RL4Eng Annual Newsletter - Issue 3

co-funded by the Erasmus+ programme of the European Union

Introduction about the project

The economic crisis and pandemic in South Mediterranean and sub-Saharan countries have put the HEIs in a challenge to accommodate for the new requirements of online teaching.

The RL4Eng project aims to improve the quality of higher education in third countries and make it more relevant into the today's digital transformation world through establishing Remote and Virtual Laboratories for Teaching and Training Engineering Students to modernize the current teaching approaches and improve the digital and entrepreneurial capacities of both students and teachers in South Mediterranean and Sub-Saharan HEIs.

The project's contribution to the priorities of the call includes the digital transformation under which digital education is the focus of the project.

Online teaching for laboratories has been implemented in EU countries with successful outcomes.

The involvement of different European Universities will help integrate good practices and minimise potential risks in implementing the RL4Eng project.

South Mediterranean HEIs have identified the necessity of training with numerous initiatives available in the European system. Few Research is available on the effective delivery of remote labs and take-home labs.

The project involves several workpackages in efforts made to elevate the knowledge of remote labs and take home labs in the partners institutions via capacity building for students, staff and faculty and share of experiences.

A remote lab will be established in each country of the partners institutions and a take-home lab will be established in each HEI of the partner countries.

The very nature of remote labs, and take-home labs makes them sustainable and easily scalable as they become part of the university structure and receives part of its budget.

Moreover, the nature of the remote labs makes them sustainable as they are accessible from everywhere and could be used for both teaching and for research.

"Yarmouk University" holds the closing conference Remote and Virtual Laboratories for Teaching and Training Engineering Students in Higher Education Institutions

Yarmouk University hosted the closing conference of the project "Remote and Virtual Laboratories for Teaching and Training Engineering Students in Higher Education Institutions in the Southern Mediterranean and Sub-Saharan Africa," funded by the European Union under Erasmus+. The conference was under the patronage of the EU Ambassador to Jordan, Mr. Pierre-Christophe Chatzisavas, and YU Vice President Dr. Ruba Al-Bataineh.

In his speech, Ambassador Chatzisavas expressed his appreciation to Yarmouk University for its initiative and referred to it as an example of excellence and leadership in modern education. He also appreciated all the project partners for their cooperation in the success of this important project, which constitutes a milestone in the path of international scholarly cooperation and the development of engineering education within the region.

He emphasized that this project is representative of the EU vision of funding tertiary education based on innovation and digitalization, helping young people and students acquire modern technical skills. He also added that such projects promote sustainable development and enrich scientific and cultural cooperation between nations.

Chatzisavas mentioned that Yarmouk University, being one of the oldest and most renowned universities in Jordan, successfully carried out this project with the assistance of 15 higher learning institutions in Morocco, Lebanon, Germany, Spain, and Tanzania. He was impressed by the level of cooperation between the partners and noted that this project is part of the most important initiatives funded by the European Union under Erasmus+, both intellectually and economically.

He also told us that the number of students and academic staff who participate in the exchange programs between Jordan and Europe per year ranges from 600 to 800 participants, pointing out that Jordan is one of the largest recipients of the program in the region.

In turn, Dr. Al-Bataineh described that the project is a motivating experience which had brought together partners from Europe, the Mediterranean, and Sub-Saharan Africa in a shared vision with a purpose of making the education in engineering more flexible, inclusive, and up-to-date through virtual labs and innovative technologies.

She attested that Yarmouk University, being the host institution of the project, boasts its top-notch achievements — setting up contemporary distant laboratories, designing home experiments, training academic staff, and improving students' learning experience — all of which prove the constructive role of cooperation and technology in promoting higher education.

Dr. Al-Bataineh emphasized preserving and exchanging these innovations among different educational institutions, thanking the European Union, all the partners, and all those who contributed to the success of the project. She also wished the participants an efficient and inspiring conference.

Dr. Mowafaq Al-Otoom, Yarmouk University project manager for the Hijjawi Faculty for Engineering Technology, reported the key achievements of the project from January 2023 to December 2025.

He referenced the fact that the project involved 15 partner institutions based in Jordan, Morocco, Lebanon, Tanzania, Spain, and Germany. Some of its key achievements included the implementation of five remote and seven home-based laboratories, benefiting more than 8,000 students and 400 administrative and teaching staff members through more than 100 engineering courses.

