

## Workshops on Women & Engineering: Transforming invisible societal challenges into visible and sustainable achievements

- **Names and addresses of the applicant or applicants:**

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- **Indication of whether the submission is on behalf of an individual or a group:** a group of people composed by:

- managers of the Faculty Computer Science (the dean and two female vice-deans),
- directors of the five UNED's associated centers (located in Albacete, Calatayud, Madrid, Ponferrada and Valencia in Spain),
- two female academic members from the Faculty of Computer Science,
- directors and several administrative staff at the study centers involved.

- **A brief summary or abstract** (100 words or less) which can be made public:

During the years 2022-23 the Faculty of Computer Science of the UNED began to develop a series of activities in the context of Women and Engineering to encourage STEM vocations. Here we present the first initiative, deployed together with the Faculty of Civil and Electrical Engineering and the Royal Academy of Engineering of Spain. The activities have been held in five different cities around the country hosted by the university's partner centers in Albacete, Calatayud, Madrid, Ponferrada and Valencia. The role of these study centers is fundamental in our university to achieve a more direct connection with citizens and align with their regional needs.

- **Description of the initiative** (max 2 pages):

During the years 2022-23 the Faculty of Computer Science at UNED started to develop a series of activities in the context of Women and Engineering. The first initiative is presented here, delivered together with the Faculty of Civil Engineering and the Royal Academy of Engineering of Spain (RAING<sup>1</sup>). In 2016, the Royal Academy of Engineering created the Women & Engineering Project<sup>2</sup> as a driving reference for STEM vocations among women, trying to dissolve the gender gap in engineering studies, motivating and engaging girls and adolescents in STEM vocations. In early 2022, both institutions UNED and RAING signed and specific agreement for collaboration and the design of some joint activities to highlight the role of Engineering as engines of social innovation and sustainability, as well as the important role that women play in the sector. The workshops were orchestrated as a meeting point for female engineering professors from the UNED central headquarters with female tutors from the Autonomous Regions of Spain and relevant personalities in relation to the productive sectors of their Autonomous Communities. Therefore, the key aspects for each workshop varied significantly, in order to reflect the concerns and experiences relevant to each Spanish geographic area. The general objectives of the workshops were:

1. To motivate and tray to grow interest in women and teenagers over STEM vocations, with special emphasis on the different branches of Engineering.
2. To disseminate and highlight the professional careers of relevant women engineers in the geographic areas of the selected Autonomous Regions.
3. To highlight the potentiality of some productive sector in each Spanish region.
4. Commitment to the achievement of the 17 SDGs of the 2030 Agenda of the United Nations.



The activities were held in five different cities of the country hosted by the study centres of the university: Albacete, Calatayud, Madrid, Ponferrada and Valencia. The role of these study centers is fundamental in our university in order to achieve a more direct and close connection with citizens. To capture the attention of the youngsters, highly recognized local professional women were contacted and invited to give a keynote speech, followed by a round table with female tutors from the study centers, the UNED's faculty members and other local professional women of interest. Some learning gamification activities were also implemented, such as word clouds, Kahoot or anonymous open questions, to foster the interaction with the attendants.

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<sup>1</sup> <https://www.raing.es/>

<sup>2</sup> <https://mujereingenieria.com/>

On November 11, 2022 the tour kicked off to disseminate the Project on Women and Engineering. That day, at the Madrid-Las Tablas Associated Center, almost 100 students of 4th ESO coming from two different High-Schools were waiting for us, with some excitement and nervous, due to the coincidence of so many teenagers who did not know each other. The meeting was great and generated some questions and expectations in the girls. In her presentation Eva Pagán, current General Manager of International Business at Redeia, highlighted the role of engineering as a driver of social innovation, told us how she dismantled a doll as a child to find out where she peed (possibly it was her start as a de facto engineer without knowing it) and showed us real photos of how the work in her company is made difficult by weather conditions. Someone in the audience remembered the Filomena, the great snowstorm that devastated the city of Madrid in January 2021, and Eva highlighted the work of engineers in situations where a large city can be completely without electricity and it is necessary to react quickly and relentlessly to solve the incidents that occur daily in the complex electricity networks.



