

Questionnaire – Skills needs in the European microelectronics industry in 2025

Presentation of the European Chips Skills Academy and aim of the questionnaire

The European Chips Skills Academy (ECSA) is a consortium co-funded by the European Union and coordinated by SEMI Europe. It embodies EU excellence in microelectronics, with 18 partners from 12 countries representing the industry, national and EU industry associations, formal educational providers and regulatory bodies in the field of accreditation and certification.

To develop its competitiveness, the EU microelectronics sector needs to overcome severe skills shortages and to adapt to future needs in terms of skills and competences.

In this light, the objectives of the European Chips Skills Academy are to:

1. Analyze key trends affecting the sector and provide strategic insights and foresights to update the EU Microelectronics Skills Strategy.
2. Establish the first-of-a-kind decentralized academy for microelectronics, linking industry, research, HE and VET currently operating in isolation
3. Develop innovative training and curriculum to provide reactive and proactive response to the skills needs of the sector.
4. Implement and operationalize the EU Pact for Skills

The European Chips Skill Academy is building on the legacy of the METIS project which, since 2020, has conducted an in-depth analysis of the skills needs in the European microelectronics industry.

The aim of this questionnaire is to monitor the skills needs evolutions in 2025.

European Chip Skills Academy

Industry



Research & Innovation



Accreditation



Social Partner



Higher Education & Training



Part 2- Questionnaire

Confidentiality agreement.

The information contained in this questionnaire will be deleted after the completion of the project. For reporting purposes, details about you, such as name or job title, will be ignored and a questionnaire number will be assigned to the informant instead.

In the event that the informant wishes to retract something said or wishes to reconfigure one of the responses, they are fully entitled to do so.

Respondents to the questionnaire will receive a dedicated summary of the results of the study by email.

Your participation is appreciated.

If you have any question associated with the filling of the questionnaire, please contact Raphaël BEAUJEU, Senior Consultant at DECISION Etudes & Conseil (beaujeu@decision.eu).

1. Organization name:

2. Name:

3. Email:

4. Job title:

5. Since mid-2024, have you observed new profiles emerging in microelectronics (new job positions that did not exist before)?
If yes, can you list and describe them?

6. Since mid-2024, have you observed new skills needs emerging in microelectronics? For which job profiles in particular?

7. What is the impact of the following elements on your recruitment policy? On the profiles and skills you are looking for?
 - The global wave of investment in semiconductor observed since 2021.
 - The EU Chips Act launched in early 2022.

8. Have you noticed any impact of geopolitical tensions on your recruitment policy?
If Yes, describe how...

9. In 2025, do you expect to hire more or less on EU soil compared to 2024?
If you are a training provider, please answer for the number of teachers hired within your organization.
 - Hire more
 - Hire less
 - Remain the same

Why?

10. In 2025, has the skills shortage within your organization in the EU worsened or improved compared to 2024?

- The skills shortage has **worsened**
- The skills shortage has **improved**
- The skills shortage has **remained the same**

Why?

11. Could you list the European organizations you are aware of which provide trainings in microelectronics (VET providers)?

- Initial training (iVET):
- Continuing / work-based training (cVET):

12. **Job profiles: Industry needs in 2025.** Please tick the profiles that from your point of view are the most sought after by European industry in 2025 (in terms of number of hires).

Please do not answer if you have no idea. In this case, please leave the cell blank.

Job profiles	Most sought-after by the industry?	Justifications / Comments from your experience (optional)
Software engineer: Controls and software engineer, software developer, solution engineer, computer software engineer		
Design engineer: designer, Electrical design engineer, electrical project engineer, electrical product engineer, product development engineer		
System design engineer (complex ASIC, SoC, SiP, SoP)		
Analog design engineer		
Digital design engineer		
Process engineer: Manufacturing (support) engineer		
Data specialist: Data scientist, Data analyst, Data engineer		
Machine learning engineer		
Test engineer: Product test engineer, test engineer, Design For Test (DFT) engineer, associate test engineer, senior test engineer		
Process technician: Manufacturing (support) technician		
Operator / Inspector: Machine operator, inspector, repair operator, general laborer		
Maintenance technician: Electrical technician, breakdown technician		
Application engineer		
Test technician: Electrical test technician, environmental and life-time test technician, troubleshooter technician, quality technician		
Robotic engineer: Electrical automation engineer, controls and robotic engineer, control system engineer, PLC programmer engineer		
Expert in cybersecurity		
Marketing engineer		
Supply chain expert / Logistics specialist		
Other? (Please specify)		

13. **Job profiles: Shortage in 2025.** Please tick the profiles that from your point of view are the most difficult to fill for the European industry in 2025 (greatest difficulty to find skilled candidates).

