

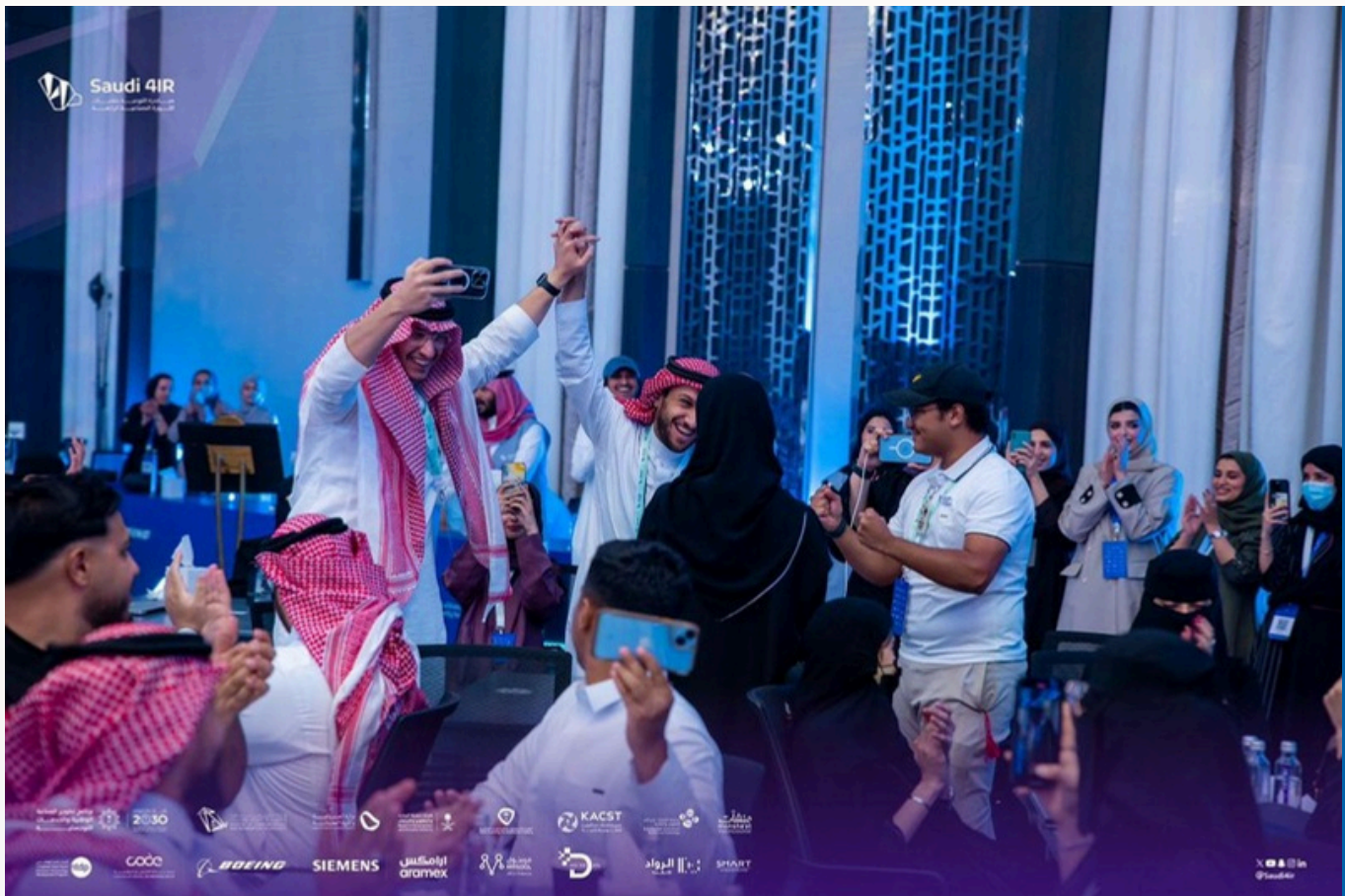


INDUSTRY 4.0 CLUB AT PRINCE SULTAN UNIVERSITY

Driving Innovation in the Fourth Industrial Revolution

2026-2027

ABOUT INDUSTRY 4.0



Innovating for the Fourth Industrial Revolution

The Industry 4.0 Club at Prince Sultan University is a student-led engineering club focused on building real technical systems through hands-on projects, competitions, research, and industry collaboration.