The project also involved the development of e-learning and training materials and the organization of more than 100 training workshops among staff and students, which led to enhanced academic performance and greater practical and digital skills. He expresses gratitude to the European Union, the Erasmus+ initiative, and all the partners for their unshakeable support towards the success of the project.

The two-day conference schedule covered technical and scientific sessions on universities' experience in establishing remote and home-based laboratories, challenges encountered, and key lessons learned. There were also presentations of students' and faculty members' experience.

There was also a broad panel discussion under the topic "Sustainability and the Future of Remote and Home-Based Laboratories in Engineering Education" with the presence of representatives from partner universities, industry, and the European Union.

The Faculty of Engineering Welcomes International Partners for the ERASMUS RL4Eng Consortium Gathering

The Faculty of Engineering (FOE) at the University of Balamand (UOB) proudly hosted the latest Remote Labs for Engineering (RL4Eng) Consortium Meeting at the Koura Campus which was held from October 22 to 24, 2025. This three-day international gathering brought together 25 participants from institutions across the globe, highlighting the project's continued commitment to advancing remote and take-home laboratories in engineering education.

The event opened with a warm welcome at the Faculty of Engineering, where Prof. Rami Abboud, Dean of the Faculty and Vice President for Internationalization and Engagement, delivered the opening address. He extended his best wishes to the consortium team, after which participants were guided on a comprehensive tour of the Faculty of Engineering, concluding with remote lab demonstrations that showcased each partner's progress, highlighting the development of their remote laboratories and the work accomplished so far in terms of students' training, implementation of lab sessions, and preparation of teaching materials.

On the second day, the team went on a university campus tour then the spotlight shifted to take-home lab presentations, where partners shared the accomplished work, students' projects carried out using these labs, and valuable feedback received from their students.

The final day was dedicated to the consortium meeting, during which the RL4Eng partners discussed the current project status, alignment with EU requirements, progress on remote and take-home labs, as well as planning the upcoming travel and next consortium meeting.

Looking ahead, the RL4Eng project will reach its final milestone in Jordan at the end of October 2025, where a dissemination conference will be held. This concluding event will gather all partners once again to showcase project outcomes, share best practices, and discuss the long-term sustainability of remote and take-home labs within engineering education. A team from UOB will include Dr. Rodrigue Imad (Associate Professor at the Computer Engineering Department – UOB RL4Eng Lead), Mr. Rabih Kahaleh (Software & Web Development Manager, from the IT Department), and Mrs. Olga Yaacoub (Laboratory Supervisor and Instructor).

By hosting this important milestone, the Faculty of Engineering at UOB reaffirmed its active role in the RL4Eng project, which is funded by the Erasmus+ European Union Programme and aims to strengthen engineering education in third countries through digital transformation and global collaboration.

The Faculty of Engineering expressed its pride in welcoming all project partners to Lebanon, emphasizing that this initiative directly aligns with its vision to extend classrooms and laboratories beyond traditional boundaries. Through projects like RL4Eng, the university continues to foster innovation, inclusivity, and international cooperation in engineering education.


FESTO


FESTO

Aqaba University of Technology Launches Robotics and IoT Take-Home Lab

As part of its ongoing efforts to promote practical, technology-driven education, Aqaba University of Technology (AUT) is proud to announce the successful implementation of its Robotics and IoT Take-Home Lab (THL).

This innovative initiative enables undergraduate students to conduct real-world experiments at home using advanced kits that include Arduino, Raspberry Pi, and a variety of sensors and actuators. The THL supports flexible, self-paced learning while enhancing skills in robotics, automation, and Internet of Things (IoT) applications. Students are trained through structured experiments covering areas such as remote sensing, smart systems, and robot control.

The lab has already been integrated into student coursework, with active use by faculty and students alike. Training sessions have been conducted to ensure effective use, and the results demonstrate high engagement and practical knowledge acquisition.

This project reflects AUT's commitment to modernizing engineering education and providing students with hands-on experiences that prepare them for emerging technological fields. It also lays the foundation for future cooperation with international partners and institutions involved in remote and virtual laboratory networks.

