7.3.1 Performance of the Institution in one area distinctive to its priority and thrust

Title: Fostering Innovation and Entrepreneurship: A Case Study of Government College of Engineering, Salem

At Government College of Engineering (GCE) Salem, a student-centric approach is paramount. This commitment is evident through the integration of courses focused on developing skills through innovation for entrepreneurship across all undergraduate programs. GCE Salem prioritizes its student-centric approach, ensuring that students not only gain technical skills but also develop an entrepreneurial mindset, critical thinking abilities, and ethical values. This dedication aligns with the institution's vision statements and is facilitated through innovative curriculum design, faculty development initiatives, student learning experiences, and industry partnerships.

1. Faculty Development Initiatives:

Recognizing the pivotal role of faculty members in shaping the next generation of engineers and citizens, GCE Salem offers capacity-building programs aimed at equipping faculty with the skills and knowledge necessary to foster innovation and entrepreneurship among students.

One such initiative is **Capacity Building Programme**, which aims to enhance faculty members' ability to guide students in their entrepreneurial journey. The program objectives include:

- Familiarize faculty members with the scientific process of innovating and the difference between startup and small companies
- Develop an entrepreneurial mindset among faculty members, enabling them identify a problem statement and formation of teams.

- Enable faculty members to define the real-world problem statement by interacting with Industry experts and apply frameworks for converting these challenges into a profitable business.
- Develop effective communication skills among faculty members to support students in their innovation journey.

2. Student Learning Experiences:

GCE Salem provides students with immersive learning experiences designed to foster innovation, critical thinking, and problem-solving skills. Courses like Ideation Sprint and Engineering Sprint offer students the opportunity to work collaboratively in interdisciplinary teams, tackle real-world challenges, and develop solutions with societal impact.

2.1 The Ideation Sprint, for example, includes the following activities:

"**Kick-off session**" where students are introduced to the purpose of the boot camp and its role in forming their ideas into Minimum Usable Prototypes (MUPs).

"Team building activities" enable a close and supportive working environment, while the Sandbox session allows students to select real-world problems and curate solutions.

2.2 **The Engineering Sprint** includes the following activities:

"Machines that make up the world" session delves into the fundamentals of engineering and provides hands-on experiences with electronic components, circuits, sensors, Arduino, and I/O interfaces.

"Innovation themes & Street Fight Engineering": a revolutionary concept that transforms problem-solving approaches where interactive group activity titled "Problem Definition using SFE" was conducted.

"Programming Paradigm & Brains of Machines" an activity where the students were given a task to develop their product idea into an innovation in various aspects using the Idea Hexagon (X' using six formulas)

2.3   Facilities Available in Innovate TN Lab:

1. Industrial Design & Rapid Fabrication Lab
2. Electronic System Design & Rapid Prototyping Lab
3. Industrial IoT Lab
4. Advanced Computing Lab
5. Additive Manufacturing Lab

2.4   Protosem:

ProtoSem is a 20 weeks Graduate Innovation Engineer Certification, offered as a comprehensive skills and competency development program that embeds an innovation-centred approach to engineering education. The programme is designed to provide comprehensive multi-disciplinary skill development to students in their sixth semester across all undergraduate programs. With a select of 45 students chosen from various UG programs. ProtoSem enables students to design, develop, and deploy innovative solutions for solving real-world problems that are provided by the industry. In this process, the students get transformed into employable individuals, or even emerge as technical entrepreneurs. The program aims to seed ingenious innovators & ambitious tech entrepreneurs among engineering students by:

1.**Activating Future Ready Talent**

- Graduate Innovation Engineers across Emerging Tech   domains
- Transdisciplinary skills & competencies
- Professional practices & differential employability

2.**Scaling up Grassroot / Localised Innovation**

- Building innovative solutions for local industry needs/problems
- Strengthening engineering skills and nurturing industrial grade solutions
- Outcomes oriented approach to industry-academia partnerships

3.**Building and Harnessing Student Innovation Capacity**

- Innovation-centric, curriculum integrated program
- Managed innovation process
- Co-creation with local industry (MSMEs)

3. Evidence of Success:

Government College of Engineering (GCE) Salem's Protosem program has yielded remarkable outcomes. Among the 45 students from six departments who participated in the program, an impressive 40 out of 45 students secured placements in renowned industries such as L&T India, Hyundai, Sonacoms, Breaks India Ltd, and Rani Group of companies. This high placement rate underscores the program's relevance and the quality of training provided.

Moreover, the Protosem program has provided students with opportunities to undertake projects in various industries. As a result of these hands-on-experiences, these **45 students organised into 9 teams** generated a total of **9 innovative ideas**. This exposure not only enhances their understanding of theoretical concepts but also prepares them for the challenges of the professional world.

These projects include:
1. To Develop a Cost-Effective Mql Applicator For Metal Working Machines That Utilize Multipoint Cutting Tool.
2. Corrective Measures for Shipment of Parts
3. Overall Equipment Effectiveness of their plant
4. Preventive/Predictive maintenance of HMC Machine
5. IoT device coupled with Mobile computer for Vision-based Threat Alert system
6. Rugged PC
7. Smart City Waste Management
8. Design and develop a 3u nanosatellite structure
9. Design and develop a UHF / VHF Antenna & ground station for satellite tracking

- Furthermore, the success of GCE Salem's innovation initiatives is exemplified by the participation of one student in the **Tamil Nadu Student Innovators (TNSI) 2022 competition**. The student's project entitled on "**Waste Water Treatment for Textile and Dyeing Industry towards pollution free society**" received a cash prize of **Rs. 1 lakh from Hon'ble Minister for MSME of Tamil Nadu, Mr. T. M. Anbarasan**. This recognition at a state-level innovation

challenge highlights the impact of GCE Salem's programs in nurturing innovative thinking and entrepreneurial spirit among students.

Conclusion:

In conclusion, Government College of Engineering, Salem's holistic approach to fostering innovation and entrepreneurship yields tangible results, evidenced by student achievements and industry placements, showcasing its impactful initiatives.

Link for additional information:

https://gcesalem.edu.in/sites/gcesalem.edu.in/files/uploaded%20files/7.3.1-merged.pdf