



**THEME ALLOCATED: Engineering and Career Management**

**TITLE OF THE WEBQUEST: Making it or breaking it; or simply engineering it!**

**INTRODUCTION**

“One thing I always tell young girls: Never let anybody tell you you can’t do it. Growing up, they’d look at me like, ‘Really?’ Even when I did my college visit, I had someone tell me most people change their minds after the first year. I never gave up. Even when I was having teachers tell me, ‘Just take a break from math, you can take this class next year,’ I said, ‘No, I’m going to take it now.’ I kept pushing for it.”

**Michelle Haupt, Operations Engineer at NASA**

Engineering is one of the fields where women are still gravely underrepresented ([Eurostat, 2021](#)). Although the figure of female scientists and engineers has been increased by around 250.000 women from 2019 to 2020, various sociocultural practices have for eons limited and undermined the prospects available to female engineers, the matters they could address and explore in their works, and the networks they could use to reach out to stakeholders. Nevertheless, this did not halt women from fighting for the right to engineer and follow their passions!

Just picture Beulah Louise Henry, Lillian Gilbreth, Jean Bartik, Radia Perlman, Marissa Mayer and Kimberly Bryant. These and many, many more women have contributed significantly to engineering, creating vital innovations for our societies today. Though many of the restrictions of the past across the world have now been challenged and lifted, contemporary women engineers still face significant impediments and difficulties in successfully managing their careers.

One major hurdle to the success of the longevity of a career in engineering is the lack of curated training for effective career management. It is not enough to rely on talent alone. Engineers, especially underrepresented and marginalised engineers such as women, need to hone their skills through careful brand development, marketing, communications and





building a strong foundation from where to grow. Questions that should be considered when managing a career are the following:

- I have a job now, but how can I keep my job?
- How can I remain relevant within this industry/field?
- When new staff come to the marketplace with better /more current skills than I have, what do I need to do?
- How can I future-proof my career position? How can I progress? How can I sustain the longevity of my current job?

By learning about and applying relevant career management skills, women pursuing engineering can be confident in accomplishing their aspirations. Breaking gender stereotypes can help YOU to sustain the career of YOUR dreams and have the skills to do so without fear!

**How changing attitudes are closing the gender gap in engineering:**

<https://www.theguardian.com/careers/2019/jun/26/how-changing-attitudes-are-closing-the-gender-gap-in-engineering>

## TASKS

Are you currently debating how to manage your career in the Engineering sector and wandering if you should changing field? Before making a decision, it is important to understand your goals for your current career, especially when it comes to assessing your abilities, desires, and career management skills in relation to your preferred career path. These can be measured through a Career Management Tool, such as a Career Model Canvas. This will help you to evaluate and decide whether continuing to pursue an engineering career is for you.

This WebQuest will outline a series of steps to guide your evaluation of an engineering career in relation to your own competences and goals. These competencies include:

- **Competences of the Self** – the measure of your worth and how this can contribute and/or add to a company, organisation, or society.



- **Competences of Strength** – taking on or building upon existing abilities and strength in relation to work and education.
- **Horizons Competences** – thinking creatively about potential career prospects by (re-)imagining, planning and acting upon career goals.
- **Network Competences** – developing important relationships, connections and networks that can provide support, advice or opportunities.

(Skills Development Scotland, 2012)

Thus, the first step to beginning that journey towards your dream career is to start by assessing your goals. This WebQuest will introduce the various elements of career management and suggestions for setting up achievable goals. Sounds good? Let's get started!

## PROCESS

### Step 1: Engineering Theory

First of all, what about an engineering career piques your interest? Are you motivated by the skills you want to bring to the table, the job description, the day-to-day activities that may arise from your position? Before anything else, it is important, however, when approaching your Career Management Plan to take into consideration the opportunities this industry offers you, in relation to your role and its various responsibilities.

Below, you will find various links related to **careers** withing **the field of engineering**.

**14 types of Engineering careers to explore?** <https://www.indeed.com/career-advice/finding-a-job/types-of-engineering-careers#:~:text=Below%20are%2014%20common%20types%20of%20engineering%20careers,Civil%20engineer.%20Mechanical%20engineer.%20Petroleum%20engineer.%20Computer%20engineer>

**Engineering careers:** <https://www.thebalancecareers.com/engineering-careers-526011>

**What Engineering Major Should I Choose?:**

<https://www.youtube.com/watch?v=Rlc2T177bkw>





**Engineering in the 21st Century- 3 Most Essential Basics to Remember:**

<https://engineeringmanagementinstitute.org/engineering-in-the-21st-century/>

**Why Women Shouldn't be Engineers:** <https://www.youtube.com/watch?v=scACUi8waGQ>

**Top 10 Most Powerful Women in the Field of Engineering:**

<https://www.sciencetimes.com/articles/24986/20200309/top-10-powerful-women-field-engineering.htm>

