

Ashesi-ETH Master of Mechatronic Engineering

A joint programme between
Ashesi University and ETH Zurich



Background

A major milestone was reached in June 2025: the first cohort of the joint Ashesi-ETH Master in mechatronic engineering officially graduated. The graduates have started their professional journeys across Africa and are making great strides in their various placement locations. We can proudly report that we are on course to meet our aim of training high quality engineers in Africa for Africa and we are glad that they are contributing to the continent's sustainable and economic development.

From the programme's inception in 2022, the Ashesi University and ETH Zurich teams were able to ensure a high-quality curriculum development, programme accreditation, and the recruitment of five cohorts of 138 talented and motivated students from nine African countries. Core to the success of the programme is the productive collaboration between the various stakeholders including ETH Zurich, Ashesi University, industry partners, and supporting organisations – including international engineering companies operating in Africa, foundations, private donors, and the Swiss State Secretariat for Economic Affairs (SECO).

As the programme has moved into a transition phase, we reflect on the journey over the past years. The journey has not been without challenges, but it has also been an enriching and rewarding experience. We look forward to 2026, a year in which Ashesi University will take more ownership of the programme and put in the right measures to ensure its long-term sustainability beyond the official collaboration period ending in December 2028. From September 2026, Ashesi will only admit students for the stand-alone two-year master in mechatronics engineering – which is an additional step towards independence and ensuring the long-term implementation of the programme.

Thank you

On behalf of our entire academic community, we would like to express our sincere appreciation for your generous support in bringing this joint Master's programme to life. Whether your contribution comes from a governmental body, a public or private foundation, or as an individual donor, your commitment has been essential in providing opportunities for talented students to access world-class education, meaningful industry exposure, and opportunities that are truly life changing.

Your continued partnership is helping shape more than individuals – it is helping shape the future of the continent. Through your generous support, Ashesi is able to educate brilliant, underserved engineers who will go on to design, build, and lead systems across Africa. The ripple effects of your investment extend far beyond our campus; they expand opportunity where it is needed most. We are deeply mindful that philanthropy is ultimately an act of trust. We pledge to steward your investment with discipline.

Thank you for standing with us in building an Africa defined by excellence, equity, and possibility.



"In this report, we are pleased to share the progress and achievements made possible through your partnership. We are deeply grateful for your trust and belief in the transformative power of education, and we look forward to continuing this journey together."

Prof. Dr. Angela Owusu Ansah,
Programme Director, Ashesi University

Achievements in 2025

Two new cohorts successfully started their journey

The fourth cohort of the three-year MAS/MSc programme jointly delivered by Ashesi and ETH Zurich, comprises 20 talented students from Cameroon, Ethiopia, Ghana, Kenya, Nigeria, and Tanzania. They began their academic year in January 2025. 10 students also joined the third batch of the two-year standalone MSc programme offered solely by Ashesi University. These students, selected from Ghana, Cameroon, Uganda and Zimbabwe, began classes in October 2025.

Prior to the start of classes, incoming students participated in a structured orientation programme designed to support a smooth transition into university life. By including team-building activities alongside guidance on academic expectations and campus life at Ashesi University, the programme helped students feel well prepared for the demands of their academic journey.

With the inclusion of these new cohorts, the programme continues to advance its mission of equipping students with the technical expertise and leadership capabilities needed to drive sustainable industrial development across Africa.

Tandem teaching by Ashesi and ETH lecturers

The Ashesi–ETH Master's programme in Mechatronic Engineering features a collaborative teaching model in which faculty members from Ashesi University and ETH Zurich work closely together. They jointly develop the course materials and co-teach the intensive four-week block modules. Lecturers from both universities have described this experience as highly enriching and motivating.

The joint teaching programme has proven to be very successful with lecturers attesting to how it has raised academic standards and introduced new teaching methods, strengthening Ashesi's Master's offerings with a blend of international expertise and local applicability. Lecturers from both Ashesi and ETH reported being exposed to new methodologies, cultures and teaching approaches which have enriched their teaching practice and their intercultural understanding. Some lecturers even reported how the joint teaching experience affected also how they were designing their undergraduate courses going forward, showing that the effect of this exchange went beyond just the Master's programme.