Quality Management
RL4Eng Newsletter Contribution

At the project RL4Eng Professional Start approach for Quality Management contains

- Quality Assurance Process
- Tool, Dashboard
- Quality Assurance Reports, structure-based recommendations and
- ´Hands-on´ involvement for Quality Assurance

Quality Assurance Process

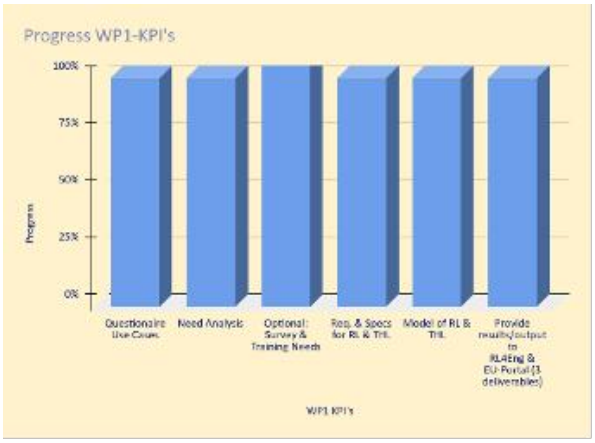
A continuous and strict Quality Assurance process is key for the success of the project.
The process starts with a comprehensive Quality Assurance Plan definition of Key Performance Indicators (KPI) and the nomination of a Quality Management Committee (QMC).

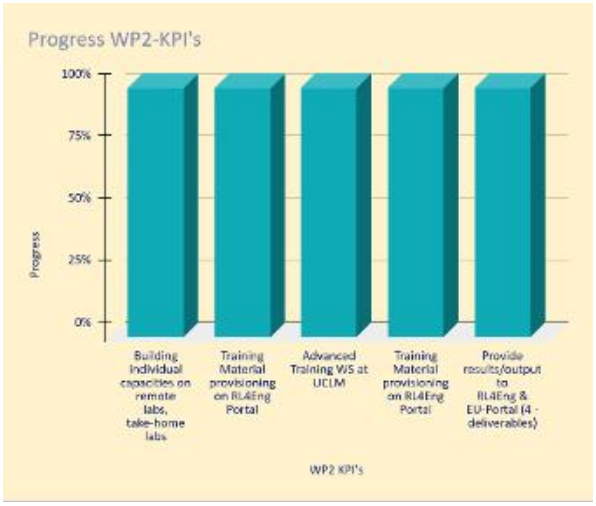
Regular QMC meetings taking into account the current status and weaknesses of the project will be translated into Quality Assurance Reports.

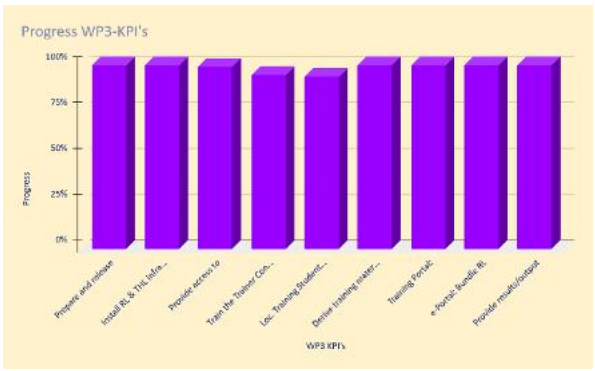
Tool, Dashboard

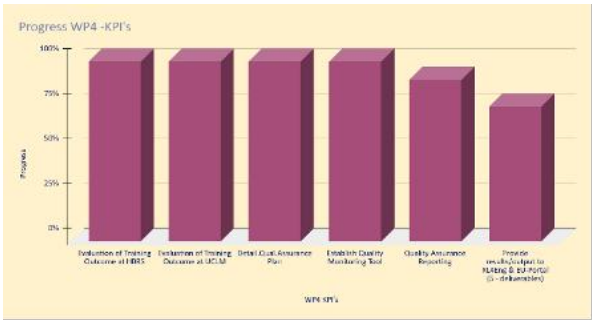
Professional Start developed a tool based on google-dashboard structured according to work packages. It allows all partners to fill in their achievements – percentage of fulfillment – of the respective KPI. KPIs were linked to relevant tasks and the deliverables according to the proposal approved by the EU.

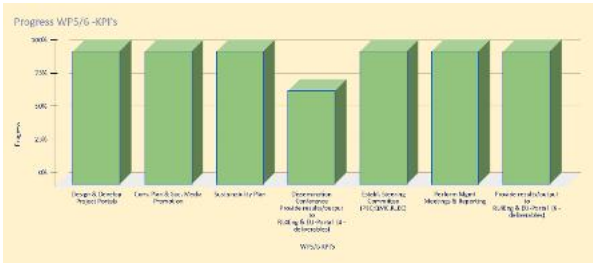
Pictures below show the status of fulfillment in July 2025.


