

Muhammad Raffay Chaudhry

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EDUCATION

B.S., Geoscience – University of Wisconsin-Green Bay

Expected December 2026

GPA: 3.96/4.00 | Dean's List (all semesters) | St. Norbert College, 2023-2024 (GPA: 4.00/4.00)

Seismology Skill Building Workshop (SSBW) – NSF & EarthScope

June – August 2026

- 12-week workshop covering scientific computing, observational seismology, seismic data analysis, and applied Python (ObsPy)

RESEARCH EXPERIENCE

Geophysics Research Assistant – Dr. John Luczaj, UWGB

Oct 2025 - Sep 2026

- Conducted EM-31 electromagnetic surveys to map subsurface conductivity variations related to a nearby suspected municipal water-main leak
- Produced high-resolution GIS conductivity maps and spatial anomaly models that resolved conflicting utility records of the main's location
- Presented results at the AIPG National Conference; awarded Best Poster Presentation

Soils Research Assistant – Dr. Kevin Fermanich, UWGB (CSET)

Nov 2025 - Aug 2026

- Conducted soil sampling, bulk density assessment, and C/N concentration analysis using a Flash 2000 elemental analyzer to support agricultural-to-solar land conversion
- Applied GIS spatial analysis across [N] study plots to evaluate site suitability and visualize nutrient distribution
- Independently performed power analysis to evaluate whether the soil sampling design provided adequate sample size
- Collaborated with a graduate researcher on water sampling to quantify metal concentrations

Fluid Inclusion Research Assistant – Dr. John Luczaj, UWGB

Dec 2025 - Jul 2026

- Applied fluid inclusion microthermometry to characterize ore-forming fluids in Eagle Mine, Michigan
- Prepared thin sections and integrated petrographic observations with microthermometric data to constrain temperature evolution of mineralizing fluids

Hydrology Research Assistant – Dr. Matthew Dougherty, UWGB

Nov 2025 - Mar 2026

- Collected and analyzed water samples across creek, river, and lake systems to assess total phosphate distribution and nutrient transport dynamics

PROJECTS

Seismic Signal Processing & P-wave Detection – github.com/Raffaycodes/Seismic-P-wave-Detection

2026

- Built a Python/ObsPy pipeline that retrieves waveform data from FDSN web services and applies STA/LTA triggers to detect P-wave arrivals
- Validated against a real earthquake waveform recorded at station COP (Denmark) on 19 Feb 2009, bandpass filtered 0.5–8 Hz to isolate the arrival from background noise

HONORS & AWARDS

Best Poster Presentation

2026

AIPG National Conference

SEG / P.C. Havens / Seismic Exchange Scholarship

2026

Society of Exploration Geophysicists – awarded to one student per academic year

AAPG Field Camp Scholarship

2026

American Association of Petroleum Geologists – funded Hawaii Volcanology Field Camp

AIPG National Award

2025 & 2026

American Institute of Professional Geologists – awarded in consecutive years

Morgan-Macaluso Scholarship

2026

College of Science, Engineering, & Technology – University of Wisconsin-Green Bay

Awarded to one to three students yearly for academic excellence and a commitment to service mankind

Exemplary Leadership Award – St. Norbert College

2024

Organized a town hall during campus budget cuts attended by one-third of the student body; awarded to five first-year students for campus leadership

PRESENTATIONS & CONFERENCES

Chaudhry, M.R., Luczaj, J., & Warr, L. (2026). “EM-31 Geophysical Survey for Municipal Water-Main Leak Detection.” AIPG National Conference, Duluth, MN.

Chaudhry, M.R. & Warr, L. (2026). "Storm Drains as a Source of Phosphate in a Small Southeast Wisconsin Lake." Poster presented at the St. Norbert College Symposium.

Chaudhry, M.R. & Fermanich, K. (2026). "Baseline Soil Characterization of a Site Undergoing Agrivoltaic Conversion." Poster presented at the UWGB Academic Excellence Symposium.

FIELD & LAB EXPERIENCE

Volcanology Field Camp – South Dakota School of Mines & Technology, Hawaii *Scheduled Jan 2027*

- AAPG-funded intensive field course in active volcanic terrain on the Big Island of Hawaii
- Map lava flow stratigraphy, characterize pahoehoe and aa flow structures, and collect samples for petrographic analysis
- Apply GPS traverses, compass-and-clinometer mapping, and field sketching to document volcanic geology in an active rift zone

Geoscience Field Trip – University of Wisconsin-Green Bay *2026*

- Analyzed Penokean, Yavapai, and Baraboo orogenic belts through outcrop mapping and stratigraphic correlation across Precambrian terranes of Lake Superior

Mineralogy Field Trip – Northwoods of Wisconsin & Upper Peninsula, Michigan *2024*

- Documented glacial stratigraphy, Penokean orogenic structures, and igneous rock assemblages including the Wolf River Batholith

Lab Experience – University of Wisconsin-Green Bay *2024*

- Evaluation of over 1000 feet of drill core related to the composite stratigraphic column for northeastern Wisconsin
- Measurement of chloride, phosphorus, nitrate, carbon, and nitrogen concentrations via flame photometry and colorimetric techniques, alongside total and volatile suspended solids (TSS/VSS) determination

FIELD, LABORATORY, & TECHNICAL SKILLS

Computational: Python (NumPy, ObsPy, Pandas, Matplotlib), Jupyter Notebooks, SAC, GMT, Unix/Linux shell, GIS (ArcGIS Pro, QGIS)

Geophysical: STA/LTA event detection; seismic time-series analysis (filtering, component rotation, spectrograms, instrument response removal); geodetic time-series analysis; FDSN/SAGE data retrieval; EM-31 conductivity surveying; data gridding and anomaly mapping

Field & Laboratory: Geologic and volcanic mapping; drill-core logging; soil coring, water sampling, sample preparation; petrographic microscopy; fluid-inclusion microthermometry; CHNS elemental analysis (Flash 2000)

PROFESSIONAL DEVELOPMENT

MIT OCW: Intro to CS & Python (2025); Computational Thinking & Data Science *2026*

Seismic Data Processing Certification, Universiti Sains Malaysia *2025*

ESRI ArcGIS Certification *2024*

LEADERSHIP & SERVICE

Student Body President / Shared Governance Chair – UW-Green Bay SGA *Sep 2025 - Present*

- Co-authored the first AI policy framework in UW System history with the Board of Regents
- Represented 13,000 students; expanded Senate from 4 to 30 members; led a team of 40+ student leaders
- Represented 165,000+ students as the student representative on the Search and Interview Committee for the 10th President of the UW System
- Coordinated student representation across 12 UW schools as Shared Governance Chair

President – Muslim Students Association & Geology Club, UWGB *Jan 2025 - Dec 2025*

- Organized a campus-wide Ramadan iftar for 150+ attendees, raising \$1,500; developed bi-weekly programming drawing 100+ participants; revamped Geology Club's visual identity by collaborating with the Graphic Design department

Competitive Powerlifter – USA Powerlifting & Pakistan Powerlifting Federation *Feb 2023 - Dec 2025*

- Ranked 2nd in Pakistan (Junior 59 kg); USAPL nationals qualifier representing St. Norbert College