“Participating in this co-teaching experience was a privilege. I observed how the ETH faculty consistently encouraged students to shift their mindset from focusing solely on obtaining results to developing a deeper understanding of the underlying ideas. One memorable aspect of the course was observing how quickly the Master’s students translated mathematical concepts into real world applications.”

Selasi Kwaku Ocloo, Lecturer, Ashesi University



Industry partners contribute to a well-rounded education for impact

Industry partners have remained actively engaged in the Ashesi-ETH Master’s in Mechatronic Engineering programme, playing a key role in ensuring its continued relevance and practical impact. Their contributions help shape the curriculum, aligning course content with global industry developments as well as the changing demands of the Sub-Saharan African market.

In addition to their input in academic design, industry partners provide valuable opportunities for experiential learning. Through internships and placement programmes – offered during academic breaks and integrated into the final-year internship requirement – students have the opportunity to apply their knowledge in real-world settings, address complex engineering problems, and benefit from skills-focused training alongside professional guidance. Furthermore, mentorship programmes and career development support assist students in refining their career aspirations and making a smooth transition into the workforce after graduation.



“Through my internship experience with Bühler, my appreciation for the theoretical grounding of everyday engineering has increased. I had the opportunity to visit factories within the various business units of Bühler, from flour processing to cocoa processing, animal feed, rice processing, and pasta lines. These experiences did not only allow me to understand the practicality of engineering concepts, but also the sustainability of food processing”

Emmanuel Otibu Darko Korankye, Cohort 2



Michele Magno (ETH Zurich) and two master's students from Ashesi with their presentation at the symposium.

Impactful research

In 2025, two students from Ashesi presented their research work they had conducted together with Ashesi and ETH lecturers, at the "Sensors Applications Symposium" in Newcastle Upon Tyne in the UK. This joint Asheshi-ETH research resulted in two scientific publications.¹

In addition, 7 other students from cohort 2 jointly presented their research at international conferences and published their work.²

1. N. O. Asante, L. Mei, X. Wang and M. Magno, "TinyEEGConformer: An Attention-Based EEG Decoding Model for Embedded Systems," 2025 IEEE Sensors Applications Symposium (SAS), Newcastle, United Kingdom, 2025, pp. 1-6, doi: 10.1109/SAS65169.2025.11105112.
 2. G. Adordie, D. K. Muuo, P. Schilk, L. Schulthess, N. Amanquah and M. Magno, "A Cost-effective Occupancy Estimation System for Energy-efficient Buildings in Africa," 2025 IEEE Sensors Applications Symposium (SAS), Newcastle, United Kingdom, 2025, pp. 1-6, doi: 10.1109/SAS65169.2025.11105203.

2. 1. Joshua Nti, Kobena Badu Enyam, Baron Nikoi Afutu, Stephen Kofi Armah "A Robust Nonlinear MPC Approach for a Self-Balancing Cube Robot", published by IEEE and presented at the 5th International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME 2025) Zanzibar, Tanzania (16-19 October 2025). 2. Princess Elorm Sepah, Kobena Badu Enyam, Lily Akosua Afriyie Kyei-Baffour. "Dynamic Adaptive Fusion LSTM-ANN: A Hybrid Deep Learning Framework for Efficient Solar PV Consumption Forecasting", published in IEEE Xplore proceedings of the IEEE PES/IAS PowerAfrica Conference 2025, held in Cairo, Egypt (28 September - 2 October 2025).

Graduation ceremony of cohort 1

In June 2025, the first cohort of 23 students successfully graduated during the Ashesi University commencement ceremony. This historic event was attended by industry partners and donors including SECO, Lafarge Holcim, Fondation Roche en Afrique, and the Arthur Waser Foundation.