On December 2, 2022 we went to Ponferrada, where we were received with enthusiasm by 180 high school students, from three high-schools and institutes in the area. Sara García, Head of Talent in Cybersecurity INCIBE, put the 120 students in tension starting her presentation entitled: "I want to be a hacker". She used her dynamic and entertaining talk to explain the dangers of networks and give advice on cybersecurity: everyone in the room was able to find out how many of our profiles on social networks have been compromised!

On December 20, 2022 we travelled to Alzira-Valencia, where the workshop was developed in a hybrid way, with about 150 students of 1st and 2nd of high school who attended in person from two institutes. Since the day was broadcast live through the UNED's campus network, there were also other high schools that connected online, which actively participated in the chat with questions. There were also some students of 4th ESO who came independently with their parents after seeing the publication in the press



announced the day. Then, the professor of the University of Valencia and computer engineer Silvia Rueda, Territorial Director in Valencia of the Department of Innovation, Science, Universities and Digital Society of the Generalitat Valenciana and has been the promoter, among others of the Girls4STEM initiative spoke to us about the transformative role of women engineers, the causes and consequences of the gender gap that currently exists in the field of engineering and how it is necessary to approach innovation with a gender perspective. As a culmination of the presentation, she commented on the need to offer the new generations of students close references of normal women with an interesting day to day life.



More than 100 girls attended the conference held in Calatayud on March 30, 2023. The panelist in this occasion was María Villaroya Gaudó Professor of Computer Architecture and Technology and Director of the Internationalization Secretariat of the University of Zaragoza. Being also a member of the Board of Directors of AMIT-Aragon, she focused her talk in the importance of diversity in engineering as a key factor to create a better society. Women possess the quality of knowing how to read in a complex environment and simplify it.

Therefore, some of the key points of the interventions were centered around the idea of the work of women engineers and their contributions to problem solving and creativity. Some studies show that they have a more complete vision of situations and therefore a greater capacity to anticipate their effects.

The last of these workshops took place on October 18, 2023 at the Albacete Study Center and was attended by 90 students in 4th ESO and 1st Bachillerato. Professor Carolina Mañoso from the Computer Science Faculty at UNED, went on to explain the importance and necessity of the workshop in an increasingly digital and competitive environment, it is essential to guide and help women to become aware of the need for their involvement in the field of engineering to achieve a society that is not only more prosperous, but also fairer. The gender biases that exist in our daily life should not be reproduced in the technological innovations created to improve that daily life. This talk was followed by a presentation by Estefanía Artiago Andicoberry, full professor at the School of Industrial Engineering of Albacete, who explained her professional career and the importance of being open to new challenges.



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- **Evidence of its impact** (max 2 pages):

**Number of participating institutions:** 8 Faculty of Computer Science at UNED, Faculty of Civil and Electrical Engineering at UNED, Real Academia de Ingeniería de España, UNED associated center in Madrid-Las Tablas (Comunidad de Madrid, Spain), UNED associated center in Ponferrada (Castilla y León, Spain), UNED associated center in Calatayud (Aragón, Spain), UNED associated center in Alzira-Valencia (Comunidad Valenciana, Spain) and UNED associated center in Albacete (Castilla-La Mancha, Spain).

**Number of cities involved:** 5 widespread throughout the Spanish national territory: Madrid, Ponferrada, Alzira, Calatayud and Albacete.

**Number of young participants** (excluding panelists and coordinators): **690**

**Number of external key-note speakers and round-table panelists:** 23 Madrid (5), Ponferrada(5), Valencia (5), Calatayud (3) and Albacete (5).

