



SWENextEd Newsletter - December 2018

Welcome to the December issue of SWENextEd. In this issue, we highlight **nuclear engineering** and reflect on the successes of female engineers in 2018. Nuclear engineers help generate renewable power and research medical and industrial applications for radioactive material. Read more to learn about famous female scientists that shaped the field of nuclear science and engineering. We also provide details on creative activities you can incorporate into your lesson plans to get your students interested in nuclear engineering! Get in on the conversation and **join our SWENextEd Facebook page** to participate in engaging discussions and receive tips for the classroom, resources for educators, and more!



Radioactive Chocolate

Teach your students about radioactive decay using a tasty treat! **The Science House**, an organization formed at North Carolina State University to empower scientific literacy in K-12 students and educators, developed an activity called **Radioactive Decay of Cadium**. In this activity, students learn concepts of half life, radioactive decay, and exponential graphs.



Looking for more lesson plans to introduce nuclear engineering? Check out **Navigating Nuclear** and **Nuclear Science Week** free lesson plans!



The Mother of Nuclear Power

*You have probably heard about **Marie Curie**, the Mother of Nuclear Science, but you might not have heard about **Lise Meitner**, the Mother of Nuclear Power.*

Lise Meitner was born in 1878 to a wealthy and cultured family in Vienna, Austria. As a child, she displayed an interest in mathematics, and her father hired private tutors to further her studies. Her formal schooling ended at age 14, as females were not allowed to attend grammar school to prepare for college. Despite the setback, she persisted and, after obtaining a teaching qualification in French, Lise began a physics degree at the University of Vienna in 1901. She passed her doctoral oral exam *summa cum laude* and graduated with a Ph.D. in physics in 1906, making her the second woman to obtain a higher education degree in Austria.



In 1907, Lisa moved to Berlin, where she worked with Otto Hahn, another enthusiastic young chemist, in a small carpenter's workshop, researching and discovering new radioisotopes. Their experiments provided evidence for **nuclear fission**, the process of one atom splitting into two. Hahn was awarded the Nobel Prize for Chemistry in 1944 for the research into fission and controversially, Meitner's contributions were not acknowledged.

Meitner died in 1960 and 32 years after her death, her contributions to the scientific community were recognized by naming element 109, the heaviest element then known, Meitnerium (Mt) in her honor.

Since Meitner, many other women have been inspired to enter the field of nuclear science. Read about the discoveries of **Darleane Hoffman**, the Nobel Prize winning contributions of **Maria Goeppert Mayer**, and **Sarah Kowaleski's** experience being a woman and a mother while managing a team at a nuclear facility.



How to Create Inclusive Teams

Research, **co-authored by an MIT sociologist**, has shown that group dynamics of teamwork can make women feel marginalized. But how can you as a teacher make a difference? **University of Michigan's Center for Research on Learning and Teaching** suggests that it's important to start by designing good team assignments, constructing your teams carefully, teach teamwork skills, and finish by assessing student teams. You can read more about this practical model for setting up an inclusive teamwork environment **here**. Want to take an even deeper dive into strategies for inclusion in the engineering classroom? Take a look at UK Royal Academy of Engineering's framework on **Designing inclusion into engineering education**.



2018: A Year of Firsts



As the year 2018 comes to an end, we can reflect on the amazing successes that our female engineers have had. [Dr. Ciara Sivels](#) became the first African American female graduate of the [Nuclear Engineering in Radiological Sciences](#) program at the University of Michigan. Similarly, [Dr. Mareena Robinson Snowden](#) became the first black woman to earn a PhD in nuclear engineering at MIT this year. [Holly Ridings](#) was the first female to be promoted to NASA chief flight director. [Olga Garcia](#) was the second female and first Latino to join the New Jersey Society of Municipal Engineers Board. Interested in learning more about successes of other amazing female engineers? Check out Business Insider's list of the [39 most powerful female engineers of 2018](#). We look forward to seeing the amazing successes of female engineers in 2019!

Your Students Can Apply for the 2019 SWENext Community Awards to attend the SWENext DesignLab!



SWENext DesignLab is an outreach event taking place at three WE Local conferences in 2019 - Baltimore, St. Louis and Denver.

The SWENext DesignLab will feature educational sessions for students, parents and educators including SWENext 101, bias literacy training and role models matter training.

The afternoon will feature presentations from teams competing in the DesignLab Community Engagement Challenge. An award ceremony will follow for the Community Engagement Challenge, the Community Award recognition and the Community Innovator Award winners.

The SWENext Community Awards recognizes girls in grades 6-12 who are actively interested in STEM and doing something in their community about it (e.g. raising awareness, mentoring students, participating in SWENext, etc.). [Application Link.](#)

Application Deadlines:

Baltimore: Application Due January 19, 2019

St. Louis: Application Due: February 9, 2019

Denver: Application Due: February 23, 2019

Did we forget something?



Let us know how we can better serve the K-12 Educator community by [participating in our survey](#). Do you feel like sharing your story? Filling out this survey may give you the opportunity to be featured in our newsletter and on SWE's [All Together](#) Blog. You will also be entered to win copies of the [SWE Comic Book](#) for your classroom!



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