Timothy Asare, Class President, Cohort 1 gave the graduation speech during the ceremony in June 2025.



Successful recruitment of cohort 5 of joint programme

Successful recruitment of new cohorts

The recruitment of new programme cohorts was carried out through a joint effort between Ashesi University and ETH Zurich, with Ashesi taking the lead in coordinating the process. The strategy combined focused outreach through established academic networks with wider promotional activities across traditional and digital media platforms. In addition, targeted initiatives were implemented to engage women’s engineering groups and related organisations, with the goal of strengthening female representation within the programme.

During this admission cycle, the programme continued to grow with the selection of students for the fifth and last cohort of the three-year joint MAS/MSc programme jointly delivered by Ashesi and ETH Zurich, as well as the third cohort of the two-year MSc programme offered solely by Ashesi University. A total of twenty-four students were admitted into the three-year joint degree track (See Figure 1). Ashesi also admitted 10 students for the 2-year stand-alone programme.

It is important to note that 2025 also marked the recruitment of the final cohort for the joint ETH-Ashesi programme with graduates getting an MAS from ETH and an MSc/MPhil from Ashesi University. With their addition, the total enrolment on the programme stands at 114 students across multiple cohorts excluding the 23 who have already graduated.

There was also great improvement regarding gender distribution for the 2025 admissions with 42% (10 out of 24) of the admitted students for cohort 5 being female (See Figure 2).

Through the generous support of our industry partners and donors, we were also able to offer scholarships to all the 24 students who were admitted to the 3-year joint degree programme as depicted in Figure 3.

