



7.2.1: Describe two best practices successfully implemented by the Institution as per NAAC format provided in the Manual.

Best Practice 1- Engineering Design and Innovation

1. Objectives of the Practice

1. To emphasize Experiential Learning and to Enhance problem-solving ability.
2. To inculcate Research Aptitude/ Culture among the students.
3. To enhance Socio-Economic Development through an Ecosystem that promotes Entrepreneurship and Research Culture among students by collaborating with industries.
4. To develop expertise in Technology tools, and Engineering design methodologies
5. To provide every student with an opportunity to get involved individually or as a group to develop team spirit with professionalism.
6. To emphasize on start-up and research as a career alternatives.

2. The Context

The primary aim of implementing Engineering Design and Innovation (EDI) is to inculcate research and innovation among the engineering students of our institute. The focus is on Project-Centric Learning. Outcomes of EDI are that students should be able to

- Identify projects relevant to societal needs
- Map the technologies learned with the project needs
- Apply the technological knowledge to design various feasible solutions
- Select the best possible solution to solve problem
- Develop/ Fabricate a working model of proposed solution
- Testing and validating product performance.
- Convert to a product as a startup.

Students choose the domains from Table 1

Table 1. Possible Domains for EDI

Agriculture	Healthcare	Defense	Smart City
Automobiles	Energy Sector	Green Earth	Home Security
Waste Management	Clean Water	Food Technology	Smart Vehicle
Intelligent Transportation	Renewable Energy	Security And Surveillance	Rural Development



The technology selected to solve the problem is shown in Table 2.

Table 2. Possible Technology used for EDI

Data Analytics	Robotics	Machine Learning	Artificial Intelligence
Cloud Computing	MEMS	Zigbee	IOT
Industrial Automation	Cyber Security	Data Science	Robotics
3D Printing	Additive Manufacturing	Blockchain	Virtual Reality

Students choose one or more tools from Table 3.

Table 3. Possible Tools Used for EDI

Java	C++	MATLAB	SCILAB
NS-2	Python	Lab view	Simulink
Open CV	CCS	3D Printing	DSP Processor
ESP 8266	R-Pi	Ardueno uno	Nvidia Jetson

3. The Practice

- Multi-Disciplinary approach is used for the effective implementation of EDI.
- Project groups are allotted to faculty, with a student count of 4 to 5 in each group based on the student's choice and the domain expertise of the faculty.
- Dean Research and Innovation provides valuable guidance to students and faculty on quality.

4. Evidence of Success

Outcome of EDI-Best Practice is in terms of UG Research outcome. Students publishes papers in reputed journals and conferences as shown in Table 4 & 5

Table 4. Best Practice Outcomes

AY	Scopus/ SCI/UGC Publications	Patents Published	Patents Granted
2022-23	1041	61	21
2021-22	900	39	32
2020-21	405	16	10
2019-20	377	20	2
2018-19	404	20	1



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Table 5. Research Eco system

Particulars per Year	Approx Number of Projects
EDI	1456
Course Projects	5168
SDP	2380
Major Projects	1660


5. Problem encountered and resources required.

- Students abilities of Teamwork, Design, Programming and Communication skills, Faculty provide guidance to the students for above skill.
- Timely completion and outcome. Monitoring mechanism.

6. Conclusion:

This helps in enhancing research and innovation culture amongst the students to make them industry and future ready.


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Best Practice 2- 360 Assessment / Examination Based on Top Professional Skills of this Decade.

1. Objectives of the Practice

- To bridge the gap between industry needs and academic education.
- To improve students' employability by focusing on the skills required by industry and to perceive dream careers based on students' interests and strengths.
- To emphasize on start-ups and research as a career alternative that will support societal benefits.

2. The Context

As per the industry need, the student is likely to select their profession in any of the domains. The institute has recognized the importance of developing skills along with domain knowledge and values and has come out with a 360-degree assessment model after due discussions and deliberations with all the stakeholders. A few of the top skills required to be successful in any profession are listed below:

- Critical thinking
- Complex problem-solving ability
- Creativity/innovation
- Team management
- Presentation of ideas
- Brainstorming Discussions/deliberations
- Carrying out Surveys
- Design of systems
- Work on case studies
- Technical writing/blogs
- Hands-on ability
- Emotional Quotient
- Judgment and decision-making

Students can have the choice of making their career in civil services, defense services, start-ups, or politics. They may take up the role of researcher, programmer, developer, system analyst, business analyst, quality assurance, etc. in the industry.

