Erica Nicole Hall

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*Cleared for top secret information and granted access to sensitive compartmented information based on a single scope background investigation completed in August of 2024 (TS/SCI).*

* **Education**

Honors Bachelor of Science

*University of Alabama at Birmingham* **|** *Expected Graduation: April 2025 – (3.97/4.0)*

* Major: Biomedical Engineering
* Minors: Chemistry & Mechanical Engineering – Thermal Systems
* Relevant Coursework: Computational Fluid Dynamics, Heat Transfer, Thermo-fluids Systems, Combustion
* **Professional Experience**

Science and Technical Intelligence Analyst (Intern)

*Defense Intelligence Agency* **|** *May 2024 – August 2024*

* (U) Reverse engineered foreign facilities and processes associated with the development and storage of weapons of mass destruction (WMD) to contribute to 5 products.
* (U) Attended 2 site visits, one at DEVCOM CBC and served as agency lead for another at NBACC. Drafted and disseminated a report summarizing knowledge gained for a joint team with another agency.
* (U) Researched WMD processes to aid in the identification of critical capabilities and components of facilities/processes to support senior analysts in the development of facility characterizations and vulnerability assessments.

Undergraduate Researcher – Tissue Engineer

*Tissue and Organ Chip Bioengineering Laboratory at UAB* **|** *August 2022 – Present*

* Creating an in vitro human tissue chip model using microfluidics and human-induced pluripotent stem cells to investigate the correlation between *Streptococcus pneumoniae* (Spn) infection and major adverse cardiac events. Responsible for designing experiments to analyze microlesion formation in 2D and 3D tissues and optimizing Spn infection methods. Defended thesis proposal to a committee of 3 doctors with subject matter expertise.
* Used CAD and CFD to create and analyze tissue chip perfusion loops with peristaltic pumps.
* Collaborated with a team of 13 researchers to conduct and evaluate experiments, ensuring cleanliness and organization in the workspace especially in the plastic manufacturing and polymer joining areas.

Biomedical Engineering Electronics Technician (Intern)

*Huntsville Hospital* **|** *May 2022 – August 2022*

* Installed, calibrated, and repaired various biomedical devices while interacting with patients and staff to support patient treatment in a 971-bed hospital spanning over 853,000 square feet.
* Authored 17 documents describing protocols, policies, standards, maintenance, and repair of medical equipment by researching biomedical engineering and IT policies and interviewing vendors and technicians.
* Serviced a slit lamp, saving the hospital over $2,000 in one hour by corresponding with the vendor to implement an innovative fix for an essential part.
* **Academic Experience**

Senior Design Project (BME 498 and 499)

*August 2024 – May 2025*

* Creating and marketing a Class II device for transcutaneous spinal cord stimulation to treat and rehabilitate patients with spinal cord injuries following FDA regulations with a team of 6 people with varying expertise.
* This project required the innovation of liquid metal hydrogel electrodes and design and integration of a custom PCB-based circuit that allows the user to alter the waveform, intensity, and duration.
* Lead the innovation and refinement of the liquid metal hydrogel.

Birmingham Robotics Initiative (BRI)

*January 2022 – May 2024*

* Coordinated a project and presented its results at the UAB Spring 2023 Undergraduate Research Expo.
* Formulated a two-part guidebook that serves as a reference guide for BRI students to learn more about CAD, programming, and other skills as they pertain to robotics.
* Designed the entirety of the CAD manual with 8 core sections of material and collaborated with one co-project lead to develop the MATLAB programming manual.

Science and Technology Honors College (STH)

*August 2021 – Present* **|** *Teaching Assistant STH 201 – Research Approaches (Fall ’23)*

* Developed valuable skills such as scientific writing and public speaking through 34 credit hours of stem and character-building coursework.
* Served on the volunteering committee to establish projects and promote student engagement with the community.

UAB Undergraduate Research Expo

*Fall 2021*

* Analyzed the 6-page scientific paper, *Determining the Roles of the TPJ and MPFC in Theory of Mind through Analysis of Connectivity* and presented a 7-minute oral presentation with a digital poster, responding to questions from faculty and professionals.
* **Skills**

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| --- | --- |
| CAD: SolidWorks | Organization, Public Speaking, & Time Management |
| Programming: MATLAB, Python | Analysis, Editing, & Technical Writing |
| Microsoft Office: Excel, PowerPoint, Word | Attention to Detail |
| CFD: Ansys Workbench |  |

* **Campus Involvement**
* Tau Beta Pi (junior and senior years). Offices held: Vice President (junior), Treasurer (senior)
* Women’s Club Soccer (sophomore through senior years). Office held: Treasurer (senior)
* American Red Cross Club (freshman through senior years)
* AIAA (freshman through senior years)
* Language without Barriers (freshman and sophomore years)