Fig. 1. Recruitment overview for 3-year joint programme

2025 Recruitment Overview Progression through the recruitment process

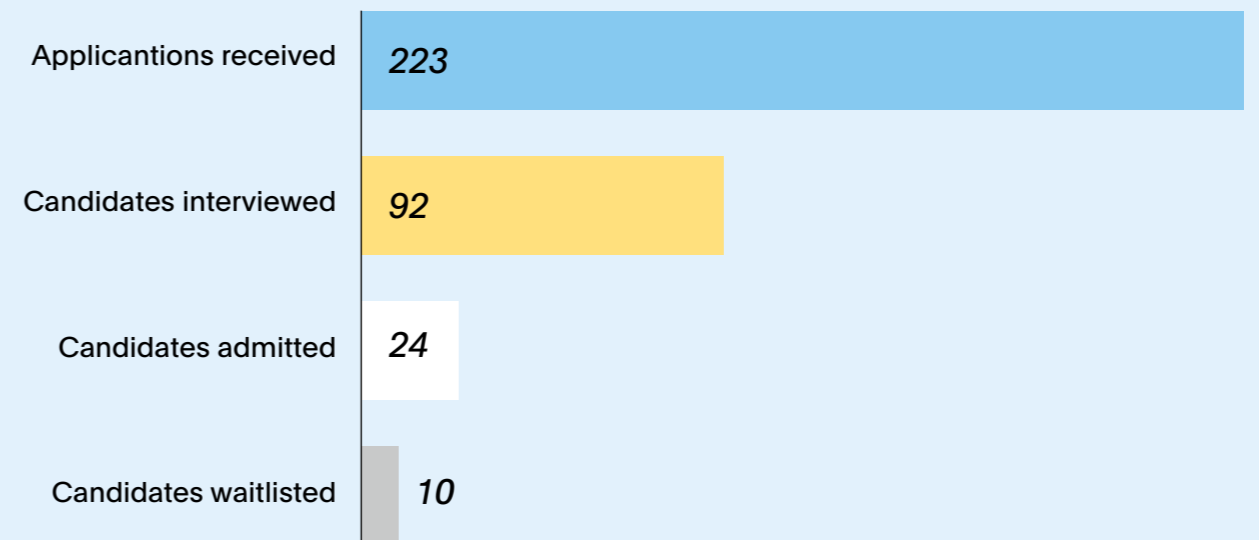


Fig. 2. Gender distribution for 3-year joint degree programme



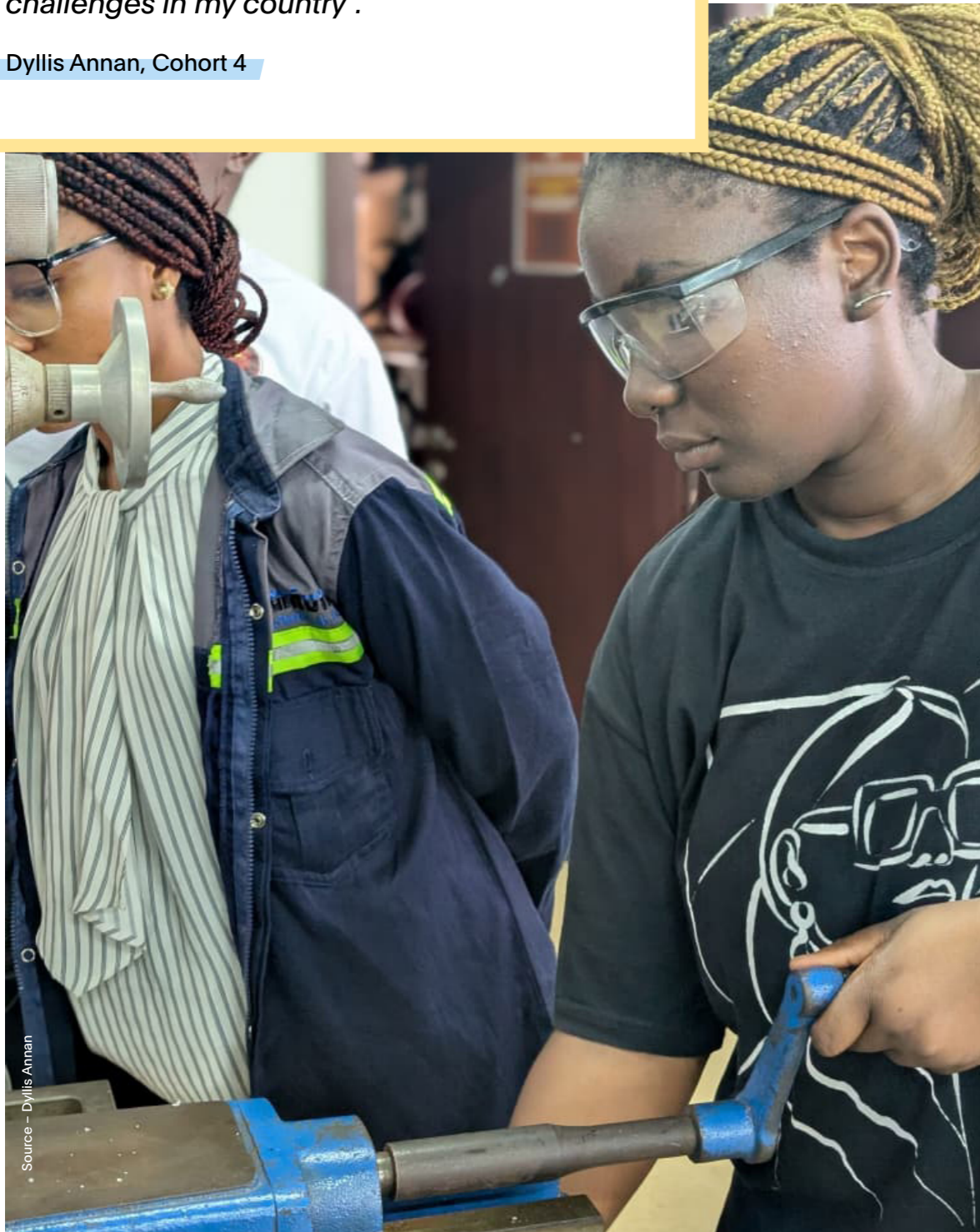
Fig. 3. Funding for 3-year joint degree programme



"I was attracted to the comprehensive curriculum. The opportunity for a scholarship was also a major motivation. I look forward to fully engaging in the courses and benefiting from the expertise of experienced faculty from ETH and Ashesi. I believe this will equip me with the skills needed to integrate into industry and apply my knowledge effectively. Adjusting to the block course schedule has been a new experience, but I am eager to embrace the learning opportunities and challenges ahead. After completing the programme, I plan to apply my skills in the food production or mechanised farming industry to contribute to solving the food security challenges in my country".