Progress WP1-KPI's
100%
75%
50%
25%
0%
Progress
Questionaire Use Cases
Need Analysis
Optional: Survey & Training Needs
Req. & Specs for RL & TRL
Model of RL & TRL
Provide results/output to RL4Eng & EU-Portal (3 deliverables)
WP1 KPI's


Progress WP2-KPI's
100%
75%
50%
25%
0%
Progress
Building individual capacities on remote labs, take-home labs
Training Material provisioning on RL4Eng Portal
Advanced Training WS at UCLM
Training Material provisioning on RL4Eng Portal
Provide results/output to RL4Eng & EU-Portal (4 - deliverables)
WP2 KPI's


Progress WP3-KPI's
100%
75%
50%
25%
0%
Progress
Prepare and release
Provide access to
Train the Trainer Con...
Loc. Training Students'...
Training Portal
e-Portal+ Bundle RL
Provide results/output
WP3 KPI's


Progress WP4 -KPI's
100%
75%
50%
25%
0%
Progress
Establish Quality Monitoring Tool
Quality Assurance Reporting
WP4 KPI's


Progress WP5/6 -KPI's
Design & Develop Project Portals
WP5/6 KPI's

Quality Assurance Reports

During the course of the RL4Eng project Professional Start issued M6, M9, M11, M18, M24 and M27 Reports. The reports addressed the current status of the

- KPI achievements
- General quality perception of the QMC
- As the project moves forward: detailled description of gaps
- Quality based recommendations to close gaps

´Hands-on´ involvement for Quality Assurance

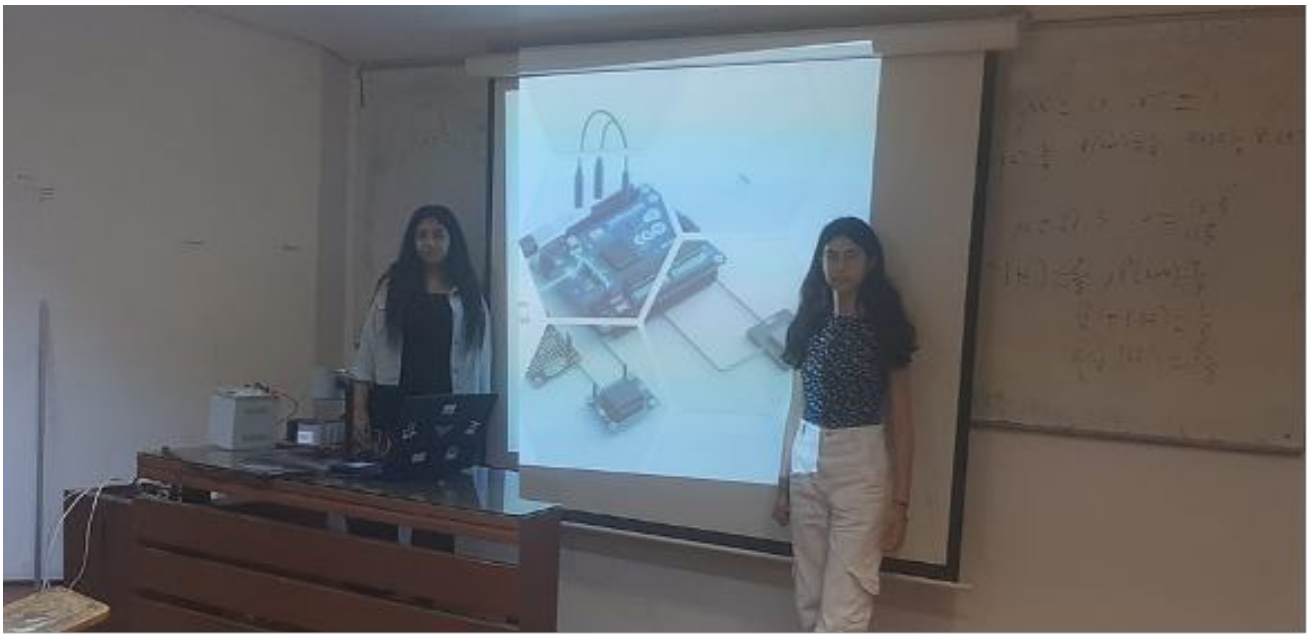
Professional Start is committed to lead the project to a success, moreover, we want to achieve the grade ´excellent´.