Please do not answer if you have no idea. In this case, please leave the cell blank.

Job profiles	Profiles for which it is most difficult to find qualified candidates?	Justifications / Comments from your experience (optional)
Software engineer: Controls and software engineer, software developer, solution engineer, computer software engineer		
Design engineer: designer, Electrical design engineer, electrical project engineer, electrical product engineer, product development engineer		
System design engineer (complex ASIC, SoC, SiP, SoP)		
Analog design engineer		
Digital design engineer		
Process engineer: Manufacturing (support) engineer		
Data specialist: Data scientist, Data analyst, Data engineer		
Machine learning engineer		
Test engineer: Product test engineer, test engineer, Design For Test (DFT) engineer, associate test engineer, senior test engineer		
Process technician: Manufacturing (support) technician		
Operator / Inspector: Machine operator, inspector, repair operator, general laborer		
Maintenance technician: Electrical technician, breakdown technician		
Application engineer		
Test technician: Electrical test technician, environmental and life-time test technician, troubleshooter technician, quality technician		
Robotic engineer: Electrical automation engineer, controls and robotic engineer, control system engineer, PLC programmer engineer		
Expert in cybersecurity		
Marketing engineer		
Supply chain expert / Logistics specialist		
Other? (Please specify)		

14. **Critical skills in 2025.** Please tick the skills that according to you are both the most sought-after and the most difficult to find for the European microelectronics industry in 2025.

Please do not answer if you have no idea. In this case, please leave the cell blank.

Skill	Most sought-after and difficult to find?	Educational level required at entry-level (EQF 4–5/ Short-cycle tertiary; EQF 6/ Bachelor; EQF 7/ Master; EQF 8/ PhD)	Comments (optional)
Systems architectures: System-on-Chip (SiP), System-in-Package (SiP), System-on-Package (SoP), complex ASIC.			
Data analysis: Data management, data visualization, data integrity...			
Artificial Intelligence / Machine learning			
Analog design			
Knowledge of applications: Ability to link and adapt technical aspects of a product (materials to use, design architecture, type of connectivity tools to integrate, etc.), to its end-user market(s) and application(s) (I4.0, automotive, etc.).			
Quality / reliability: quality engineering, quality assessment, reliability analyses, robustness of microelectronics (EMC, EMI, ESD...)			
Security: Security by design, cybersecurity, data security & privacy			
Hardware / Software integration			
Knowledge of new materials			
Software / Digital skills (shift from hardware to software affecting most profiles. Especially embedded software)			
Other? Soft Skills?			
Other? Soft Skills?			

15. **Emerging technologies.** Among the following list of emerging technologies, can you tick the ones that currently have the greatest impact on the skills needs of companies?

N°	Emerging technology	Has an impact on the skills needs? (Yes / No)	Is there a shortage of associated skills in Europe? (Yes / No)	Job profiles impacted & Description (optional)
1	<p>Edge IoT / Edge AI</p> <p>Design of emerging systems (SoC, SiP, complex ASIC) and modules for Edge IoT and Edge AI</p>			
2	<p>Artificial Intelligence</p> <p>Tiny Machine Learning (ML), Deep Learning (DNN, CNN), Low-power hardware for ML...</p>			
3	<p>Security</p> <p>Cybersecurity by design, lightweight cryptography, post-quantum cryptography, etc.</p>			
4	<p>Heterogeneous architectures / integration</p>			
5	<p>Advanced packaging: FC BGA, Fan Out, 2.5D & 3D stacking, embedded die</p>			
6	<p>Power</p> <p>Power computing, power management innovations, ultra-low power MCU</p>			
7	<p>Quantum computing</p>			
8	<p>Photonics</p> <p>Integrated photonics, photonic interconnection networks...</p>			
9	<p>Neuromorphic computing</p>			
10	<p>High-Performance Computing (HPC)</p>			

	Other?			
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16. What would be your **policy recommendations** to bridge the current microelectronics skills shortage in the EU?

17. Are you **interested in joining the “EU Chips Skills Alliance”**, to collaborate with the EU stakeholders the reach to goals of the European Chips Skills Academy and the Microelectronics Pact for Skills?

The working groups are:

1. Skills observatory
2. Diversity, Inclusion, Equity and Belonging (DEIB)
3. Skills Academy
4. Interest and Awareness raising
5. National / Regional / Cluster activities

- Yes, and I am interested by all the topics for collaboration
- Yes, I am particularly interested in skills monitoring and global trends report
- Yes, I am particularly interested in diversity and inclusion topics
- Yes, I am particularly interested in the educational activities (e.g. summer schools...) and in the e-learning platform
- Yes, I am particularly interested in interest and awareness raising
- Yes, I am particularly interested in national / regional / cluster activities
- No