Dyllis Annan, Cohort 4

Dyllis Annan and other students of cohort 4 during a practical workshop course.



Source - Dyllis Annan

Successful completion of programme and job placement for cohort 1 and 2

Cohort 2 successfully completed their programme and will graduate in spring 2026. So far 7 students already got employed in industry in the fields of engineering, manufacturing and sales. In addition, three students are conducting industry relevant research with Ashesi University. The students are working in various African countries including Ghana, Ivory Coast, Nigeria, Kenya and Tanzania.

Cohort 1 graduates continue to excel in their various fields of employment (food processing, building material production, teaching, research and academic projects, startup in automation and doctoral studies). This highlights the programme's success in equipping students with industry-relevant skills and fostering innovation across multiple sectors in Africa and beyond. Additionally, the students reported a great learning experience during the various internships offered by industry partners which complemented their classroom learning.



Source - Ernest Samuel

"When I enrolled in the Ashesi-ETH Zurich Master's programme, I came in as a mechanical engineer from a small community in Nigeria with big ambitions but limited exposure. The programme changed that completely. It equipped me with cutting-edge technical skills, sharpened my problem-solving and communication abilities, and connected me to a global network spanning Ghana, Switzerland, and the UK. Within the programme, I was part of a team selected by a US-based accelerator, freelanced internationally, and contributed to AI projects with real-world impact. Today, I work as an Automation Engineer at Lafarge Africa, a Member of Holcim Group, one of the largest cement manufacturers in the world, where I lead process control upgrades, develop AI-based solutions, and support large-scale plant operations daily. The programme did not just make me a better engineer. It made me a builder of possibilities."

Ernest Samuel, Cohort 1



Source – Dennis Oppong Gyedu

“I completed a two-month internship at Barry Callebaut Ghana in the Utilities and Energy Management Department, where I worked on projects focused on improving factory efficiency and operational reliability. My work included analysing shell boiler efficiency using operational data and Python-based regression analysis, as well as contributing to the design of an air handling unit (AHU) for the Bühler roaster room to ensure proper ventilation and pressurisation. Through these projects, I gained hands-on experience in industrial energy systems, data-driven engineering analysis, and the practical application of engineering principles in a real manufacturing environment.”

Dennis Oppong Gyedu, Cohort 2

Dennis Oppong Gyedu testing a solar panel.

Visit by 4 Ashesi students to ETH for SDG pitch event and project

In November 2025, 4 students from Ashesi University (2 teams of 2 students) participated in the SDG Pitch Event: Building a Sustainable Future, organised by ETH4D together with ETH Entrepreneurship and the ETH Student Project House (SPH). The event brought together students and researchers for an evening dedicated to one shared mission: exploring how early-stage ideas can drive meaningful progress towards the UN Sustainable Development Goals (SDGs). This was the first time that students from Ashesi University took part in the event and presented their projects alongside ETH Zürich students. Joshua Nti and Princess Elorm Sepah presented RespCare – An air purification solution developed to improve indoor air quality while Tabitha Wanjau and Evans Omwega presented their project on Afri~Energy Meter – A smart sub-meter enabling more transparent and efficient energy use in African households. At the end of the pitch event, RespCare received the audience vote.

The four students – Princess Elorm Sepah, Tabitha Wanjau, Joshua Nti and Evans Omwega at the ETH4D office with Dr. Adina Rom, Executive Director, and Dr. Sewoenam Chachu, Programme Manager for educational partnerships.



