

Engineering-Girls Framework (Resource Exchange)

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Kim Wilkens is the founder of Tech-Girls and founding board member of Charlottesville Women in Tech, a non-profit that provides human connections and resources for women and girls interested in or associated with technology. Kim has been at the forefront of K-12 computer science education at the local, state, national, and global levels and has over twenty years of experience integrating computer science in both school and out-of-school time. She completed her EdD in 2023 with a focus on creating equitable computer science experiences. Kim is currently the director of the Global Center for Equitable Computer Science Education in the School of Education and Human Development at the University of Virginia.

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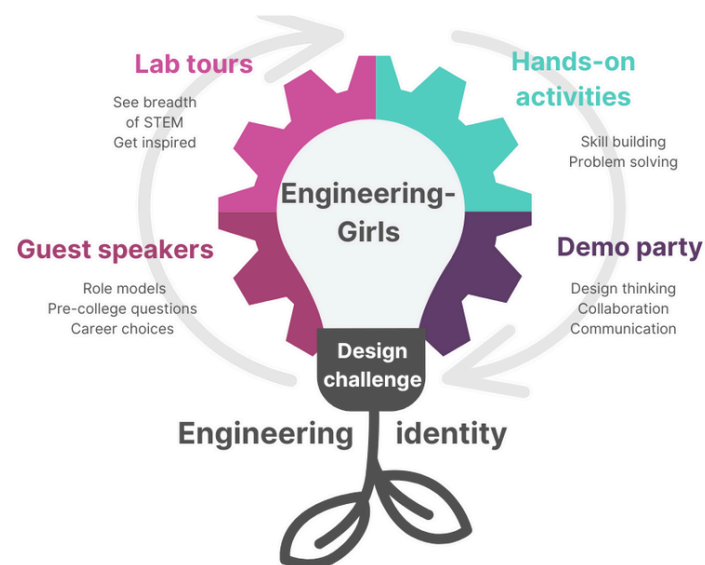
He is the founding Managing Director of the Wallace H. Coulter Center for Translational Research. And serves as Assistant Dean for Innovation & Entrepreneurship in the School of Engineering & Applied Science at the University of Virginia.

Engineering-Girls Framework (Resource Exchange)

Engineering-Girls is a pre-college initiative aimed at increasing gender diversity in STEM by engaging high school students in a free, week-long summer program focused on engineering foundations. Built on over a decade of experience, our framework offers a replicable model that integrates research-backed strategies—including hands-on activities, real-world problem-solving, design thinking, and mentorship by role models who are both technically skilled and pedagogically informed—to boost female interest and persistence in engineering.

Program Objectives

- **Bridge the Gender Gap in STEM:** Promote gender equity in engineering and computer science by offering hands-on activities, mentorship, and diverse role models.
- **Real-World Problem Solving:** Engage students in meaningful projects that apply engineering concepts to address real-world challenges.
- **Build Confidence and Community:** Create a supportive space where students feel empowered, capable, and connected to peers and mentors.
- **Foster STEM Pathways:** Increase awareness of STEM career opportunities and post-secondary education pathways through lab tours, student panels, and networking opportunities.



Program Highlights

- **Engineering foundations:** Mornings begin with sessions to build community and foster engineering identity.
- **Engineering challenges:** The first two days focus on skill-building, problem-solving, and collaboration.
 - **BME track examples:** Accessible video game controller design, prototyping with robotics kits, block-based coding, and 3D CAD.
 - **CEE track examples:** Bridge-building, recyclable scavenger hunt, and insulated house challenges.
- **Lab tours:** Participants explore inspiring STEM labs during Tuesday and Wednesday tours.
- **Guest speakers:** Lunchtime panels feature university students and professionals discussing college life and STEM careers.
- **Design challenge:** Introduced Wednesday, the challenge follows the design thinking process—empathize, define, ideate, prototype, and share.
 - Example challenge: Solve a problem tied to daily life for a young person with diabetes.
- **Demo party:** On the final day, participants present their solutions and prototypes to family, friends, and community members.



Engineering-Girls Program Timeline



January: Foundation Building

- Set up biweekly meetings for planning team to coordinate and assign tasks.
- Finalize tracks that will be offered during the program.
- Identify the dates for the program.

February: Initial Planning

- Determine the program budget and allocate funds to each track.
- Set the maximum number of participants per track.
- Design the application form and process.
- Update the program website and social media with current details.

March: Recruitment and Preparation

- Hire students for each track to join the planning and assist during the program.
- Begin publicizing and collecting applications.
- Develop a tracking system for application reviews and updates.

April: Participant Selection and Agenda Development

- Review applications and facilitate participant selection for "blind" review for each track.
- Send invitation emails to participants and guardians with required participation forms.
- Draft the overall program schedule.
- Begin outreach to secure guest speakers, lab demonstrations, and special events.

May: Detailed Preparations

- Submit background checks for instructors and student workers.
- Identify and reserve all necessary spaces.
- Track-specific curriculum development.

June: Logistics and Media Coordination

- Plan demo party event to showcase participants' work.
- Schedule lab tours.
- Arrange media coverage and program documentation.
- Order program-branded t-shirts.

July: Final Details

- Send final program details to participants.
- Invite guardians to demo party.
- Confirm catering for the program.
- Procure core program and track-specific materials.
- Prepare pre- and post-surveys for participants.

August: Program Execution

- Gather and prepare materials and supplies.
- Create name tags and check-in lists.
- Assign staff roles for:
 - Morning setup.
 - Afternoon cleanup and debrief.
 - Participant check-in and departures.
 - Lunch setup.
 - Track-specific coverage.



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More info: <https://engineering.virginia.edu/about-our-school/community-outreach/engineering-girlsuva>