Alhareth Aley

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Education

Diploma in Mechanical Engineering Technology **Expected: Dec 2025**
NBCC (New Brunswick Community College) *Saint John, NB*

- **Relevant Coursework:** Machine Design, CAD for Mechanical Design, Strength of Materials, Manufacturing Processes

Skills

Design & CAD: SolidWorks (3D Modeling, FEA/CFD), AutoCAD (2D/3D), Siemens NX, Onshape, Autodesk Revit
Analysis & Testing: Finite Element Analysis (FEA), Computational Fluid Dynamics (CFD), ASTM, ASME, ASHRAE
Software: Microsoft Office Suite (Excel, Word, Outlook), Google Workspace, Notion (Project Management)

Certifications

First Aid CPR/AED (Level C) | *Life Start Training First Aid & Safety* **June 2024 – June 2027**

Workplace Hazardous Materials Information System (WHMIS) | *St. John Ambulance* **Issued: June 2024**

Projects

Optimized Design of Portable Air Filtration Unit | *Fundy Engineering & Consulting Ltd* **Expected: Dec 2025**

- **Developed** an optimized portable air filtration unit design in an almost a one-year contract by applying advanced CAD modeling (SolidWorks/AutoCAD) and researching technical articles for improved manufacturability and system integration
- **Executed** CFD simulations and performance analysis to reduce pressure drop and enhance particulate capture, successfully improving the unit's efficiency to **92%+** (per ASHRAE standards)
- **Redesigned** key internal components using 3D modeling and design optimization, integrating structural integrity and cost-effective production methods to support final system development
- **Delivered** comprehensive engineering documentation and technical recommendations to the client and advisor, facilitating smooth project sign-off and next-stage development

Design & Analysis of Auto Engine Components | *NBCC Technology Department* **Jan – Feb 2025**

- **Modeled** and designed a detailed MOPAR 383 engine assembly (pistons, rods, block) in SolidWorks, accurately incorporating bore, stroke, and compression ratio specifications
- **Executed** dynamic motion studies and Finite Element Analysis (FEA) on the assembled components to rigorously assess stress distribution, deflection, and safety factors
- **Analyzed** and **interpreted** FEA results, iterating the design **twice** to identify and eliminate critical stress areas, improving robustness and achieving a **94%** project score

Tensile Testing – Winter Term | *NBCC Technology Department* **March – April 2024**

- **Conducted** tensile testing on three specific materials (AISI 1020, AISI 1090, Aluminum) per **ASTM E8-21** standards, ensuring all lab procedures were compliant and supervised by a Professional Engineer
- **Operated** a Model 300ST tensile testing machine, executing **three** precise material strength tests and collaborating with a two-person team to ensure accurate data collection and quality control (QC)
- **Collected** and **analyzed** testing data (yield/tensile strength, elongation) to prepare detailed technical reports, **managing project deadlines** using **Notion** to ensure timely delivery and achieving a **90%** report score

Work Experience

Data Entry Student – Summer Term **June 2023 – July 2023**
American Iron & Metal (AIM) *Saint John, NB*

- Managed **40-50** customer data records daily using Google Workspace, maintaining **90%+** accuracy to support the Marketing Manager with data quality checks and business reporting

Volunteer Experience

Tutor (Math/Physics) **Sept 2023 – Present**
Pathways to Education/Teen Resource Centre (TRC) *Saint John, NB*

- Support high school students by explaining complex physics and math concepts using logical, step-by-step methods, strengthening communication and problem-solving skills