Mission

To empower engineers by exploring and applying Industry 4.0 technologies, promoting collaboration, hands-on learning, and knowledge sharing.

Vision

To become one of PSU's leading platforms for student innovation, applied engineering, and national and international competition readiness.

CORE VALUES



INNOVATION

Transforming ideas into real solutions.



TEAMWORK

Collaboration across disciplines and backgrounds.



HANDS-ON EXECUTION

Designing, manufacturing, testing, and improving real projects.



CONTINUOUS LEARNING

Developing technical skills beyond the classroom.

CLUB STRUCTURE



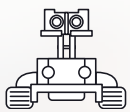
AEROSPACE DIVISION

Satellite missions, UAV systems, RF communication, ground stations, antennas, avionics, telemetry, and autonomous aerial platforms.



AUTOMOTIVE DIVISION

Battery-electric vehicles, Shell Eco-marathon, energy efficiency, joule meter development, telemetry, testing, composites, and vehicle optimization.



ROBOTICS DIVISION

VEX U, Sumo robotics, autonomous robots, embedded control, mechanical design, manufacturing, programming, and competition strategy.



SUPPORT FUNCTIONS

Media and documentation, sponsorships and partnerships, operations, lab organization, events, and member training.

The Industry 4.0 Club is organized into three technical divisions supported by operational teams that help manage documentation, sponsorships, media, events, and lab activities.



RESEARCH & INNOVATION AREAS: OUR MAIN FOCUS



OUR MAIN

FOCUS

01

Aerospace and Space Systems

Satellite missions, UAVs, RF communication, antennas, ground stations, telemetry, and space systems engineering.

02

Advanced Robotics

Building autonomous systems for various industrial applications.

03

AI, IoT, and Smart Systems

Sensor-based systems, automation, data collection, dashboards, monitoring systems, and intelligent engineering applications.

04

Electric Mobility and Energy Efficiency

Battery-electric vehicles, Shell Eco-marathon, joule meter development, telemetry, testing, and energy optimization.

05

Manufacturing and Prototyping

3D printing, composites, CAD design, rapid prototyping, fabrication, testing, and system integration.

OUR OBJECTIVES

Building students who can design, build, test, document, and compete.



OBJECTIVES

- **Real-World Experience:**
Introduce students to practical, real-world projects that apply their academic knowledge.
- **Industry Exposure:**
Market student talent and achievements to organizations aligned with the club's focus areas.
- **Cross-Disciplinary Collaboration:**
Foster integration between different majors to encourage diverse skill sets and perspectives.
- **Skill Application:**
Apply academic knowledge to solve complex problems and innovate through hands-on projects.
- **Competition Readiness:**
Build a capable team prepared to compete in local and international competitions.

AEROSPACE DIVISION

Space systems, UAVs, RF communication, satellite missions, and autonomous aerial platforms.



ACHIEVEMENT

Selected from 480 teams and more than 2,000 participants

ORBIT

RawdahScope reached orbit aboard SpaceX Transporter-15

IMPACT

PSU student contribution to real space systems engineering

RawdahScope is a PocketQube satellite mission developed through the SARI Competition organized by the Saudi Space Agency. The mission connects space technology with environmental monitoring by using satellite data and IoT-based ground measurements to support afforestation and sustainability analysis in Riyadh.

SATTHON II



ACHIEVEMENT

1st Place Overall

Industry 4.0 Club won 1st Place Overall in SATTHON II, a satellite signal reception and analysis competition focused on practical RF engineering, amateur radio, and satellite communication.

The team received SSTV images from the International Space Station and analyzed multiple signal types including CW, SSB, FT8, FT4, and WSPR. The competition strengthened the team's practical experience in satellite communication, RF reception, decoding, spectrum awareness, and ground station operation.

TECHNICAL SCOPE

Satellite signal reception, RF analysis, SDR tools, SSTV image reception, signal decoding, and amateur radio operations.

WHY IT MATTERS

This project gave students direct exposure to real satellite communication workflows, not only simulation or theory.

