

# QUANTUM UNIVERSITY



## Student Centric Methods



**Annual Report on Problem  
Solving Methodologies  
Academic Year (2019–2020)**

# **ANNUAL REPORT PROBLEM SOLVING LEARNING METHODOLOGIES**



**Academic Year (2019-2020)**



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## **Problem Solving Learning Methodologies**

**2019-2020**

Problem-Based Learning (PBL) is an innovative educational approach that redefines the traditional classroom dynamic by placing students at the forefront of their learning experience. In this methodology, students actively engage in the learning process by tackling real-world, open-ended problems within collaborative group settings.

The essence of PBL lies in its emphasis on cultivating essential problem-solving skills. Instead of relying on traditional lecture-based instruction, PBL encourages students to delve into authentic challenges that mirror those they might encounter in their future careers. This hands-on approach not only deepens their understanding of the subject matter but also equips them with critical thinking, communication, and teamwork skills.

Central to PBL is the concept of student empowerment. By immersing themselves in collaborative group work, students take ownership of their learning journey. This not only enhances their motivation and self-directed learning skills but also fosters a sense of responsibility and independence. In this active learning environment, students become more than passive recipients of information; they become problem-solvers, applying theoretical knowledge to real-world scenarios.

### **Problem Solving Methods**



- Technical Quiz
- Project Work and Demonstration
- Project Competition
- Research Paper Presentation/RIC Presentation
- Case Studies
- Hackathon-Problem Selection and Solving



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Project Work	S.No.	Department	Title	Venue/ Key Person	Affiliation	Date	No. of Students
	01	Department of Mechanical Engineering	Industrial Automation	B. Tech Seminar Hall/Mr. Deepak Sharma, Mr. Anil	Prolific Systems & Technologies Pvt. Ltd. at Greater Noida	02/02/2019	75
	02	Department of Mechanical Engineering	Workshop on Design and Fabrication of Gear	Mechanical Lab	Quantum University	30/03/2019	21
	03	Engineering All Departments	Project on Entrepreneurship Awareness	B. Tech Seminar Hall/ Dr. Rajeev Ranjan	DST-NIMAT program of the Government of India	30/08/19 to 01/09/2019	75
	04	Department of Hospitality and Tourism	Hotel Communication Skills	Ms. Saloni Kaushik	Assistant Manager-Concierge at the Oberoi Gurugram.	25/09/2019	9
	05	Department of Computer Science & Engineering	E-Commerce Website Development	Mr. Azhar Ali	Mentor, Techno Pro Club	06/10/2019	45
	06	Department of Computer Science & Engineering, Department of Computer Applications in collaboration with The Genesis QUIC	Hackathon cum Project Exhibit	B. Tech. Seminar Hall	Quantum University	10/12/2019	21

Technical Quiz	01	Department of Mechanical Engineering	Spot Welding Technical Quiz	Mechanical Lab	Quantum University	14/01/2019	21
	02	Department of Mechanical Engineering	Technical Quiz on Engineering Mechanics	Mini Auditorium	Quantum University	12/10/2019	28
	03	Department of Mechanical Engineering	Quiz on Basics Components of a Vehicle	A-103/Mr. Vivek Kumar Sharma	Quantum University	26/12/2019	19



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## Event Report Project Work 2019-2020

### 1. Industrial Automation 02/02/2019

The **Demonstrative Project on “Industrial Automation”** was held on **2<sup>nd</sup> February 2019** at Quantum University organized by the **Department of Mechanical Engineering** in association with the **Institution Innovation Council** for the **B.Tech students** with a total strength of 75 attendees at the **B.Tech Seminar Hall**. The program was led by **Mr. Deepak Sharma and Mr. Anil from Prolific Systems & Technologies Pvt. Ltd. in Greater Noida**.

**Mr. Deepak Sharma** began by providing a basic understanding and fundamental knowledge about industrial automation, Hydraulic and Pneumatic systems, PLC & SCADA applications in industry, and the basic procedure on how we can implement automation in the industry. **Mr. Anil's emphasis** was on developing practical skills related to industrial automation from the perspective of industrial engineering. It was a highly interactive session and students were informed of intricate issues to be taken care of during the process from idea to automation procedure and till the implementation.







**Images from the Industrial Automation Workshop led by Mr. Deepak Sharma and Mr. Anil from Prolific Systems & Technologies Pvt. Ltd. at Greater Noida**

## 2. Workshop on Design and Fabrication of Gear on 30/03/2019

The Workshop on “Design and Fabrication of Gear” was held on **30<sup>th</sup> March 2019** at Quantum University in association with **Institution Innovation Council for Mechanical Engineering students** with a total strength of **21 attendees**. The program was organized by Mr. M. Kannan and was led by **Mr. Ashu Kumar and Mr. Harikrishna Nagwan**.

