

HEMISTEN



Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them. Project number: 2023-1-ES01-KA220-HED-000155347



Entrepreneurship for Women in STEM

Breaking Barriers and Leading Innovation

Course Introduction & Objectives

Welcome to *Entrepreneurship for Women in STEM!*

We'll explore how your STEM knowledge can be translated into entrepreneurial success. Whether you have an idea or are just curious about starting a business, this course will help you develop skills to make it a reality. Let's get ready to dive into the world of startups with a focus on women empowerment in STEM.

Course Objectives:

- A. Provide background knowledge on entrepreneurship specifically for women in STEM.
- B. Highlight the importance of women's participation in the entrepreneurial ecosystem within STEM fields.
- C. Offer practical exercises designed to inspire women STEM students and educators to pursue entrepreneurial careers and contribute to bridging the gender gap in STEM professions.

What to Expect: We'll explore entrepreneurial fundamentals tailored to STEM fields, focusing on real-world application and interactive activities to help women build business skills.



Why Entrepreneurship in STEM?

- ❖ Why should women in STEM consider entrepreneurship?
- ❖ The landscape is changing!
- ❖ Women are underrepresented in both STEM and entrepreneurship, but this also means there's a huge opportunity for you to disrupt industries.
- ❖ Think about women like **Reshma Saujani**, who founded “Girls Who Code”, or **Lisa Su**, the CEO of AMD. They’ve turned their STEM backgrounds into platforms for innovation.
- ❖ I encourage you to see your technical expertise as the foundation for building something bigger.

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.



Lisa Su



Reshma Saujani



Key Traits of Successful Female Entrepreneurs in STEM



- ❖ What makes a successful entrepreneur?
- ❖ It's a combination of **resilience, adaptability, creativity, and leadership.**
- ❖ You already have key **problem-solving skills** as STEM students, but now it's about learning to pivot quickly, take risks, and inspire a team.
- ❖ **Think about the traits you already possess:** Are you a natural problem solver? A critical thinker?
- ❖ Let's reflect on these and figure out where you can strengthen your **entrepreneurial mindset**



Take 5 minutes to list **three traits you already possess** that align with entrepreneurship.

Then, list **two traits you'd like to improve** in a nearly future.



Pixabay

- | | |
|--------------------|----------------------|
| 1- Creativity | 11- Passion |
| 2- Resilience | 12- Communication |
| 3- Risk Taking | 13- Financial Acumen |
| 4- Vision | 14- Networking |
| 5- Leadership | 15- Self-Motivation |
| 6- Adaptability | 16- Empathy |
| 7- Confidence | 17- Time Management |
| 8- Problem Solving | 18- Customer Focus |
| 9- Resourcefulness | 19- Competitiveness |
| 10- Decisiveness | 20- Curiosity |

Identifying Opportunities for Women in STEM



- ❖ One of the biggest challenges is **identifying the right opportunity**.
- ❖ You don't need a revolutionary idea to start – often, **the best opportunities come from solving everyday problems**.
- ❖ In STEM, your expertise can help address **real-world challenges** in health, sustainability, tech, or manufacturing.
- ❖ What are some problems you see in your field? Remember, **every gap or inefficiency is a potential opportunity**



Pixabay

I want you to **brainstorm potential business ideas** based on challenges you've observed in your specific STEM discipline. Focus on things you are passionate about and see a need for innovation!

Tips for Successful Brainstorming:

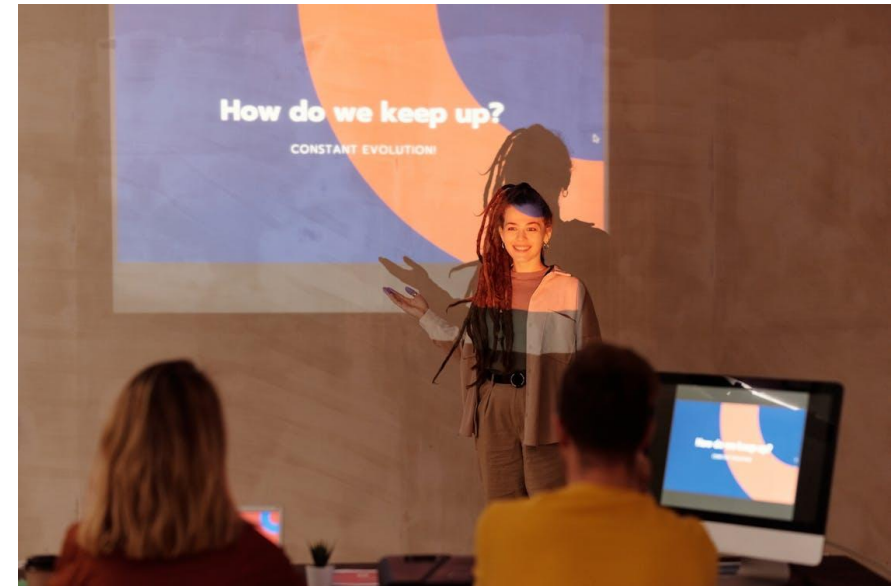
- No Idea is Bad!
- Quantity Over Quality (at First)!
- Be Open-Minded!
- Use Diverse Perspectives!

From Idea to Business Plan

- ❖ Now that we've discussed opportunities, let's talk about turning those ideas into a business plan.
- ❖ **A business plan** is a roadmap – it outlines your business model, your target market, how you'll generate revenue, and how you'll manage costs. It forces you to think critically about every aspect of your startup.
- ❖ **Even if your idea is brilliant, it's useless without a plan.** I'll walk you through the key components and we'll develop one together using a simplified **template**.



Take the business idea you came up with, and use this **template** to create a mini business plan. Focus on three key elements: (1) your **value proposition** (what makes your idea unique), (2) your **target market**, and (3) how you'll generate **revenue**.



Pexels



What to include in a business plan?

- ✓ Executive Summary
- ✓ Business Description
- ✓ Market Analysis
- ✓ Product Service Description
- ✓ Marketing and Sales Strategy
- ✓ Operations Plan
- ✓ Management and Organization
- ✓ Financial Plan
- ✓ Risk Analysis
- ✓ Appendix (Optional)



Market Research for STEM Startups

- ❖ Once you have a business idea, you need to validate it through **market research**.
- ❖ Who is your customer?
- ❖ What does the competition look like?
- ❖ In STEM, your market may be very **niche or specific**, which can be a strength, but it requires understanding exactly where your product fits.
- ❖ A **niche market** example: [Ginkgo Bioworks](#)

Steps for Market Research:

- ✓ Identify a Niche Market Opportunity
- ✓ Understand Industry Needs
- ✓ Market Segmentation and Targeting
- ✓ Strategic Partnership
- ✓ Pivoting Based on Research

- ❖ Check for: “Questions for Market Research”
- ❖ Check for an example of a “Niche Startup”



Pexels



Building a Team



- ❖ **Successful teams are those with diverse strengths but shared vision!**
- ❖ Building a strong team is one of the most important things you'll do as an entrepreneur.
- ❖ In STEM startups, you'll need **diverse talents**: technical expertise, marketing skills, financial knowledge, and leadership.
- ❖ The best teams are made of people who bring something different to the table. However, you all need to **share the same vision**.
- ❖ **Different roles** include a CEO, a head of engineering, a marketing lead, and a financial officer.
- ❖ Chek for **TEAMWORK** module!



Pexels



- ✓ Identify what roles you would need to make your business successful.
- ✓ Assign roles within your team and explain why each is critical for your idea

Financial Planning, Funding, Building a Minimum Valuable Product



- ❖ Let's talk about money!
- ❖ Startups need **financial planning**, whether it's bootstrapping or securing investors.
- ❖ Women in STEM also have access to specific **grants** and **funding** opportunities.
- ❖ Understanding your funding needs and managing costs is essential for long-term success
- ❖ Before launching a full product, you need to test your concept with a **Minimum Viable Product (MVP)**.
- ❖ A MVP is a **basic version** of your product that allows you to gather feedback and test the market.
- ❖ It's important to launch your MVP quickly, so you don't waste resources developing something nobody wants. Once you get feedback, you can iterate and improve."



