

Format for Presentation of Best Practices
(Institution should submit the Best Practices in this format only)

1. Title of the Practice: Offering Honors Degrees to UG Engineering Students

2. Objectives of the Practice: -

- 1. Enhance academic rigor:** To provide fast learning engineering students with an advanced, industry-oriented curriculum that goes beyond standard undergraduate curriculum.
- 2. Foster industry-readiness:** To develop highly skilled engineering graduates with strong technical knowledge in advanced trends used in industries.
- 3. Provide global competitiveness:** To prepare graduates for higher academic pursuits (such as Masters and Ph.D.) and enhance their employability in a global job market.
- 4. Develop leadership skills:** To cultivate critical thinking, project management, and leadership qualities that are essential for future engineering professionals.

3. Context

The engineering discipline has become more dynamic, with rapid advancements in technology and evolving industrial needs. The demand for engineers who not only possess traditional technical expertise but also the knowledge about advanced technology used in the industries is increasing. An Honors degree offers a structured pathway to develop these higher-level competencies.

Institutional Context:

- Universities are increasingly incorporating Honors programs to cater to the top-performing students, pushing them towards more challenging and industry-oriented coursework.
- These programs aim to bridge the gap between academia and industry, aligning with industry expectations.
- An Honors degree is seen as a mark of distinction, opening doors to competitive postgraduate programs and desirable job placements.

4. The Practice

- **Curriculum Design:** The honors engineering degree involves courses based recent trends in industry and practical labs. Students are required to maintain high academic standards, typically with a minimum GPA requirement.

- **Research Projects:** Students undertake independent or supervised research, contributing to ongoing projects or exploring new engineering problems. This fosters a deeper understanding of the engineering process and critical thinking skills.
- **Industry Collaborations:** Partnerships with industries and engineering firms allow honors students to participate in internships, co-op programs, and project collaborations that enhance practical learning.

Honors Degrees Offered by the Institute:

- Department of Mechanical Engineering offers Honors degree in Robotics and Automation
- Department of Civil Engineering offers Honors degree in Infrastructure Engineering
- Department of Chemical Engineering offers Honors degree in Modelling and Simulation
- Department of Computer Science Engineering offers Honors degree in Artificial Intelligence and Machine Learning

5. Evidence of Success

- **Academic Achievement:** Honors students consistently outperform their peers in both theoretical and practical exams, demonstrating a deeper understanding of complex engineering concepts.
- **Industry Recognition:** Graduates of Honors programs are highly sought after by top engineering firms, as they possess both advanced technical skills and leadership potential. Many students secure employment or internships before graduation.

6. Problems encountered and resources required:-

Problems Encountered:

- **Equity and Access:** Honors programs often attract students from more privileged backgrounds, potentially limiting access for students from underrepresented or lower socioeconomic backgrounds.
- **Maintaining Program Relevance:** As engineering evolves, there is a challenge in keeping the Honors curriculum aligned with the latest technological advances and industry needs.

Resources Required:

- **Industry Partnerships:** Strong collaborations with engineering companies and research organizations are essential to provide students with real-world applications and opportunities for internships or co-ops.

- **Expert Faculty:** There is shortage of faculty members who are expert in advanced technology being used in industry. Identifying expert faculty and appointing them requires extensive resources.