**Mr. Ashu Kumar** began with a discussion on a brief introduction of the different gear fabrication processes and Lab technician Mr. Mange Ram operates the milling machine. He discusses the fabrication of Spur Gear with the help of a vertical milling machine. **Mr. Harikrishna Nagwan** highlighted that the vertical milling machine is a precision tool used for shaping and fabrication by the removal of stock typically from metallic work pieces.







**Pictures from a Successful Workshop on “Design and Fabrication of Gear”**

### **3. Project on Entrepreneurship Awareness on 30/08/2019 to 01/09/2019**

Quantum University, Roorkee in association with the **Entrepreneurship Development Institute of India, Ahmedabad** organized an **Entrepreneurship Awareness Camp** for students under the **DST-NIMAT program of the Government of India** from **August 30<sup>th</sup>, 2019 to September 1<sup>st</sup>, 2019**. Approximately 75 students joined the event and gained insight into the latest developments in the entrepreneurship ecosystem in the state.

Prof. Vivek Kumar, Vice Chancellor-Quantum University, and Prof. (Dr.) Gulshan Chauhan, Director- Faculty of Technology, jointly inaugurated the event. The awareness camp started with the lamp lighting ceremony. The objective of the program was to create awareness among faculty and students of different courses about various facts of entrepreneurship as an interesting career option and also to highlight the merits of pursuing such an option.

**Prof. Vivek Kumar, Vice Chancellor-Quantum University**, shared his views on the idea of business growth. He said that the quality of product is very important for a good business. He motivated students to be a job creator rather than a job seeker.

The **Entrepreneurship Awareness Camp** was further preceded by **Dr. Rajeev Ranjan**. He emphasized the need for Entrepreneurship. He said, "The one who is creative, innovative, and has risk-taking ability is an entrepreneur." He said that to start a venture, an innovative idea is the first step. Self-confidence, risk-taking ability, perseverance, creativity, and personality are the most important parts of trait theory. He also told students about banks, investors, and venture capitalists.





**Take a Glance at the Entrepreneurship Awareness Camp for students under the DST-NIMAT program of the Government of India**

#### **4. Hotel Communication Skills on 25/09/2019**

On 25th September 2019, the Department of Hospitality and Tourism, in collaboration with the Institution Innovation Council, organized a Workshop on Hotel Communication Skills at Quantum University. The workshop was specifically designed for Bachelor of Hotel Management students, with 9 attendees.

##### **Workshop Details:**

- Lead Presenter: Ms. Saloni Kaushik, Assistant Manager-Concierge at The Oberoi Gurugram, led the workshop.
- Content: Ms. Kaushik commenced the workshop with a descriptive presentation on communication, emphasizing its pivotal role in maintaining the reputation and popularity of organizations within the hospitality industry.
- Topics Covered: The presentation covered various aspects of communication relevant to the hotel industry, including verbal and non-verbal communication, customer interaction, handling guest complaints, and maintaining professionalism in all interactions.
- Interactive Session: The workshop featured interactive sessions where students were encouraged to participate actively, share experiences, and ask questions to enhance their understanding of effective communication techniques.
- Practical Insights: Ms. Kaushik shared practical insights and real-life examples from her experience in the hospitality sector, providing valuable context and relevance to the theoretical concepts discussed.

##### **Learning Outcomes:**

- Enhanced Communication Skills: Attendees gained a deeper understanding of effective communication techniques and their significance in the hospitality industry.
- Customer Interaction: Students learned the importance of clear and courteous communication in interactions with guests, contributing to customer satisfaction and loyalty.
- Conflict Resolution: The workshop equipped students with strategies for handling guest complaints and resolving conflicts professionally, thereby enhancing their problem-solving abilities.
- Professionalism: Attendees gained insights into maintaining professionalism in all aspects of communication, reflecting positively on the reputation of the organization.
- Industry Relevance: Practical insights shared by Ms. Kaushik provided students with valuable industry-specific knowledge and prepared them for the challenges of the hospitality sector.

The Workshop on Hotel Communication Skills proved to be a valuable learning experience for BHM students, providing them with essential communication skills and industry insights necessary for success in the hospitality industry. The collaboration between Department of Hospitality and Tourism and the Institution Innovation Council facilitated the delivery of a



relevant and impactful workshop, contributing to the holistic development of students and aligning with the institution's commitment to excellence in hospitality education.





**Pictures from Ms. Saloni Kaushik from Assistant Manager-Concierge, The Oberoi Gurugram.**

### **5. E-commerce Website Development on 06/10/2019**

The Workshop on “E-Commerce Website Development” was held on 6<sup>th</sup> October 2019 at Quantum University organized by **Techno Pro Club** in association with the **Institution’s Innovation Council** for the **CSE, MTE, and B.Sc. Agriculture students** with a total strength of **45 attendees**. The program was led by the mentor of the club **Mr. Azhar Ali & Team (B. Tech CSE 3<sup>rd</sup> Year)**.