For more information on **the engineering sector in Cyprus**, click on the following links:

**Engineering jobs in Cyprus:** <https://www.carierista.com/en/jobs/search/any/engineering-jobs>

**Technical Chamber of Cyprus (ETEK)** (the umbrella organisation for all Cypriot Engineers):

<https://www.eamc-engs.org/Members/etek/>

<https://www.etek.org.cy/>

**Step 2: The Value of your Self-Worth**

Recognizing your self-worth and understanding what you can offer in a specific career role is essential in contemplating your new career plan. Your self-worth can include your qualifications, experience, skills, knowledge etc.

For further information on the requirements of the **engineering industry**, consider the links below:

**Why Do So Many Women Who Study Engineering Leave the Field?:**

<https://hbr.org/2016/08/why-do-so-many-women-who-study-engineering-leave-the-field>

**10 Reasons Why We Need More Female Engineers:**

<https://www.femalefirst.co.uk/lifestyle/why-we-need-more-female-engineers-1113792.html>





**How to become an expert as an Engineer:** <https://www.engineering.com/story/how-to-become-an-expert-as-an-engineer>

**Inspiring the next generation of female engineers:**

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

Another advantage of understanding your self-worth, is that it will provide you with the necessary motivation when beginning a new career or when managing your existing one. This motivation will help develop your self-exploration in terms of your career and provide you with the courage and belief in yourself necessary for planning your career.

For more information in **understanding and appreciating your worth**, click on the following links:

**Self-assessment career planning:** <https://www.hsph.harvard.edu/career-services/self-assessment/>

**How To Manage Your Career Like A Business:**

<https://www.forbes.com/sites/carolinecastrillon/2020/01/23/how-to-manage-your-career-like-a-business/?sh=2f0094846381>

**What is Self-Worth and How Do We Increase it?** <https://positivepsychology.com/self-worth/>

**Self-worth in the workforce:** <https://au.indeed.com/career-advice/career-development/self-worth>

Being aware of your profile and your strengths is key to completing your career management plan. This will allow you to specify what skills you can bring to the table, need, and can develop to follow your dream career.

Identifying your strengths, abilities and competences are a great first step in planning your Career Model Canvas. Being an organized and structured employee plays a formative role on the whole employee body. Studies have shown that organized employees are factors in greater job performance, productivity, employee engagement and overall work satisfaction and fulfilment.





For more information on how you can be more organized at work and in charge of your career management, click on the following links:

**How to Effectively Manage Your Own Career:** <https://www.stlouisfed.org/open-vault/2018/november/manage-your-own-career>

**14 Tips to Effectively Manage Your Career:** <https://goalsandachievements.com/14-tips-to-effectively-manage-your-career/>

**Career Development Training and Resources:** <https://cedia.net/resources/job-seekers/career-development-tools>

**Career management process:** <https://www.youtube.com/watch?v=92eihrdf8Z0>

**How (and Why) to Build a Sustainable Career:**  
<https://www.flexjobs.com/blog/post/build-a-sustainable-career/#:~:text=At%20its%20most%20basic%2C%20a,of%20your%20skills%20and%20experience.>

The next step is to build a mind map of good practices that you can employ to successfully manage your career in Engineering better. Mind maps can be a great visual tool to organise your ideas on paper.

For more information on **how to write effective mind-maps for your career management**, use the following links:

**Online Mind map:** <https://www.mindmup.com/>

**How to Brainstorm with Mind Maps:** <https://www.mindmaps.com/how-to-brainstorm-with-mind-maps/>

**What's on your Career Mind Map?:** <https://www.cultivatae.com/mind-map-career/>

### **Step 3: Why me?**

Up until now, we have discussed the value of becoming self-aware of your strengths and capabilities for the execution of your duties in the workplace. Now, it is time to turn to your strengths and skills that you will need working in the Engineering sector, which is





integral in managing your career. Being organized is the foundation to overcoming any barriers that may arise in your professional life.

Facing challenges with the appropriate skill set can help you to be more willing to learn from your mistakes and failures. The following table will assist you in identifying these skills. We recommend you copy the following table and fill it in. Use the scale 1-10 to rate each of the competency, 1 being the lowest and 10 the highest where necessary.