**Number of faculty members from UNED's headquarters and managers of UNED's associated centers involved in coordination activities:** 11.

**Dissemination through social networks:** Linked In, Facebook, X and Youtube.

Assoc. Center	Date	Attend.	Coordinators form UNED	Key-note speakers and participants in round tables
Madrid	11/11/22	100	<b>María Paloma del Campo Moreno</b> (Director, AC Madrid) <b>Cristina González Gaya</b> (Dean, Civil Engineering UNED) <b>María Guinaldo Losada</b> (Associate Professor FCS UNED)	<b>Eeva Pagán Díaz</b> (General Manager, International Business, Redeia) <b>Sara Gómez Martín</b> (Director of the Women and Engineering Project at the Royal Academy of Engineering) <b>Matilde Santos Peñas</b> (Full Professor, Faculty of Computer Science, Universidad Complutense de Madrid) <b>Esther Tapia Sanz</b> (General Director, Official College of Telecommunication Engineers COIT) <b>María Pedrero de la Puente</b> (Industrial Engineer. Philips health systems)
Ponferrada	02/12/22	180	<b>Covadonga Rodrigo San Juan</b> (Vice-Dean for Research, Transfer and Innovation, FCS UNED) <b>Jorge Vega Nuñez</b> (Director, AC Ponferrada)	<b>Sara García Bécares</b> (Computer Engineer, Head of Cybersecurity Talent, INCIBE) <b>Mariví López López</b> (Computer Engineer, Coordinator of the Science Network of Castilla y León SCAYLE) <b>Eva García Martínez</b> (Industrial Engineer, Tutor Professor, UNED Ponferrada Associated Center) <b>Marta Vázquez González</b> (Computer Engineer, Application Development INTECCA UNED) <b>Paula Ramos Pérez</b> (Industrial Technical Engineer, Head of Laboratory Fundación Ciudad de la Energía - CIUDEN, F.S.P.)
Valencia	20/12/22	150	<b>Alejandro Cerdá Esteve</b> (Director, AC Alzira-Valencia)	<b>Silvia Rueda Pascual</b> (Territorial Director in Valencia. Department of Innovation, Science, Universities and Digital Society. Generalitat Valenciana)

			<p><b>Cristina González Gaya</b> (Dean, Civil Engineering UNED)</p> <p><b>Olga C. Santos</b> (Subdirectora de Gestión y Ordenación Académica ETSI Informática)</p>	<p><b>Teresa Bonet Segura</b> (Computer Engineer. Member of the Governing Board of the Official College of Computer Scientists of the Valencian Community. Management Computer Technician in the City Council of Torrent)</p> <p><b>Eva Antonino Daviu</b> (Telecommunications Engineer. Professor at the Polytechnic University of Valencia. Researcher at the University Institute of Telecommunication and Multimedia Applications (ITEAM))</p> <p><b>Nieves Romero Gari</b> (Industrial Engineer. Dean of the Official College of Industrial Engineers of the Valencian Community)</p> <p><b>Maribel Valero</b> (Computer Engineer. Academic Coordinator of the CA Alzira Valencia of the UNED. Head of IT Coordination Unit of the Valencian Anti-Fraud Agency)</p>
Calatayud	30/03/23	170	<p><b>Rafael Pastor Vargas</b> (Director, FCS UNED)</p> <p><b>Covadonga Rodrigo</b> (S Vice-Dean for Research, Transfer and Innovation, FCS UNED)</p> <p><b>Luis Joaquín Simón Lázaro</b> (Director AC Calatayud)</p>	<p><b>María Villaroya Gaudó</b> (Professor of Computer Architecture and Technology. Director of the Internationalization Secretariat of the University of Zaragoza. Member of the Board of Directors of AMIT-Aragon)</p> <p><b>Lidia García Quiles</b> (Industrial Engineer by the University of Zaragoza. Collaborates in Aitiip Center (Research Association Injection Workshop of the Plastics Industry) and responsible for R+D+i in Tecnopackaging SL)</p> <p><b>Montse Grañeras</b> (STEAM Girls for Science alliance, Spanish Ministry of Education)</p>
Albacete	18/10/23	90	<p><b>Rafael Martínez Tomás</b> (Director, AC Albacete)</p> <p><b>Cristina González Gaya</b> (Dean, Civil Engineering UNED)</p> <p><b>Carolina Mañoso Hierro</b> (Associate Professor FCS UNED)</p>	<p><b>Estefanía Artigao Andicoberry</b> (PhD in Science Applied to Industrial Engineering. Professor and Assistant Director of Quality and Relations with Companies of the ETSI Industrial de Albacete UCLM).</p> <p><b>Dolores Gómez López</b> (Senior Computer Engineer. Software Department Manager at Tecon Soluciones Informáticas)</p> <p><b>Rosa Luz Carreño</b> (Mining Technical Engineer. University Master's Degree in Occupational Risk Prevention. Sole Administrator in Preventive Management in Construction Site)</p> <p><b>Sandra García Carmona</b> (Technical Agricultural Engineer. Technical Director in AGAS Farm)</p> <p><b>Irene Lozoya López</b> (Technical Industrial Engineer. Master in Industrial Plant Management. MBA. Responsible for Production, Processes and Planning in Gurit Spain)</p>
<b>Total</b>		690	11	23