The main motive of this session was to teach the students about how to make a small e-commerce Website which helps them to better understand Web Designing/Front End Concepts. **Mr. Azhar Ali** briefly described Web Development, its career scope, its importance, etc. This session was mainly focused on designing the Web Pages. Design Pages with the help of Client-side languages like HTML, CSS JavaScript, etc were covered during the session. Further, it has also been taught how one can make web pages more attractive by using CSS and they can also use validation and some applications in their web page with the help of JavaScript.





**Mr. Azhar Ali conducted a session on E-Commerce Web Development for B.Tech Students**



## **6. Hackathon cum Project Exhibit on 10/12/2019**

On 10th December 2019, an Inhouse hackathon was executed with 21 participants with coding skills competing to solve the problem. The Department of Computer Science and Engineering and Computer Applications in collaboration with 'The Genesis QUIC' has organized an In-House Event Hackathon cum Project Exhibit for the projects designed by students. The major objective of organizing this exhibit was to provide a platform and unleash the potential of the students by showcasing their innovative projects.

- There were two categories for the Exhibit one was Startups and the other was Projects based on Web and App Development.
- 21 students participated in the Project Exhibit and more than 14 projects were displayed.
- The projects were judged based on the following criteria (Presentation, Communication, Future Scope as a Start-up, Functionality).
- Two teams won the event Team-8 (B. tech Walleh) which showcased startups and Team-11(syn-ack) which presented projects.



**Participating in Student in-house event Hackathon and Project Exhibit**

# Event Report

## Technical Quiz

### 2019-2020

#### **1. Spot Welding Technical Quiz on 14/01/2019**

Resistance spot welding is a process in which contacting metal surface points are joined by the heat obtained from resistance to electric current; it was held on 14/01/2019 by the Department of Mechanical Engineering and 21 students learned from the practical class of spot welding. It is a subset of electric resistance welding.

Work-pieces are held together under pressure exerted by electrodes. Typically, the sheets are in the 0.5 to 3 mm (0.020 to 0.118 in) thickness range. The process uses two shaped copper alloy electrodes to concentrate welding current into a small "spot" and to simultaneously clamp the sheets together. Forcing a large current through the spot will melt the metal and form the weld.

The attractive feature of spot welding is that a lot of energy can be delivered to the spot in a very short time (approximately 10–100 milliseconds). That permits the welding to occur without excessive heating of the remainder of the sheet.



**Students Learning about Resistance Spot Welding**

## **2. Technical quiz on Engineering Mechanics 12/10/2019**

The Technical Quiz on Engineering Mechanics held on 12/10/2019 provided valuable insights into the crucial role of Artificial Intelligence and Machine Learning (AIML) in the contemporary simulation of artificially designed or human-engineered systems. The event, attended by an estimated 28 students from the students of the Department of Mechanical Engineering, aimed to enhance students' understanding of AIML applications in engineering.

During the event, a knowledgeable speaker showcased various real-time applications and videos, effectively illustrating the integration of AIML in engineering systems. The interactive session actively engaged students, allowing them to witness practical applications and gain a deeper understanding of the concepts discussed.

The event was well-organized, and students actively participated, expressing genuine enjoyment and enthusiasm throughout the session. A dedicated questionnaire section provided an opportunity for students to seek clarification on AIML-related queries. Remarkably, students demonstrated a strong grasp of the subject matter by successfully clearing all questions posed to them.

In conclusion, the Technical Quiz on Engineering Mechanics served as an informative and engaging platform, successfully bridging the gap between theoretical knowledge and practical applications of AIML in engineering. The positive response from students indicates the effectiveness of such events in fostering a deeper understanding of cutting-edge technologies within the academic community.



**Take a Quick look at the Technical Quiz on Engineering Mechanical**



### **3. Quiz on Basic Components of a Vehicle on 26/12/2019**

On the insightful day of December 26th, 2019, an intellectually stimulating event unfolded – the Quiz on Basic Components of a Vehicle. This engaging quiz was meticulously crafted to challenge our students' understanding of vehicles and their intricate dynamics.

The purpose of this quiz extended beyond mere assessment, 19 students of the Department of Mechanical Engineering held the ground of intellectual pursuit; it aimed to delve into the depths of our students' knowledge about vehicles. By exploring the fundamental components of vehicle dynamics, participants were not only tested on their theoretical understanding but were also immersed in real-time scenarios and practical applications.

This dynamic quiz session served as a platform for our students to showcase their expertise in the realm of vehicles. The questions posed were designed to evaluate their comprehension of various aspects, encouraging them to think critically and apply their knowledge to solve complex problems related to vehicle dynamics.

Through this interactive experience, students were not only evaluated but were also inspired to delve deeper into the world of vehicles, igniting their curiosity and passion for understanding the intricate mechanics that drive these machines.

In essence, this quiz on basic components of a vehicle was more than just a test; it was a stimulating journey into the heart of automotive engineering. It encouraged our students to explore, learn, and expand their horizons, fostering a profound appreciation for the complexities of vehicle dynamics and preparing them for future challenges in the ever-evolving world of automotive technology.



**Take a Glance on the Quiz on Basic Components of a Vehicle**