Sketch out or describe what your MVP would look like.
Focus on the core features and how it solves the problem you've identified



Marketing & Branding

- ❖ **Marketing and branding** are often overlooked by STEM entrepreneurs, but they're essential.
- ❖ Your brand tells your story, and your marketing communicates the value of your product. Even if you have the best tech, it won't sell itself."
- ❖ **Building a Brand:** What message do you want your brand to convey? Why will people trust you?
- ❖ **Discuss online platforms** (social media, digital marketing, SEO), and how they can be used effectively in STEM businesses.
- ❖ **Design a simple logo and create a slogan** for your startup. Consider how you want to be perceived by your customers!

Intellectual Property and Legal Considerations

As STEM entrepreneurs, protecting your intellectual property (IP) is crucial. You don't want someone else to steal your idea, so **patents** and trademarks are your shield.

Check for **PATENTS** module!



Pexels

Pitching Your Idea

- ❖ Pitching is one of the most important skills for any entrepreneur.
- ❖ You need to communicate your vision clearly and persuasively to investors, customers, and even potential employees.
- ❖ Here are some tips!
 - **Keep It Concise:** A pitch should be brief and focused. Aim for 5-7 minutes.
 - **Use Visuals:** Support your presentation with clean, easy-to-read slides or demos.
 - **Practice Delivery:** Confidence and enthusiasm are key. Practice until your delivery feels natural.
 - **Be Prepared for Questions:** Investors and partners will want to dive deeper. Prepare answers for potential questions about risks, competition, and scalability.
 - Check for more **PITCHING** info!



Pexels



Sample Structure of a 5-Minute Pitch:

1. Hook/Problem (30 seconds)
2. Solution (1 minute)
3. Value Proposition and Market (1 minute)
4. Business Model (30 seconds)
5. Traction (30 seconds)
6. Team (30 seconds)
7. Financials and Ask (30 seconds)
8. Call to Action (30 seconds)

Following the sample structure, try to pitch your idea! Be careful with timing!

Networking and Mentorship

- ❖ Success in entrepreneurship isn't just about your skills—it's also about your **network**.
- ❖ The right connections can lead to partnerships, investments, and mentorship opportunities.
- ❖ **Finding mentors**, especially in male-dominated fields, is a crucial way to get support and advice.
- ❖ Visit the **MENTOR ZONE!**



Pixabay



Conclusions

We've covered the essential steps of starting a STEM-based business: from identifying opportunities to creating a business plan and pitching your idea. Your next step is to take action – refine your plan, seek feedback, and continue building. The entrepreneurial journey is ongoing, so stay connected, keep learning, and most importantly, keep going!

Additional Resources



Venture Capital Funds & Entrepreneurial Support

- **[Female Founders Fund](#)**
 - A venture capital fund that invests in early-stage female-led startups. The platform offers financial backing, resources, and a community for women entrepreneurs in various industries, including STEM.
- **[Women Who Tech](#)**
 - This organization provides resources, funding, and support for women-led tech startups. It offers pitch competitions, funding grants, and mentorship to help women scale their STEM ventures.
- **[Backstage Capital](#)**
 - A venture fund dedicated to investing in underrepresented founders, including women, people of color, and LGBTQ+ entrepreneurs. Backstage Capital has invested in several women-led STEM companies.
- **[Golden Seeds](#)**
 - An investment firm focused on empowering women entrepreneurs by providing funding and mentorship. Golden Seeds invests in female-founded companies with a strong focus on innovation and technology.
- **[Women TechEU](#)**
 - Women TechEU is a 2-year EU-funded project supporting women leading deep tech startup companies from Europe. Their mission is to create a more gender-balanced entrepreneurship ecosystem. We believe that diversity drives innovation, and we are here to provide women in deep tech with more opportunities, resources, and support to thrive.

