan="4">ACTION1: Students are made to recognize the importance of lifelong learning through pep/motivational talks and programmes. Using ICT facilities, such as PPTs, live demonstration of topics imparted using video lecture and real time webcast and lecture contents including new technological developmental tools and knowledge of new products, gives students and lifelong knowledge to be further improved upon.
ACTION2: Existence of chapters of professional bodies/ societies like CSI.ACM.ISTE and events under the banner of these societies gives students opportunity to have a lifelong learning. The students are encouraged to take membership of these societies.
ACTION3: The students are involved in the activities of alumni association and are encouraged to take membership of Association at the time of passing out.</td></tr>
</table>

PSOs Attainment levels& actions for improvement (2015-2019)

PSOs	Target Level	Attainment Level	Observation
PSO 1: To analyze, design and develop computing solutions by applying foundational concepts of Computer Science and Engineering			
PSO 1	**1.89**	**1.75**	Target level has not been achieved. Study about different software tools are used to analyze, design and develop computing solutions by applying foundational concepts of Computer Science and Engineering. Efforts are made to publish / exhibit / innovate through conferences / journals / workshops, purchase state of the art equipment and softwares etc.
ACTION1: Academic workshops and conferences are coming into picture to apply more knowledge in terms of conduction of experiments and analysis as required. **ACTION2:** Training programmes for use of softwares are conducted for students. **ACTION3:** Courses of lab works in which students learn to use softwares are included in the curriculum. The syllabi of these courses are regularly updated. **ACTION4:** Project works are encouraged that involve the usage of technical resources such as software's towards for solving technical problems.			
PSO 2: To apply software engineering principles and practices for developing quality software for scientific and business applications.			
PSO 2	**1.89**	**1.9**	Target level attained. The courses of the program support to apply software engineering principles and practices for developing quality software for scientific and business applications.
ACTION1: Students are motivated to take up the real life problems during their project work so that they can design, analyze and find solution which gives exposure to latest technologies.			

7.2. Academic Audit and Actions Taken Thereof During the Period of Assessment (10)

ACADEMIC AUDITING

The process of Academic Auditing intends to monitor and enhance the quality of technical education through proper guidelines for both teaching faculty and students, so as to ensure qualified engineers / researchers passing out from Engineering Institutions, affiliated to the S.A. Engineering College.

OBJECTIVES OF ACADEMIC AUDITING:

(i) To ensure academic accountability.

(ii) To define quality of each component of the functionalities and to ensure quality of technical education throughout the system.

(iii) To safeguard functionalities of technical education.

(iv) To define effectiveness of teaching – learning process and to devise methodology to confirm maximum output from faculty members as well as students.

DOCUMENTS TO B E PRODUCED FOR AUDIT COURSE DIARY AND COURSE FILE

Each affiliated institution has to maintain the details of various academic c activities in the form of documents given below. These documents shall be made available to the external auditor as and when required.

1. Class Time Table& Faculty Time Table

2. Students Roll List

3. Students Batch List (for practical courses, projects)

4. Course Diary for all the courses including practical, seminar, project etc.

5. Course File

6. Equipment Log register used in Laboratories

7. Consolidated Attendance statement of students

8. Consolidated statement of marks of internal tests

9. Seminar presentation details

10. Project (Mini project/Design project/Final semester project) progress review reports

11. Register of internal evaluation marks

12. Register of Remedial/Bridge/Language Lab classes

13. Result Analysis

14. A course file is maintained by each staff of the department for each course handled by him/her.

15. Value Added Courses

16. NSS Activities

17. Mini Projects

18. Global certification Courses

19. MOOC Courses

20. Guest Lectures

21. Placement Training

7.3 Improvement In Placement, Higher Studies And Entrepreneurship

Item	CAY*m1* (2020-2021)	CAY*m2* (2019-2020)	CAY*m3* (2018-2019)
Total No. of Final Year Students (N)	164	161	130
No. of students placed in companies or Government Sector (x)	144	139	118
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level Tests, GRE, GMAT etc.) (y)	6	5	2
No. of students turned entrepreneur in engineering/technology (z)	0	2	0
x + y + z =	150	146	120
Placement Index : (x + y + z)/N	0.91	0.91	0.92
Average placement= (P1 + P2 + P3)/3	(0.91+0.91+0.92)/3=.91 (91/100)		

7.4 Improvement in the quality of students admitted to the program

Item		2021-2022	2020-2021	2019-2020
National level Entrance examination(Name of the entrance examination)	No. of students admitted			
	Opening Score/Rank	-----	-----	-----
	Closing Score/Rank	-----	-----	-----
State/university/Level Entrance Examination / Others (Name of the entrance examination)	No. of students admitted	180	142	164
	Opening Score/Rank	93	89	93.50
	Closing Score/Rank	53.67	41.67	42.33
Name of the entrance examination for lateral entry or lateral entry details	No. of students admitted	12	5	6
	Opening Score/Rank	91.24	95.36	79.58
	Closing Score/Rank	60.89	68.95	69.36
Average CBSE/Any other Board Result of admitted students(Physics, Chemistry & Maths)		12.22% [(CBSE-16+Others-6)-22/180]	5.63% [(CBSE-7+Others-1)-7/142]	9.75 [(CBSE-16)-16/164]