VTOL UAV

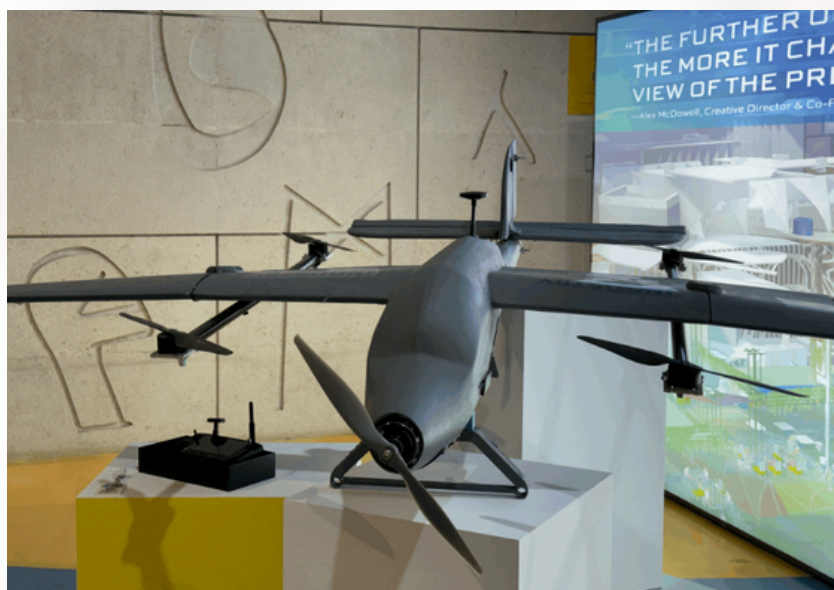
In collaboration with Prince Sultan Defense Studies and Research Center (PSDSARC)

The VTOL UAV project focuses on designing and developing a vertical take-off and landing aircraft that combines multirotor hovering capability with fixed-wing flight efficiency.

Key Achievements:

- 3D Printed Parts & Molds: Cost-effective, intricate designs, and recyclable molds.
- Controlling System:
 - Hardware: Divided into subsystems, each handling a specific function.
 - Software: An integrated algorithm connecting all subsystems.
- Successful Prototyping: Built to test and install hardware components.

This project highlights the future potential of 3D printing in aerospace and defense.



3D-PRINTED AIRCRAFT PROJECT

- Student-led project in collaboration with German aerospace firm MK Technologies
- Goal: Design, 3D print, and assemble a functional model airplane
- Hands-on learning combining aerospace design, innovation, and additive manufacturing

Outcome:

- Successfully flew a fully functional 3D-printed airplane (first at PSU)
- Gained experience in international collaboration, precision fabrication, and aerospace-grade design
- Validated practical applications of additive manufacturing in aviation



AUTOMOTIVE DIVISION

Battery-electric vehicles, energy efficiency, telemetry, vehicle testing, and Shell Eco-marathon.



SHELL ECO-MARATHON

Shell Eco-marathon is one of the club's flagship engineering projects. The PSU Eco Team designs, builds, tests, and competes with battery-electric vehicles focused on maximum energy efficiency.

1. Shell Eco-marathon 2024

- 1st Place in the Middle East – Urban Concept Battery Electric
- 5th Place in Asia-Pacific
- Fully redesigned vehicle with carbon fiber axles and optimized electrical systems

2. Shell Eco-marathon 2025: Expanding technical horizons and participating with two vehicles.

- 1st Place in the Middle East - Prototype Battery Electric
- 1st Place in the Middle East - Urban Concept Battery Electric
- 6th Place in Asia - Prototype
- 7th Place in Asia - Urban Concept

3. Shell Eco-marathon 2026

- 1st Place in the Middle East - Prototype Battery Electric & Urban Concept Battery Electric
- Competing with two vehicles once again and improving our efficiency results by around 30%.

SHELL ECO-MARATHON

JOULEMETER & TELEMETRY SYSTEM



The team developed custom energy measurement and telemetry systems to monitor vehicle performance during testing and racing. This turns the car from a mechanical project into a measurable engineering platform.

MEASURED DATA

- Current, voltage, power
- Energy consumption
- Speed and GPS
- Testing time

ENGINEERING VALUE

- Energy analysis
- Driver feedback
- Race strategy
- Efficiency optimization

OUTCOME

Better testing decisions and stronger ownership of the vehicle electrical system.

ROBOTICS DIVISION

Competition robots, autonomous systems, embedded control, mechanical design, and student-led manufacturing.

VEX-U ROBOTICS 2025



VEX U is an international university robotics competition where teams design, build, program, and operate custom robots for complex game objectives.

This year, the PSU Robotics Team participated in VEX U and achieved a major result in the Robot Skills Challenge, which evaluates both autonomous and driver-controlled robot performance. The result reflects strong mechanical design, programming, testing, reliability, and competition strategy.