Source – ETH4D office

Impactful master thesis research

The Master's thesis projects undertaken in this programme demonstrate the strong integration of advanced engineering research with practical challenges in industry, infrastructure, and sustainability. Developed in close collaboration with academic supervisors and industry partners, many of the projects addressed real operational problems while maintaining a high level of scientific rigor. This collaborative framework enabled students to translate theoretical knowledge into practical solutions, strengthening both their technical expertise and their ability to work in interdisciplinary and applied environments.

The topics covered a broad spectrum of modern engineering challenges, ranging from structural health monitoring, industrial fault detection, and manufacturing optimisation to smart energy systems, battery management, and resilient electrical infrastructure. Several projects focused on sustainable technologies and resource-efficient systems, including energy-autonomous sensor networks for smart agriculture, off-grid monitoring solutions, and optimisation of electric vehicle thermal management. Others investigated advanced manufacturing and materials, such as additive manufacturing processes, shape memory effects, and novel bio-based materials like mycelium networks.

A significant number of Master's theses explored advanced computational and data-driven methodologies. These included machine learning and transfer learning for predictive maintenance, physics-informed neural networks for complex physical systems, operator learning for mechanics, and data-driven control approaches for autonomous and high-performance systems. Additional work examined advanced simulation techniques such as the lattice Boltzmann method, as well as modern control strategies including model predictive control and optimal state-space control for energy and mobility systems.

Many projects were directly linked to real-world infrastructure and industrial operations, including power grid reliability, remote monitoring of electrical substations, mining process optimisation, and factory workshop reliability improvement. This ensured that the research outcomes had immediate relevance for industry partners while also contributing to broader scientific and technological advancement.

Through these projects, students gained hands-on experience with complex systems, emerging technologies, and real datasets, while building professional connections with companies and research institutions. The breadth of topics and the applied nature of the research illustrate how the programme prepares graduates to address pressing engineering challenges in areas such as sustainable energy, intelligent infrastructure, advanced manufacturing, and AI-driven engineering.

Outlook

Implementation and transition of Programme Management

2025 began the transition phase of the programme starting with a 50/50 split of course development and teaching responsibilities between ETH lecturers and their tandem partners at Ashesi. Additionally, Ashesi has taken over the lead role on industry partner relations. This is part of the process of transferring full ownership of the programme to Ashesi University by December 2028. It is anticipated that in 2026, the course development and teaching split will increase further in favour of Ashesi University, to up to 70/30 and some courses solely taught by Ashesi lecturers. ETH remains dedicated to providing teaching and management support during this phase of the initiative. It is anticipated that this continued engagement will further reinforce the existing collaboration, enabling industry partners and Ashesi University to identify mutually advantageous pathways to sustain the shared objective of developing a new generation of engineering leaders in Africa beyond the joint phase with ETH Zurich.

Invitation to Graduation Ceremony – Second Cohort of the Programme

The second cohort of the joint programme will graduate this summer. They completed their studies in January 2026 and their official graduation ceremony will take place on 15th May 2026 at the Ashesi University Campus in Ghana. All donors and partners who would like to attend the ceremony can register by contacting the programme managers at Ashesi University or ETH Zurich.

Partners' Assembly – Fall 2026

The 2nd edition of the Partners' Assembly for the Ashesi-ETH Master of Mechatronic Engineering Programme was held in October 2025 at ETH Zurich with industry partners and donors, as well as academic collaborators participating. The event featured presentations from the Ashesi leadership, ETH4D and ETH lecturers who have been involved in the project, as well as the testimonial of one of the graduates of the first cohort.

The Partner's Assembly also provides an occasion to recognise the valuable role of our industry and supporting partners, celebrate milestones reached, and discuss future plans. The 2026 edition of the Assembly will take place at the central campus of ETH Zurich in Fall 2026. We look forward to welcoming you there as we build on our collaboration and explore further possibilities for impact.