Therefor Professional started to be involved in more details of the project such as

- Developed templates for detailed descriptions of the envisaged RL and THL
- Initiating and supporting RLEC (Remote Lab Establishing Committee) meetings to speed up installment and access
- Establishing and running a Task Force to achieve easier log in methods for RL such as ´Social Login´ via MS or google accounts.
- Supporting the Grantholder with more detailed tables about gaps and needed actions.

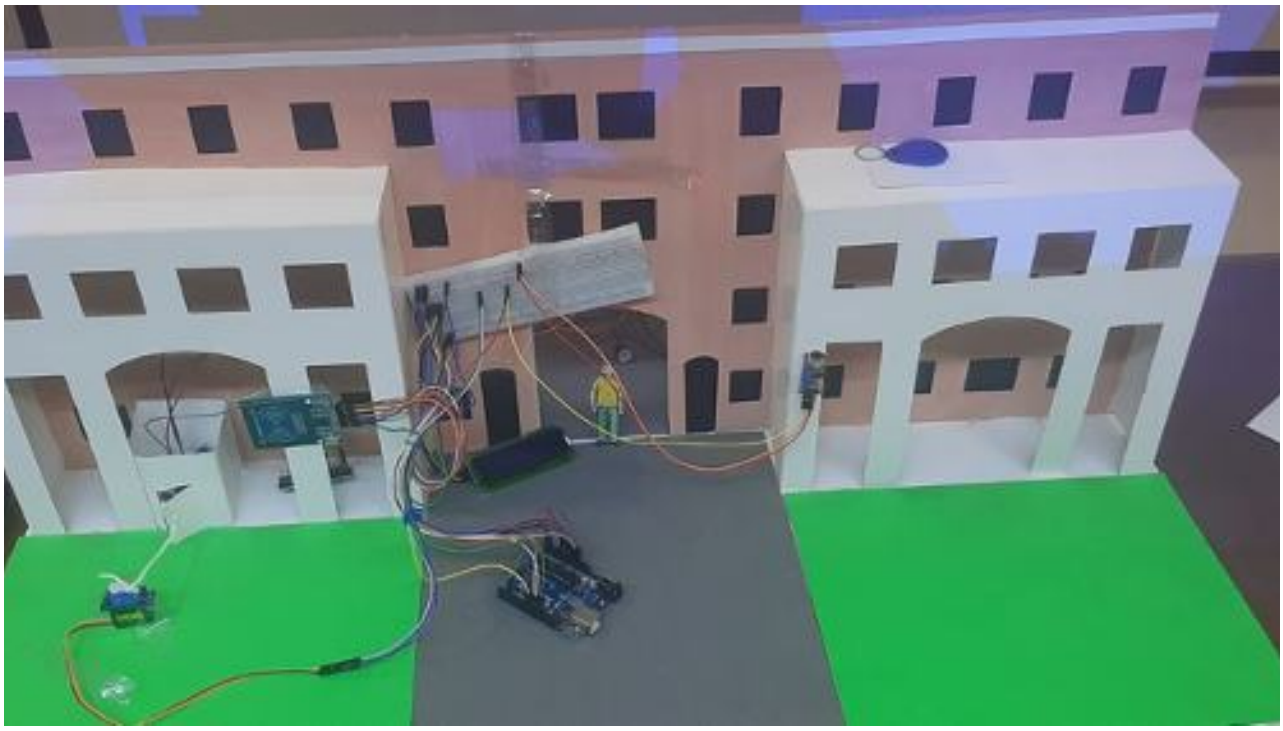
Third THL workshop at the Faculty of Engineering of the Lebanese University