<b>Skill/ Competency</b>	<b>Importance to the role</b>	<b>Skill Strength</b>	<b>Strategy to upscale skill</b>	<b>Strategies implemented? (complete at a later stage)</b>
Critical thinking				
Problem Solving				
Interpersonal Skills				
Analytical Skills				
Quantitative reasoning				
Time management				
Teamwork				
Creativity				
Communication				
Attention to Detail				
Leadership				
Educational Commitment				





Entrepreneurial skills				
Working under pressure				

When managing your career, be prepared to:

- 1) Set realistic, reasonable and attainable objectives. Setting unattainable goals will lead to frustration, de-motivation and possible failure. Instead, opt for smaller achievable goals that will ultimately lead to the ultimate objective.
- 2) Ensure your objectives are quantifiable. You can do this by setting deadlines, for instance, so that you have a point of measure.
- 3) Understand your goals may require a flexible approach. This will include adapting to new circumstances, changing the pace as appropriate, and being in tune with the needs of the situation.

#### **Step 4: Networks and Networking**

Another important element to take into consideration in your Career Management Plan is how to build your network. Networking is essential in career management as it will help ensure you will get the support to rise and develop in the sector. Networks are created by building contacts and relationships with people, organisations and establishments within and around the industry.

For **networks** of careers in the **engineering industry**, click on the following links:

**European Federation of National Engineering Associations:** <https://feani.org/>

**Technical Chamber of Cyprus (ETEK):** <https://www.etek.org.cy/>

**Cyprus Association of Civil Engineers:** <https://www.spolmik.org/>

**Cyprus Mechanical Engineers Association:** <https://feani.org/>

[http://www.sfmeca.fr/comes/ICOMES\\_CYPRUS.htm](http://www.sfmeca.fr/comes/ICOMES_CYPRUS.htm)







For **support networks as a woman in engineering**, click on the following links:

**Supporting women in Engineering:** <https://www.smiths.com/careers/supporting-women-in-engineering>

**How to Support Women in Your Workplace:**

<https://engineeringmanagementinstitute.org/support-women-workplace/>

**Networking tips for female Engineers:** [https://www.youtube.com/watch?v=J3Vp-M\\_YrVY](https://www.youtube.com/watch?v=J3Vp-M_YrVY)

### **Step 5: What lies in the future?**

Managing your career by creating a 5-year plan will provide you with the outline for your Career Model Canvas. Making what is called *Horizons* for your future career is a great method to recognise what you want to achieve, while also setting you up with motivation to actually take the steps to achieve your goals.

For more information on the **value of setting motivational horizons for your career plan**, use the following links:

**Planning for your horizons:** <https://www.managementstudyguide.com/benefits-of-career-development-system.htm>

**Motivation for job searching:** <https://www.forbes.com/sites/jackkelly/2018/05/11/8-smart-ways-to-successfully-motivate-yourself-to-start-your-job-search/?sh=76332144d07c>

**Advancing your career:** <https://www.indeed.com/career-advice/career-development/how-to-develop-your-skill-set>

For more information on the **intricate details of job horizons within the engineering industry**, use the following links:

**Salary in Mechanical Engineering in Cyprus:**

<https://www.paylab.com/cy/salaryinfo/mechanical-engineering#:~:text=The%20salary%20range%20for%20people,actual%20maximum%20salary%20is%20higher>

**Salaries for Engineers in Europe:** <https://www.todaytip.net/the-best-salaries-for-engineers-in-europe/>





Hooray! You are now ready to create your 5-year-plan for managing your current career. It is time to create a rough outline of your 5-year plan and what you intend to achieve to sustain your ongoing career in Engineering.

### Step 6: Time for Action: *Career Model Canvas*

We have now celebrated our self-worth, identified our strengths and compared them to the skills necessary in an engineering career and have even built up our networks and horizons in reference to this current path that you are exploring. Our 5-year plan is sitting beside us waiting to be applied. We are more than ready to jump into completing our Career Model Canvas. This tool will play a key in planning your career through a practical step-by-step plan of action.

Using the example below, you can create your own Career Model Canvas by filling out each section with the information you have collected in the previous steps of this WebQuest. You can use this resource to help kickstart your career path!

In your own Career Model Canvas you will consider:



## CREATE YOUR OWN CAREER MODEL CANVAS

CAREER OR JOB TITLE:

<b>Key Partners (Networks)</b>  <i>Include an overview of networks in your region, nationally and across Europe where you can access advice on this potential career.</i>	<b>Key Attributes (Self)</b>  <i>List here the key personal attributes that you have, that are particularly useful for your new career. Describe who you are and what you can bring to this role.</i>	<b>Value Proposition (Strengths)</b>  <i>List your key strengths, highlighting the skills and experiences that you can bring to this new career. Try to answer the question: 'What sets me apart from other candidates in this role?'</i>	<b>Soft Skills (Strengths)</b>  <i>List here the soft skills (communication, teamwork, collaboration, etc.) that you have and identify how they can be used in this new career.</i>
<b>Key Values (Self)</b>  <i>List here what is important to you in a career, and in life. List your intrinsic and extrinsic motivations, and state what your personal goals are for this new career.</i>		<b>Transferrable Skills (Strengths)</b>  <i>List here the main transferrable skills that you have from other experiences and life roles. Include an example of how these skills can be applied in your new career.</i>	
<b>Revenue (Horizons)</b>  <i>Research and summarise the salary potential of this role and estimate the opportunities for advancement in this sector for your own career.</i>		<b>Growth Potential (Horizons)</b>  <i>Research and estimate the potential growth in this sector in your country, across Europe and globally.</i>	

Click on the following link to **develop and complete your personal Career Model Canvas**:

**Your own Career Model Canvas:** <https://careerdesigncanvas.ca/>



## EVALUATION

Upon the completion of this WebQuest, you will have achieved the following learning outcomes:

Engine	Knowledge	Skills	Attitude
ering	<ul style="list-style-type: none"> <li>• A factual and empirical understanding of potential career pathways in the Engineering sector.</li> <li>• Factual knowledge of local, national, and pan-European career options in the Engineering sector.</li> <li>• Factual knowledge of local, national, and pan-EU programmes for women in the Engineering sector.</li> <li>• Factual knowledge of personal attributes and skills required for a successful career in the Engineering sector.</li> </ul>	<ul style="list-style-type: none"> <li>• Being able to recognise and discuss career options in the Engineering sector.</li> <li>• Being able to discern personal character qualities in relation to careers in the Engineering sector.</li> <li>• Being able to evaluate personal skill limitations for a successful career in Engineering.</li> <li>• Being able to draw an effective education and career plan for success in the Engineering sector.</li> <li>• Being able to research available career options.</li> </ul>	<ul style="list-style-type: none"> <li>• Openness to critically analyse one's capacity to sustain a career in the Engineering sector.</li> <li>• Evaluation of the vital role women hold in the Engineering sector.</li> <li>• Eagerness to research career options in the Engineering sector.</li> <li>• Willingness to discuss what has been gathered from other female professionals in the sector's network.</li> <li>• Willingness to engage in female networks in the Engineering sector.</li> </ul>



		<ul style="list-style-type: none"><li>• Being able to research successful female role models in the Engineering sector.</li><li>• Being ready for challenges in order to develop career management skills when pursuing a career in the Engineering sector.</li></ul>	<ul style="list-style-type: none"><li>• Adaptability to identify skills and characteristics necessary to find success in an Engineering career.</li></ul>
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As a self-assessment for this WebQuest, complete the following questions below:

1. It is mostly women who have made significant contributions within the engineering sector. True or False?

Answer: False

2. Which of the following options are the four components necessary for building your career in the arts?

- a) Achievement, Money, Impulse, Purpose
- b) Bribing, Strength, Horizons, Networking
- c) Self, Strength, Horizons, Networking
- d) Achievement, Affiliation, Autonomy, Purpose

Answer: (c)

3. Which of these is not an essential basic for engineering in the 21<sup>st</sup> century?

- a) Further skills development
- b) Entrepreneurial skills
- c) Completion of a Master's degree
- d) Digital competences

Answer: (b)





4. Which of the following is NOT a career in Engineering?

- a) Environmental engineer
- b) Mechanical engineer
- c) Food engineer
- d) Software engineer

Answer: (d)

5. Which of the following are NOT used to support female engineers in the workplace?

- a) Reducing their work hours
- b) Pointing them to a mentor
- c) Recognizing their technical expertise
- d) Being a buffer to harassment

Answer: (a)

## CONCLUSION

Congratulations! Managing your profession better is the first step to ensuring the sustainability of your career. By completing your own Career Management Tool will help you to set out achievable goals! Additionally, planning and managing your career offers you the space to self-reflect on the decisions, (educationally, professionally, and personally) that you need to make in order to begin a STEAM career.

This WebQuest has assisted you in researching, analysing, and assessing your suitability for a career in engineering and the specific steps you will need to take in order to fulfil this goal. Following a career in engineering will provide you with a rich, exciting, and interesting career that will help to give form to your community and the world at large.

Careers in the engineering sector offer many benefits such as:

- unique challenges;
- meaningful and substantial work;
- self-development;
- innovation;
- a considerable income.





As a woman in this sector, you have the power to combat male stereotypes that exist within the arts sector and lead the way for other women interested in STEAM careers too! So, what's stopping you? Let's do this!



“At its heart, engineering is about using science to find creative, practical solutions. It is a noble profession.”

Queen Elizabeth II

