

HENRY DRYDEN

NCAA Division II Scholar-Athlete
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EDUCATION

South Dakota School of Mines and Technology, August 2021 – May 2025 (Expected)

Metallurgical Engineering Major, GPA 3.803

- SDSMT Copper Academic Scholarship recipient (annual, renewable) (2021-2023)
- SDSMT Jane Spiece Mineral Industries scholarship recipient (2022-2023)
- SDSMT Logan Aluminum MET Scholarship recipient (2021-2022)
- SDSMT Scholar Athlete Award (2021-2022)

WORK EXPERIENCE

Precision Castparts Corporation - Airfoils Division, May 2023 – August 2023

Alloy Process Engineering Co-Op

- Executed acid trials exploring feasibility of hydrochloric acid & ultrasonic cavitation as neutralizing agent.
- Worked alongside company vendors to optimize scrap processing and throughput for cost savings.
- Coordinated and analyzed chemistry remelt samples to investigate increase in tramp elements.
- Organized and trended historical chemistry data of tramp elements.
- Developed and modified new or existing standard operating procedures.
- Tracked and analyzed the deterioration of their neutralizing acid over time.

Integra Resources – DeLamar Project Mine, May 2022 – August 2022

Engineering Intern

- Vetted and planned Geotech drilling roads as part of the company's 2022 drill program.
- Wrote standard operating procedure documents for maintenance on water treatment process equipment.
- Hosted a Geotechnical Engineering contractor on a site tour.
- Investigated water pH adjustment solutions.
- Completed the OSHA 10-hour New Miner Training course.

ACTIVITIES & COMMUNITY INVOLVEMENT

SDSMT Casting Club, Spring 2022 – Present

- Apply principles of metallurgy in a foundry setting using various materials to create art through science.
- Primary focus in investment and vacuum investment casting methods.

Hardrocker Football, Fall 2021 – Present

- Athletic scholarship award recipient for 2021, 2022, 2023 seasons.
- Starting Tight End on one of the top NCAA Division II offenses in the nation.
- Participated in annual community volunteer activities totaling over 30 hours in each of the 2021, 2022, 2023 seasons.

First Year Peer Mentor, Fall 2023 – Present

- Responsible for guiding and mentoring first year students studying Metallurgical Engineering.
- Duties: correspondence, organize group activities, resource for matters regarding success at SDSMT.

Hardrocker Ally Association, Spring 2022 – Present

- Volunteer supporter of student-run organization formed by Mines athletes and students dedicated to making South Dakota Mines more inclusive through community outreach, networking, and advocacy.

CRITICAL SKILLS

Math and Computational: Calculus, differential equations, trigonometry, algebra

Chemistry: Equilibrium reactions, Lewis structures, entropy, compound nomenclature, stoichiometry

Physics: Kinematics, energy (systems and movement), forces, electromagnetism

Laboratory: Optical microscopy, tensile testing, hardness testing, elastic modulus of materials

Software: Microsoft Office, Photoshop, Autodesk Fusion 360, DaVinci Resolve, ArcGIS Pro, Python, MATLAB

RELEVANT COURSE WORK

MET 220(L) – Mineral Processing and Recovery [Lab], Spring 2023, [Grade: A]

- Mineral processing operations including comminution, sizing, froth flotation, gravity separation, electrostatic separation, magnetic separation, and flocculation.
- Theoretical and working knowledge of post-consumer recycling and remediation of contaminant effluents.

EM 321 – Mechanics of Materials, Spring 2023, [Grade: A]

- Core engineering concepts such as stress and strain that result from axial, transverse, and torsional loads on bodies loaded within the elastic range.
- Theoretical and lab/practical work in topics such as combined stresses, shear and moment.

MET 232/231L – Properties of Materials [Lab], Spring 2022, [Grade: A]

- Foundational knowledge of materials and their applications in the engineering world.
- Emphasis on atomic structure, and mechanical, thermal, optical, electrical, and magnetic properties.

MET 320 – Metallurgical Thermodynamics, Fall 2023, [Grade: TBD]

- Principles of chemical thermodynamics and their application to metallurgical engineering processes.
- Topics: laws of thermodynamics, open and closed systems, criterion of equilibrium, heat capacities and reaction equilibrium constants.

MET 330 – Physics of Metals [Lab], Fall 2023, [Grade: TBD]

- The fundamental principles of physical metallurgy with emphasis on the mathematical description of mechanisms that control the structure of materials.
- Topics: structure of metals, x-ray diffraction, elemental theory of metals, dislocations, slip phenomena, grain boundaries, vacancies, annealing and solid solutions.

MET 332 – Thermomechanical Processing, Fall 2023, [Grade: TBD]

- The relationship between the structure and properties of materials.
- Topics: the iron-carbon system, hardenability of iron base alloys, stainless steels, cast irons, aluminum, copper and magnesium, rubber and copper polymers.

Transcripts and references available by request