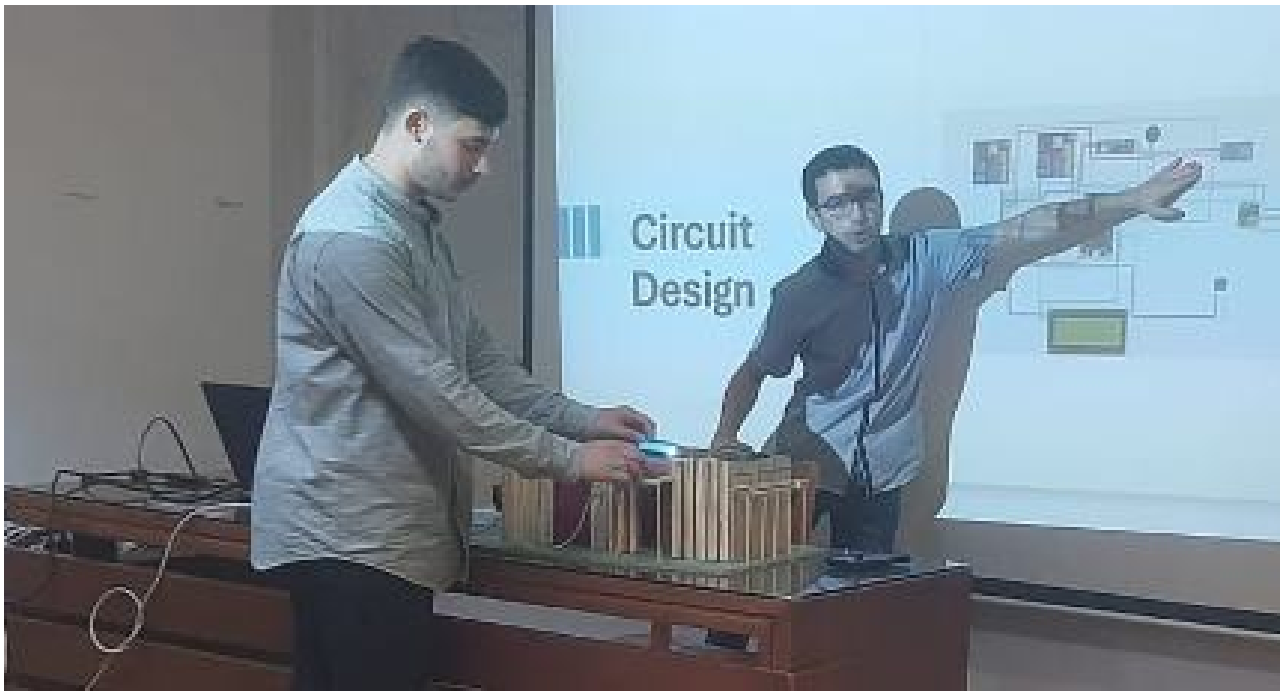
As part of the RL4ENG project activities, the third workshop was held on July 10, 2025, at the Faculty of Engineering of the Lebanese University. Third-year students from the Electrical and Electronics Engineering program (spring semester) presented their mini-projects developed using the LUTHL4EEE kits. These kits provided an opportunity to design and build technical mini-projects incorporating Arduino boards, sensors, motors, actuators, and various electronic modules.This THL experience proved highly effective in fostering creativity, autonomy, and engineering thinking. The students also demonstrated interdisciplinary knowledge, drawing on concepts from previous courses to enrich their projects. Below some examples.



