# Future careers in manufacturing: The rise of STEM and women in engineering



The manufacturing industry is experiencing a surge in demand for careers in STEM, particularly in roles centred around automation, data analytics, and sustainability. Carol Mitchell-Lin, a key player in promoting Industry 4.0 concepts, sheds light on these developments in an interview with Design News. As the creative services manager at Joanne Gore Communications, Mitchell-Lin advocates for data-driven solutions and educates manufacturing professionals on the continuous growth associated with Industry 4.0.

Mitchell-Lin highlights several job functions that are currently in high demand, which include advanced manufacturing process development, data-driven decision-making and predictive analytics, as well as sustainable manufacturing using green technologies. She elaborates by stating, “As technology evolves, we can expect more sophisticated applications of Industry 4.0 principles, leading to greater opportunities in AI, machine learning, and smart manufacturing in 2025 and beyond.”

Several trends are driving these opportunities forward, according to Mitchell-Lin. These include the increasing integration of Industry 4.0 technologies, an enhanced focus on sustainability and the circular economy, and a notable talent gap within the manufacturing sector that underscores the need for skilled workers.

To further illuminate career prospects in manufacturing, she is set to moderate a panel discussion entitled “Driving Leadership for Women in Engineering” at the MD&M West conference on February 5. The panel will feature notable speakers such as Brandyl Hutzel, systems engineering manager at Northrop Grumman; Charlotte Wagner, an executive coach; Mia M. Fujii, country business development executive at Siemens Digital Industries Software; and Yvette Espinoza, principal software engineer at Northrop Grumman. According to Mitchell-Lin, the session will provide practical advice and real-world examples aimed at inspiring and empowering participants in their STEM career journeys.

Particularly focused on challenges faced by women in engineering, the panel will address common obstacles, such as underrepresentation, unconscious bias, and limited mentorship opportunities. Mitchell-Lin elaborates, “Women in STEM leadership roles often encounter challenges such as underrepresentation, unconscious bias, and a lack of mentorship opportunities. Additionally, balancing work-life demands and navigating male-dominated environments can be difficult.”

Several recommendations are provided by Mitchell-Lin for women who are either in or looking to enter STEM leadership positions. These include seeking out mentors and peers for guidance and support, advocating for oneself in professional settings, embracing opportunities for career growth, and exploring diverse roles within the industry.

In preparing for leadership roles, she recommends a commitment to lifelong learning, adaptability to emerging technologies, and a clear understanding of how to implement solutions for specific challenges. Moreover, she stresses the importance of cultivating strong communication skills, particularly the ability to articulate complex concepts clearly.

For those interested in gaining a deeper understanding of the evolving landscape of careers in manufacturing, the upcoming panel at MD&M West promises to deliver valuable insights from influential women in STEM. The event is poised to offer a platform for discussion on both the opportunities and challenges inherent in the manufacturing sector today.

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://mrinetwork.com/hiring-talent-strategy/the-role-of-a-stem-education-in-manufacturing/> - This article supports the claim that STEM education is crucial for innovation in the manufacturing sector, highlighting the need for STEM talent in areas like robotics, computer-aided design, and working with new materials.
2. <https://mrinetwork.com/hiring-talent-strategy/the-role-of-a-stem-education-in-manufacturing/> - It also discusses how STEM education helps bridge the skills gap in manufacturing by providing practical skills and knowledge.
3. <https://mrinetwork.com/hiring-talent-strategy/hiring-for-manufacturing-in-the-industry-4-0-era/> - This article explains the role of Industry 4.0 technologies in manufacturing, including the integration of AI, machine learning, IoT, and robotics, which aligns with Mitchell-Lin's points on advanced manufacturing and data-driven solutions.
4. <https://mrinetwork.com/hiring-talent-strategy/hiring-for-manufacturing-in-the-industry-4-0-era/> - It highlights the new class of jobs created by Industry 4.0, such as data scientists, IoT engineers, and robotics engineers, which are in high demand.
5. <https://kaizen.com/insights/industry40-manufacturing-productivity/> - This article details how Industry 4.0 and digitization improve manufacturing efficiency, productivity, and responsiveness, supporting the growth associated with Industry 4.0 principles.
6. <https://kaizen.com/insights/industry40-manufacturing-productivity/> - It explains the role of real-time data and predictive analytics in enhancing decision-making and maintaining efficient manufacturing operations.
7. <https://labmidwest.com/teched2025predictions/> - This article discusses the ongoing impact of Industry 4.0 and the CHIPS and Science Act on manufacturing, including the trend of reshoring and the need for skilled workers in the sector.
8. <https://labmidwest.com/teched2025predictions/> - It predicts significant investments in U.S.-based facilities and highlights the talent gap in the manufacturing sector, aligning with Mitchell-Lin's points on the need for skilled workers.
9. <https://mrinetwork.com/hiring-talent-strategy/the-role-of-a-stem-education-in-manufacturing/> - This article emphasizes the importance of experiential learning and industry partnerships in preparing STEM graduates for the workforce, which is relevant to Mitchell-Lin's advice on career growth and mentorship.
10. <https://mrinetwork.com/hiring-talent-strategy/hiring-for-manufacturing-in-the-industry-4-0-era/> - It discusses the interdisciplinary skills required in manufacturing, including roles in supply chain management, quality assurance, and sustainability, which are areas Mitchell-Lin highlights as being in high demand.
11. <https://kaizen.com/insights/industry40-manufacturing-productivity/> - This article underscores the importance of continuous learning and adaptability in the face of emerging technologies, a point Mitchell-Lin stresses for women in STEM leadership roles.
12. <https://www.designnews.com/manufacturing/stem-careers-abound-in-manufacturing> - Please view link - unable to able to access data