Acronyms:

AC: associated center

FCS: Faculty of Computer Science

### LINKS TO INFORMATIVE WEBPAGES

- AC Madrid-Las Tablas: [http://extension.uned.es/actividad/28520&codigo=JSMEI\\_MAD](http://extension.uned.es/actividad/28520&codigo=JSMEI_MAD)
- AC Ponferrada: [https://extension.uned.es/actividad/28532&codigo=JSMEI\\_PONF](https://extension.uned.es/actividad/28532&codigo=JSMEI_PONF)
- AC Valencia: <https://extension.uned.es/actividad/28690&codigo=JSMEI>
- AC Calatayud: [https://extension.uned.es/actividad/28545&codigo=JSMEI\\_CAL](https://extension.uned.es/actividad/28545&codigo=JSMEI_CAL)
- AC Albacete: <https://extension.uned.es/actividad/33771&codigo=JSMEI>

### PRESS RELEASES

- CA Albacete:  
<https://www.uned.es/universidad/facultades/informatica/bienvenida/escuela/noticias/2023/20231020-jornada-mujer-ingenieria.html>  
<https://www.coiiab.com/jornada-sobre-mujer-e-ingenieria/>
- CA Madrid  
<https://unedmadrid.es/noticias/jornada-sobre-mujer-e-ingenieria-en-uned-madrid-transformando-los-retos-invisibles-de-la-sociedad-en-logros-visibles-y-sostenibles/>  
<https://www.uned.es/universidad/facultades/informatica/bienvenida/escuela/noticias/2022/20221213-jornadas-mujer-ingenieria.html>
- CA Ponferrada  
<https://www.uned.es/universidad/facultades/informatica/bienvenida/escuela/noticias/2022/20221213-jornadas-mujer-ingenieria.html>  
<https://www.elbierzonoticias.com/ponferrada/uned-ponferrada-pone-20221201161444-nt.html>
- CA Valencia:  
<https://www.unedvalencia.es/jornada-mujer-e-ingenieria-transformando-retos-invisibles-en-logros-visibles/>  
<https://www.uned.es/universidad/facultades/informatica/bienvenida/escuela/noticias/2023/20230109-jornada-mujer-ingenieria-valencia.html>  
<https://www.europapress.es/comunitat-valenciana/noticia-ingenieras-daran-cita-uned-valencia-acercar-trabajo-centros-educativos-hay-ofrecer-referentes-20221219081751.html>