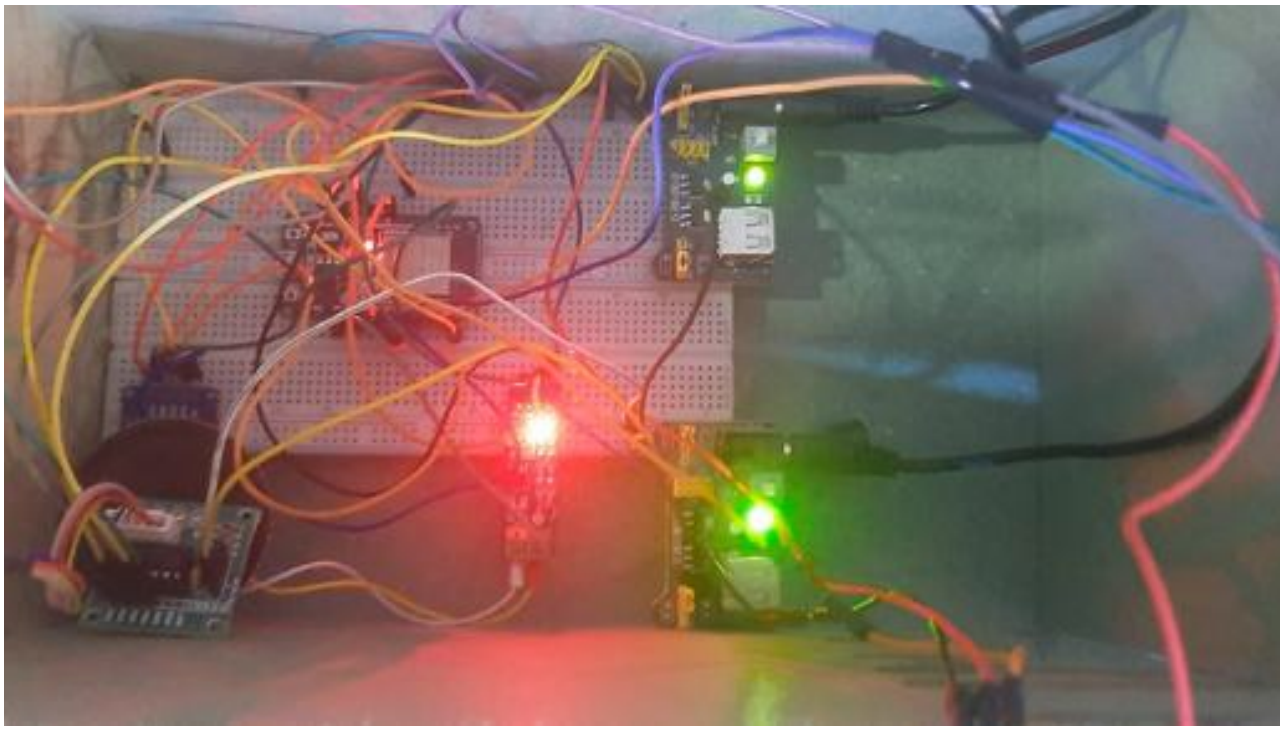
Smart dustbin Segregation

Dorm Automation system



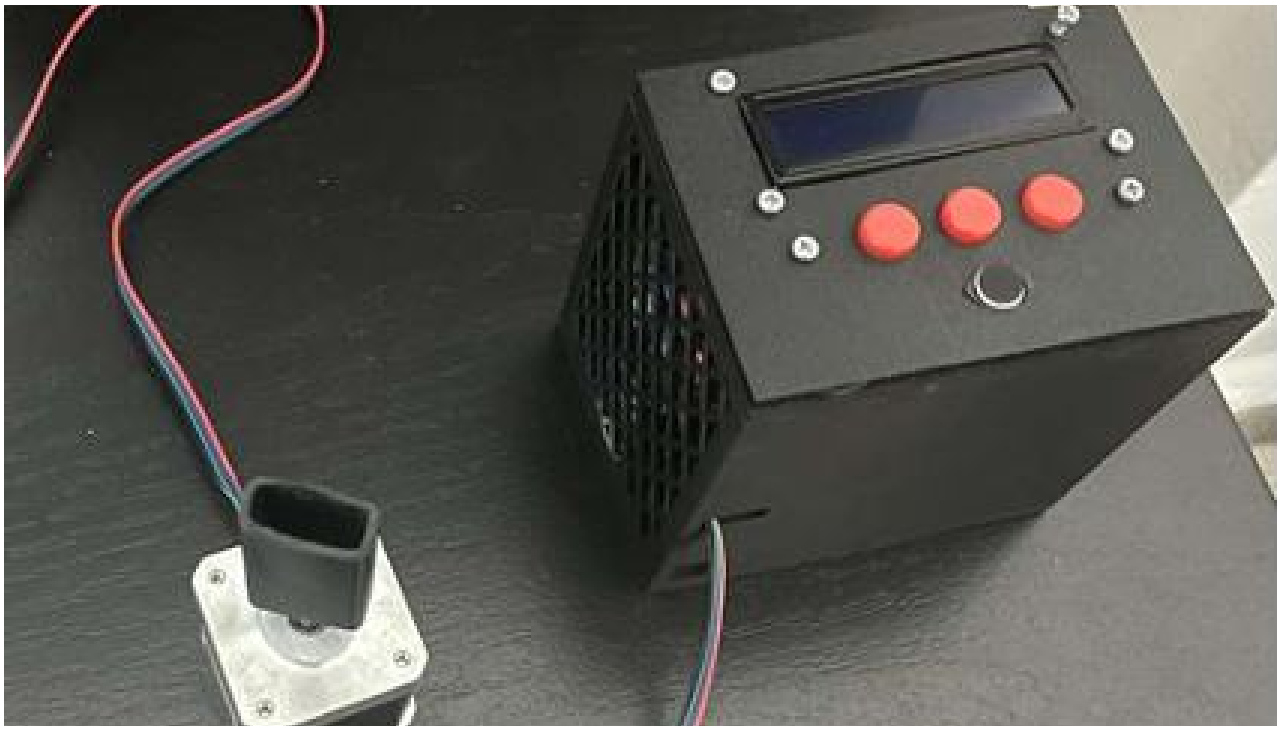


Smart Home



Smart irrigation system

Robotic guitar tuner



TAGITI Launches Unified Single Sign-On (SSO) Access to RL4Eng Remote Labs

TAGITI has successfully completed the implementation of Single Sign-On (SSO) to simplify and secure access to RL4Eng remote labs. SSO allows users to log in once using their official university email and gain access to every lab without needing separate accounts or passwords. This major improvement enhances user experience, security, and efficiency for both students and partner institutions.

Access to RL4Eng labs is exclusive to official partner universities that already have a registered domain. We have successfully integrated SSO using the Keycloak platform, enabling seamless authentication through Google or Microsoft accounts associated with the university's domain. This ensures that only authorized students from partners universities can access and benefit from the remote labs.

The process is easy and student-friendly. The student visits the RL4Eng website, selects E-Portal from the header menu, then chooses Remote Labs. From there, the student picks the lab based on their interest. At this point, the website automatically redirects the student to Keycloak (the SSO provider) to complete the secure login process.

Once redirected, the student chooses “Login with Google” or “Login with Microsoft” according to their official university email domain. After successful authentication, the student is returned to rl4eng.com, where a brief form is filled for statistical purposes.

Finally, the student will be instantly redirected to the selected lab and can begin working immediately. This new SSO system provides a smooth, secure, and unified experience—one login for all remote labs.

Hijjawi Faculty Leads Fifth Meeting of "RL4Eng" Project in Lebanon

The Hijjawi Faculty for Engineering Technology at Yarmouk University led the fifth meeting of the project “Development of Remote and Virtual Laboratories for Teaching and Training Engineering Students in the South Mediterranean and Sub-Saharan Higher Education Institutions (RL4Eng)”, funded by the European Union under the Erasmus+ program. The event was recently held at the University of Balamand in Lebanon.