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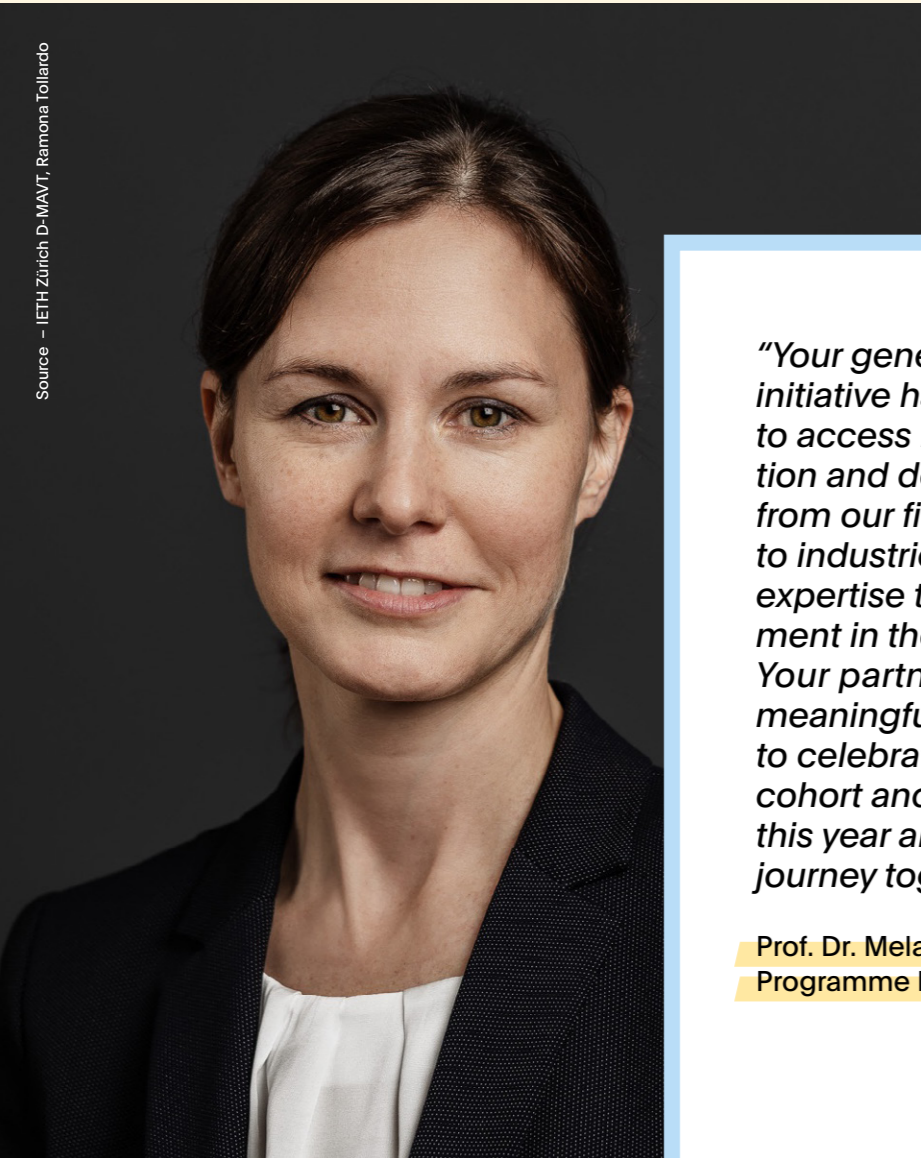
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"Your generous support of this educational initiative has enabled talented students to access high-quality engineering education and develop critical skills. Graduates from our first cohort are already contributing to industries across Africa, applying their expertise to support innovation and development in their communities and beyond. Your partnership is making a lasting and meaningful difference. We look forward to celebrating the graduation of our second cohort and their subsequent job placements this year and look forward to continuing this journey together!"

Prof. Dr. Melanie Zeilinger,
Programme Director, ETH Zurich

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Photography
Unless otherwise stated: Ashesi University


Thank you!

We are very grateful that we have the support of many partners for our ambitious project, the ETH Ashesi Master in Mechatronics Engineering.

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