3. The Practice

Assessment components are finalized through deliberations with various stake holders. Each assessment factor is assigned the marks based on its implication. The final score of that component is the summation of all marks obtained for each factor given by internal and external examiner. The distribution of various components is mentioned below:



- Seminar Assessment (G-PPT)
- Group Discussion (GD)
- Design Assignment
- Survey Assignment
- Blog Assignment
- Comprehensive Viva-voce (CVV)
- Theory Examination- MCQ, Closed / Open Book Examination.

4. Evidence of Success

1. Overall result of the student has been improved due to this type of assessment as shown in Table 6.
2. Performance of the students is also increased in the GD and interviews during the placement scrutiny. As a result, placement has also increased in last three years as shown in Table 7.
3. Students can work in a planned manner to achieve their career aspirations by improving the relevant skills which are improved through the assessment mechanism.

Table 6. Students Result

Year	Passing Percentage	Percentage of First Class	Percentage of Distinction
2022-23	97.63	37.75	59.01
2021-22	97.98	24.41	70.72
2020-21	97.17	32.08	63.33
2019-20	94.60	51.79	42.41
2018-19	92.13	45.10	33.47

Table 7. Students Placements and Higher Study

Year	Percentage of (Placement + Higher study)
2022-23	76.18
2021-22	84.61
2020-21	82.39
2019-20	81.88
2018-19	82.75

5. Problem encountered and resources required.

- Faculty faced challenges about assessment tools: Relative weightage for assessment are decided by senior faculty.
- GD, article/ Blog writing.: Faculty guidance and expert sessions.
- Technical writing.: Subscription of IEEE Explorer, Science-Direct, J-gate, Plagiarism Detection Software.



6. Conclusion

All round growth of the student by improving.

- Critical thinking through design assignments / projects
- Communication, active listening, leadership, and through seminar, GD, CVV
- Time management, project planning through project work.
- Writing ability through blog writing, publications
- Design abilities, problem solving ability through EDI.

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Evidence of the Best Practice 1

Engineering Design and Innovation

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Engineering Design and Innovation

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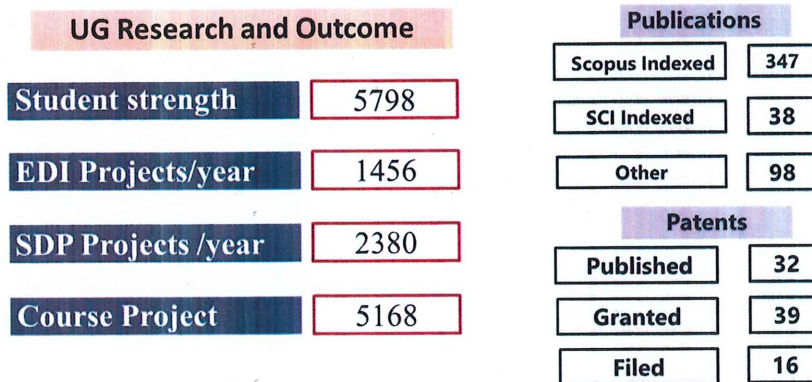



Fig.1 Research outcome per year


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Evidence of the Best Practice 2

Assessment Based on Top Professional Skills of this Decade.