Additional Resources



Networking & Professional Organizations

- **[Society of Women Engineers \(SWE\)](#)**
 - SWE offers extensive resources for women engineers, including networking opportunities, mentorship, conferences, scholarships, and advocacy programs.
- **[Women 2.0](#)**
 - A global network and community platform that connects women entrepreneurs in STEM and tech with investors, partners, and peers. Women 2.0 offers educational content, events, and a supportive network for female founders.
- **[Women in STEM \(WiSTEM\)](#)**
 - A resource hub and community for women in STEM fields, offering educational content, mentorship opportunities, and career development resources to support women in tech and entrepreneurship.
- **[Girls in Tech](#)**
 - A nonprofit that empowers and educates women in technology and STEM fields. Girls in Tech provides professional development, mentorship programs, and events to help women grow in their careers and start businesses.

Additional Resources



Networking & Professional Organizations

- [Women Angels for STEAM \(WA4STEAM\)](#)

- WA4STEAM is a growing international community of women angel investors seeking to expand women led entrepreneurial presence in the STEAM fields. Science, Technology, Engineering, Arts & Architecture and Mathematics. It counts with a rich network of strategic partners and other angels' groups, which reinforces our scope of support and increases our investment capability by connecting the companies in our angels' portfolios to other ecosystems.

MOOCS

- [Syllabus | Managing Innovation and Entrepreneurship | Sloan School of Management | MIT OpenCourseWare](#)
- [Entrepreneurship – from ideas to reality | OpenLearn - Open University](#)
- [First steps in innovation and entrepreneurship: Introduction | OpenLearn - Open University](#)

Additional Resources



TED Talks by Female STEM Entrepreneurs

1. Reshma Saujani: Teach Girls Bravery, Not Perfection

Reshma Saujani, founder of *Girls Who Code*, delivers a powerful talk on encouraging young women to be brave in their pursuit of STEM careers and entrepreneurship, instead of striving for perfection.

2. Diana Sierra: Empowering Women Through Design

Diana Sierra, a social entrepreneur, discusses her journey designing sustainable products for women in developing countries, focusing on innovation and entrepreneurship to address social issues.

3. Linda Liukas: A Delightful Way to Teach Kids About Computers

Linda Liukas, the founder of *Rails Girls*, talks about the importance of introducing young girls to coding and computer science in an engaging, creative way.

4. Emily Pilloton: Teaching Design for Change

Emily Pilloton talks about using design and technology to empower girls to solve problems in their communities and take charge of their future through entrepreneurship.



References



Cardella, G. M., Hernández-Sánchez, B. R., & Sánchez-García, J. C. (2020). Women entrepreneurship: A systematic review to outline the boundaries of scientific literature. *Frontiers in psychology, 11*, 1557.

Elliott, C., Mavriplis, C., & Anis, H. (2020). An entrepreneurship education and peer mentoring program for women in STEM: mentors' experiences and perceptions of entrepreneurial self-efficacy and intent. *International Entrepreneurship and Management Journal, 16*(1), 43-67.

Gaweł, A., & KRSTIĆ, M. (2021). Gender gaps in entrepreneurship and education levels from the perspective of clusters of European countries. *Journal of Developmental Entrepreneurship, 26*(04), 2150024.

Kuschel, K., Ettl, K., Díaz-García, C., & Alsos, G. A. (2020). Stemming the gender gap in STEM entrepreneurship—insights into women's entrepreneurship in science, technology, engineering and mathematics. *International Entrepreneurship and Management Journal, 16*(1), 1-15.

Neumeyer, X., Santos, S. C., & Morris, M. H. (2019). Who is left out: exploring social boundaries in entrepreneurial ecosystems. *The Journal of Technology Transfer, 44*, 462-484.

