

William and Mary 2024 iGEM Application

(an on-campus spring, summer and fall research opportunity in synthetic biology for undergraduates)

Please send the following to igem@wm.edu by **11:59 PM, January 3rd, 2024:**

- A completed PDF copy of this form titled **iGEM2024_FirstName_LastName** (e.g. iGEM2024_John_Doe.pdf)
- A PDF of your unofficial transcript, which can be obtained for free from Banner. File name should be as listed above but with the word transcript appended. (e.g. iGEM2024_Jane_Doe_Transcript.pdf)
- Any additional coding/graphic design/research samples (see requirements below)

*iGEM (international Genetically Engineered Machine) is an annual synthetic biology competition focused on solving real world problems through the use of engineered genetic systems. Previous competitions have hosted over 400 student-driven teams from almost 50 countries from around the world; **over 3,500 synthetic biologists attended the 2023 Grand Jamboree held in Paris, France**, including our William and Mary iGEM team.*

*William and Mary has a strong track record at iGEM. In 2015, we won the Undergraduate Grand Prize as well as Best Education and Public Engagement, and in 2016 we placed in the top three undergraduate teams for Best Foundational Advance Project. In 2017, we won First Runner-Up, Best Measurement, and Best Mathematical Model. In 2020, we won Best Therapeutics Project and Best Mathematical Model. In 2021, we were nominated for Best Foundational Advance Project. In 2022, we won Best Software Project and were nominated for Best Presentation and Best Mathematical Modeling. **This past year, in 2023, we won Best Measurement, were nominated for Best Mathematical Model, Best Foundational Advance, and Best Presentation, and were named a top 10 undergraduate team overall.** Over the last 9 years, we consistently medaled silver or gold.*

iGEM begins in the spring semester, runs during the summer session, and continues through the fall semester. It culminates in an international event known as the Giant Jamboree, during which teams from around the world gather with members of the synthetic biology community to present their research and get the chance to be recognized during an awards ceremony (official dates for the Giant Jamboree in 2024 are to be determined). **As such, iGEM is a significant time commitment.** During the season, a 3-credit COLL 300 course (BIOL 301-Engineering Life), a 1-credit biology journal club, and up to 3 Research in Synthetic Biology research credits are available. **Participating in iGEM satisfies the COLL 300 requirement.** During the summer, a **research stipend** along with free on-campus housing is provided.

Please note:

More information can be found at http://bit.ly/wm_igem

Members of the William and Mary iGEM team demonstrate creative scientific thinking, a highly motivated work ethic, and a commitment to working collectively as a group.

A passion for research and solving important global problems is essential! Show us your **passion** in this application!

We are accepting applications for the positions of:

- Wetlab Team Members

- Wetlab team members carry out scientific procedures including but not limited to bacterial inoculation, DNA extraction and amplification, gel electrophoresis, and plasmid/genome integration (to bioengineer cells). Members also perform a range of experiments relevant to the project and collect and analyze data. Additionally, wetlab members are expected to conduct dry lab research to shape the direction of the project, develop protocols, and ascertain other relevant information. No research experience required - relevant skills will be taught as needed!

- Math Team Members

- Math team members mathematically and computationally model experimental data with a focus on its biological application. Ordinary Differential Equations, Genome-Scale Metabolic Models, and statistical analysis including regressions are common. Math team members may create software relevant to the project. You should be familiar with mathematical/computation applications, but you do not need to be a Math major!

Please contact igem@wm.edu with any questions.

Please be sure to attach, in addition to this completed form in which you address the questions below, a PDF of your unofficial transcript from William & Mary. The unofficial version is available for free from Banner.

1. Please tell us your name, social class, intended major(s)/minor, and email address. List any awards or grants you have received (ex: Monroe Scholar).
2. Please specify whether you are applying for the math team or wetlab team, keeping in mind that this is not a definitive distinction. Synthetic biology is an interdisciplinary field, and iGEM team members are encouraged to participate in all aspects of the project: wetlab, math, outreach, and wiki development.
3. While it is not a requirement, please concisely list any relevant research experiences below, including date(s), duties performed, and any awards/publications/presentations. (Many members of previous teams joined with no prior research experience!)
4. iGEM is a significant time commitment of approximately 5 hours per week during the spring semester, at least 40 hours per week during the 10-week summer session, and at least 8 hours per week during the fall semester (though often a lot more the week of wiki-freeze). Please note that you will be enrolled in a 1-credit course in the spring and have the opportunity to register for a 3-credit COLL 300 course, as well as receive up to 3 research credits for your work during the fall. Please explain how you plan to manage your time as a member of the iGEM team with your course load and extracurricular activities.
5. Please describe using approximately 500 words (about 1 page single-spaced), why you are excited to be part of W&M's iGEM team for the 2024 season. You may wish to discuss why you selected iGEM over other research opportunities, and why the field of synthetic biology specifically interests you. Please reference specific papers, projects, or techniques in the field that excite or inspire you. Additionally, you may wish to discuss what you personally would bring to the 2024 team, both in terms of research skills as well as character and ability to work well as part of a team.

6. (Optional) Integrated human practices (IHP), as well as public outreach & education, are key components of iGEM which are judged within the competition. IHP involves identifying individuals who may potentially benefit from or be affected by your project, known as “stakeholders,” and integrating their feedback into project design and implementation. Public outreach & education projects involve increasing synthetic biology visibility and engaging communities, especially underserved and underrepresented communities, within STEM. Please describe relevant experience and skills. Additionally, please pitch a potential STEM outreach campaign to educate a specific subset of the public (middle school students, retirement home residents, etc.) on synthetic biology. For example, in 2021, our team visited several retirement homes to spread awareness about the field of synthetic biology and communicate our project on orthogonality. In 2022, we developed an educational synthetic biology board game to introduce middle and high school students to relevant concepts in an engaging way. In 2023, we developed a comprehensive soil synthetic biology guidebook for researchers and also authored a policy recommendation.

7. (Optional) Please describe any website building, coding (including HTML and JAVA), and graphic design experience and skills. Attaching a sample to demonstrate your skills (ex: attaching samples of your art with focus on graphic design, or attaching a screenshot of a webpage/project you coded using HTML) is evaluated favorably.

8. If there are any skills, experiences or anything else you would like to share with us, please do so below.