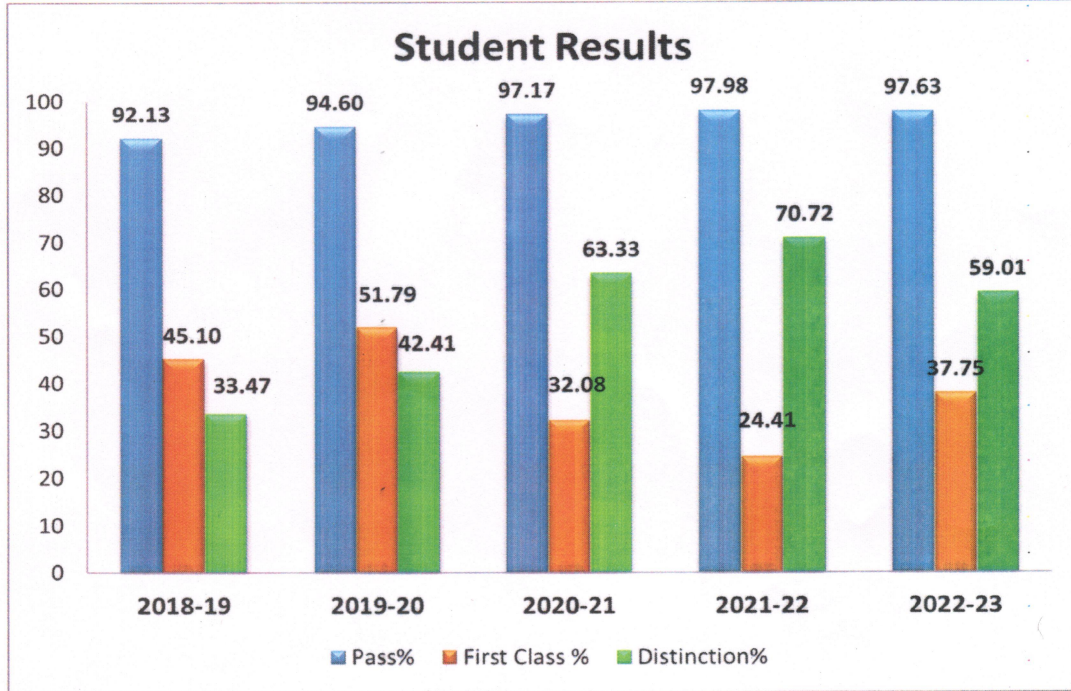


Fig.1 Students Result

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Evidence of the Best Practice 2

Assessment Based on Top Professional Skills of this Decade

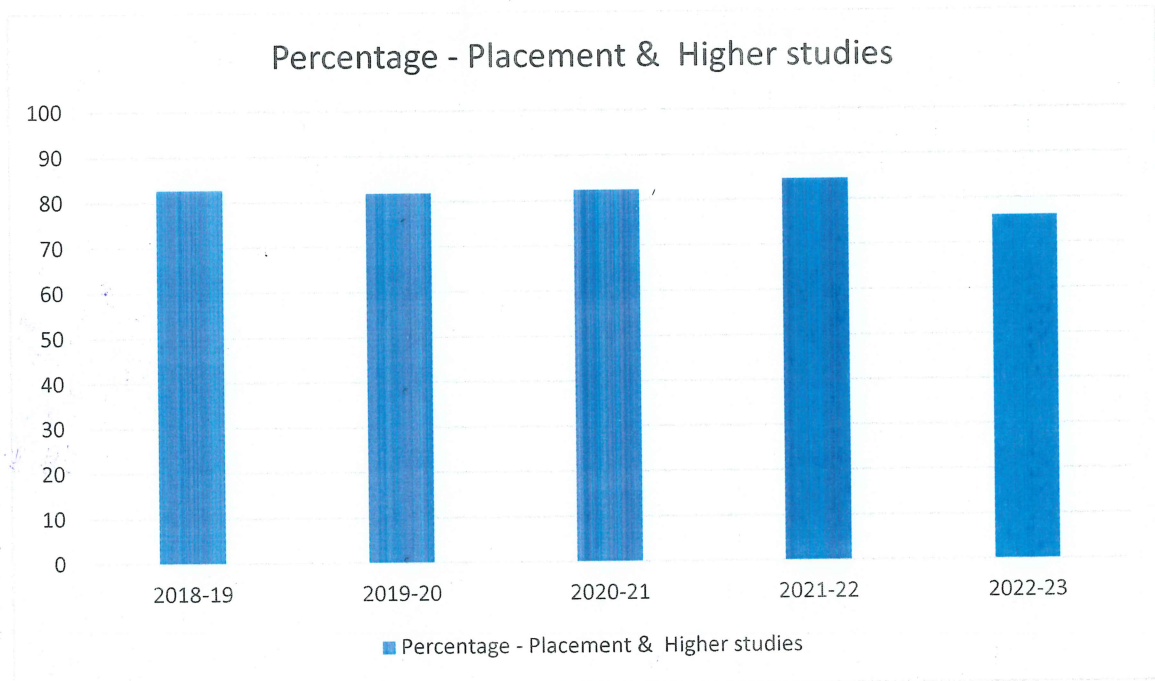





Fig.2 Students Placements and Higher Studies


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