ACHIEVEMENT:

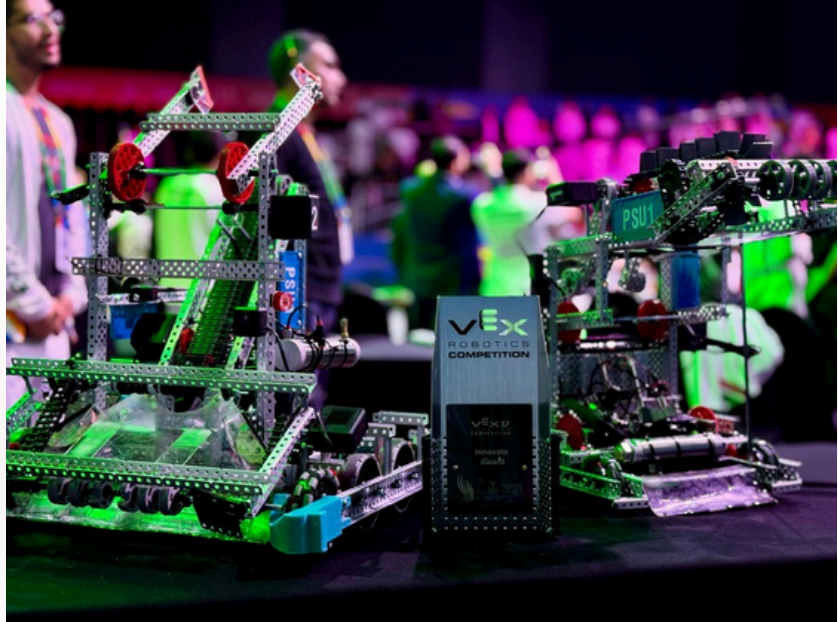
Robot Skills Champion Award

1st Place in the Robot Skills Competition

Ranked 55th worldwide out of 266 participating teams



VEX-U ROBOTICS 2024



The PSU Robotics Team participated in VEX U, an international university robotics competition where teams design, build, program, and operate custom robots.

The project developed student experience in robot design, mechanical systems, autonomous programming, testing, and competition strategy.

ACHIEVEMENT:

The Innovation Award

SUMO ROBOT COMPETITION



The Industry 4.0 Club organized the local Sumo Robot Competition for the third time. The competition challenged autonomous robots to compete in a circular arena using mechanical design, sensors, embedded control, and strategy.

CLUB ROLE

- Organized the local competition
- Supported participating teams
- Provided lab-based technical guidance

TEAM RESULT

- Team Vanguard won 1st place
- Strong robot reliability and strategy
- Mechanical, programming, and sensor integration

NEXT STEP

The team is preparing for the National Sumo Competition in October.

AGRICULTURE ROBOT

The **Agriculture Robot** project focuses on building a robot designed to improve the efficiency and precision of seed planting, reducing waste and optimizing agricultural practices.

Key Features:

- **Precise Seed Planting:** Addresses inefficiencies in traditional methods by minimizing seed wastage.
- **Technology Integration:**
 - Uses **Raspberry Pi, Arduino, GPS**, and **rotational sensors** for accurate navigation.
 - User-friendly interface for setting waypoints and guiding the robot's path.
- **Innovation & Impact:** Aims to enhance farming productivity and showcase our technical skills in robotics.



SMART HYDROPONIC MONITORING SYSTEM

This project integrates sensors into hydroponic systems to **precisely monitor water and nutrient levels**, optimizing resource use and sustainability in agriculture.

Key Benefits:

- **Water Conservation:** Efficiently monitors and reduces water wastage.
- **Nutrient Optimization:** Ensures precise nutrient administration, enhancing plant growth.
- **Sustainable Agriculture:** Promotes eco-friendly practices in hydroponic farming.



FUTURE PARTICIPATIONS

Expanding technical capability, competition readiness, and industry collaboration.

FUTURE PARTICIPATIONS



The Industry 4.0 Club is committed to building stronger technical teams, improving project execution, and expanding PSU's presence in national and international engineering competitions.

- SUAS
- National Sumo Competition
- VEX U Robotics
- Shell Eco-marathon 2027
- Shell Eco-Marathon Autonomous
- Industry 4.0 Hackathon and Technical Programs

CONTACT US!



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INDUSTRY



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