This project aims to enhance the educational process in engineering by integrating modern technology into teaching and training. It seeks to create interactive virtual platforms that provide students with practical learning opportunities and realistic simulations, regardless of time or location. The project also contributes to strengthening faculty competencies and enables students to gain valuable practical experience, aligning with the requirements of the regional and international labor market.

The meeting brought together 15 academic institutions from Jordan, Lebanon, Morocco, Tanzania, Spain, and Germany. Participants shared the latest updates and outcomes achieved since the project’s launch and reviewed future work plans and strategies to expand the initiative to reach a larger number of students.

The event included specialized workshops on integrating virtual laboratories into curricula and utilizing them to enhance students' engineering skills.

The Yarmouk University project management team, consisting of Dr. Mohammad Alzubaidi, Dean of the Hijjawi Faculty for Engineering Technology, Dr. Dania Bani Hani, Vice Dean (participating remotely), and Dr. Amin Jarrah from the Department of Computer Engineering, highlighted the university's leadership role in overseeing the project since its inception. They emphasized the university's strong commitment to supporting international initiatives that enhance higher education quality and foster cross-border academic collaboration.

It is noteworthy that Yarmouk University, through the Hijjawi Faculty for Engineering Technology, received EU support under the Erasmus+ program three years ago as the project owner, managing its activities in cooperation with partners from the six participating countries. This reinforces the university's position as a pioneering institution in leading international projects aimed at advancing higher education in the region.

UOB/RL4ENG Erasmus Day 2025

The University of Balamand will celebrate Erasmus Days 2025 with an exhibition organized by the RL4ENG project team. The event will showcase the international mobilities achieved within the project, as students share their testimonies and experiences from training activities in Europe. The exhibition will also present the remote laboratories developed under the RL4ENG project, highlighting their role in fostering innovation and digital learning in engineering education.

- Event link: https://www.erasmusdays.eu/event/uob-rl4eng-erasmus-day-2025
- Event Flyer: link

RL4eng

Partners









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