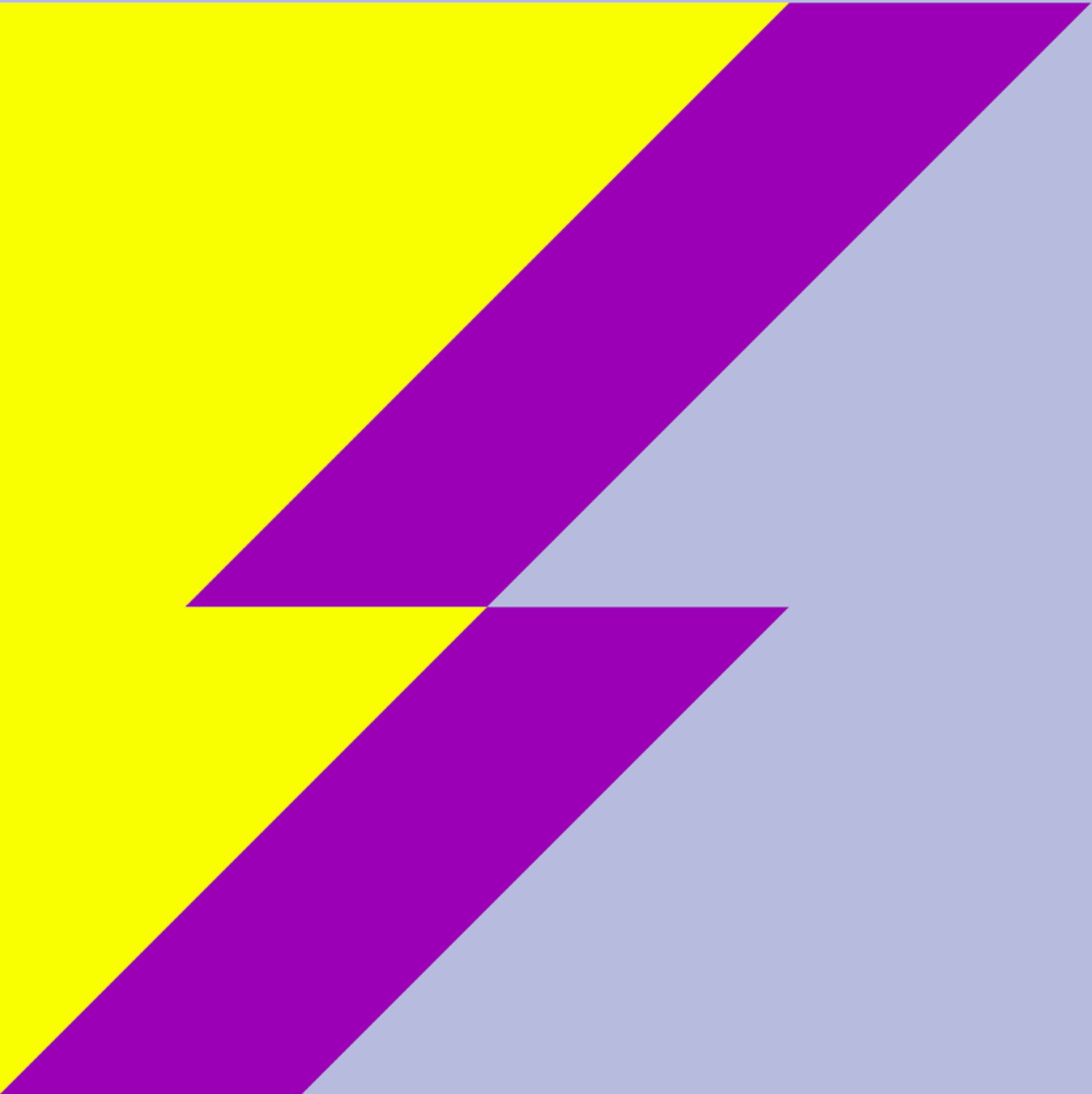
Poggesi, S., Mari, M., De Vita, L., & Foss, L. (2020). Women entrepreneurship in STEM fields: literature review and future research avenues. *International Entrepreneurship and Management Journal, 16*, 17-41.

Shahin, M., Ilic, O., Gonsalvez, C., & Whittle, J. (2021). The impact of a STEM-based entrepreneurship program on the entrepreneurial intention of secondary school female students. *International Entrepreneurship and Management Journal, 17*(4), 1867-1898.

Sharma, L. (2022). Assessing the “entrepreneurship as emancipation” perspective among women in STEM. *Management Decision, 60*(6), 1585-1605.

Treanor, L. (2022). Gender, STEM women and entrepreneurship: a review and future research directions. *International Journal of Gender and Entrepreneurship, 14*(4), 499-520.





FEMSTEM