<https://www.lavanguardia.com/local/valencia/20221218/8649584/ingenieras-daran-cita-uned-valencia-acercar-trabajo-centros-educativos-hay-ofrecer-referentes.html>

## SOCIAL NETWORKS DISSEMINATION

- AC Albacete:

Youtube: [https://www.youtube.com/watch?v=gj5YXy\\_Km3w](https://www.youtube.com/watch?v=gj5YXy_Km3w)

LinkedIn: [https://www.linkedin.com/posts/tecon-soluciones-informaticas\\_ingenieria-mujereingenieria-mujeresingenieras-activity-7120800794177646592- u B/](https://www.linkedin.com/posts/tecon-soluciones-informaticas_ingenieria-mujereingenieria-mujeresingenieras-activity-7120800794177646592- u B/)

- AC Calatayud:

X: <https://x.com/ETSIIUNED/status/1641389443574636545>

- AC Ponferrada:

CadenaCampus portal:

[https://www.intecca.uned.es/portal/grabacion?ID\\_Sala=356985&ID\\_Grabacion=638624&hashData=90bd0bbef866bd3947846f0edc3621ed&paramsToCheck=SURfR3JhYmFjaW9uLEIEX1NhbGEs](https://www.intecca.uned.es/portal/grabacion?ID_Sala=356985&ID_Grabacion=638624&hashData=90bd0bbef866bd3947846f0edc3621ed&paramsToCheck=SURfR3JhYmFjaW9uLEIEX1NhbGEs)

[https://www.intecca.uned.es/portal/grabacion?ID\\_Sala=356985&ID\\_Grabacion=638645&hashData=2ff133cc98ade2f66b4e0fbc3095a9dc&paramsToCheck=SURfR3JhYmFjaW9uLEIEX1NhbGEs](https://www.intecca.uned.es/portal/grabacion?ID_Sala=356985&ID_Grabacion=638645&hashData=2ff133cc98ade2f66b4e0fbc3095a9dc&paramsToCheck=SURfR3JhYmFjaW9uLEIEX1NhbGEs)

[https://www.intecca.uned.es/portal/grabacion?ID\\_Sala=356985&ID\\_Grabacion=638656&hashData=f06295ef74aeff86c4a0bb841db4cb71&paramsToCheck=SURfR3JhYmFjaW9uLEIEX1NhbGEs](https://www.intecca.uned.es/portal/grabacion?ID_Sala=356985&ID_Grabacion=638656&hashData=f06295ef74aeff86c4a0bb841db4cb71&paramsToCheck=SURfR3JhYmFjaW9uLEIEX1NhbGEs)

[https://www.intecca.uned.es/portal/grabacion?ID\\_Sala=356985&ID\\_Grabacion=638666&hashData=040a88cc15cc8146cad0646e74681580&paramsToCheck=SURfR3JhYmFjaW9uLEIEX1NhbGEs](https://www.intecca.uned.es/portal/grabacion?ID_Sala=356985&ID_Grabacion=638666&hashData=040a88cc15cc8146cad0646e74681580&paramsToCheck=SURfR3JhYmFjaW9uLEIEX1NhbGEs)

[https://www.intecca.uned.es/portal/grabacion?ID\\_Sala=356985&ID\\_Grabacion=638668&hashData=a8faeff7f46b7beec7780996277b19d4&paramsToCheck=SURfR3JhYmFjaW9uLEIEX1NhbGEs](https://www.intecca.uned.es/portal/grabacion?ID_Sala=356985&ID_Grabacion=638668&hashData=a8faeff7f46b7beec7780996277b19d4&paramsToCheck=SURfR3JhYmFjaW9uLEIEX1NhbGEs)

- AC Valencia:

Youtube: <https://www.youtube.com/watch?v=Vd0xxJCsg0Q>

Facebook:

<https://www.facebook.com/photo/?fbid=594206829175398&set=ecnf.100057582574619&rdr>

## LETTERS OF SUPPORT