Profile

Ben Adams is a mechanical engineer, full-stack software engineer, and tour guide.

Full-Stack Programming

I have built enterprise solutions, including libraries, desktop applications, web interfaces, and SQL queries. I primarily use .Net/IIS/MSSQL/Js.

Techno-Economist

I have built a python geothermal electricity simulation tool (genGEO).

Cross-cutting Disciplines

I work in projects that require a wide-breadth of understanding and skill (e.g., software coding, geologic engineering, and power plant equip cost).

User-Centered Approach

My customer-oriented experience drives a user-centered perspective. For example, "what does the user want?" rather than "what should we do?"

Contact

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Google Scholar Profile:
Link

Benjamin M. Adams

Research Engineer | **Carbon Solutions LLC**

September 2022

Professional Licensure

Professional Mech. Engineer #54249 (P.E.) | State of Minnesota | **2016—Present**

Professional Experience

Research Engineer | **Carbon Solutions LLC** | **2021—Present**
Writing software to make reduced order models (ROMs) using machine learning in the Julia software language.

Full-Stack Software Engineer | **Dells Duck Tours** | **2013—Present**
Create and maintain Point-of-Sale software for this medium-sized tour operator in Wisconsin Dells, WI. This enables web-sales, card-present-sales, payroll tracking and reporting, environmental sound for positive guest experience, zipline safety equipment. (C#, SQL, Javascript, Network equipment, low-voltage cabling, 208/120V Electric, PCI Compliance, metal/PVC conduit ...)

Tour Development Specialist & Guide | **Austin Adventures** | **2021—Present**
Manage guest relationships while providing week-long bicycle tours through the Netherlands, Austria, and Switzerland. Created our Swiss tour itinerary.

Full-Stack Software Engineer | **Colectica** | **2017, 2021**
Created GUI and backend software for survey management (C#, SQL, Js,...)

Postdoctoral Associate | **ETH Zurich** | **2018—2020**
Developed a first-principles techno-economic simulator, genGEO, in python.

Consulting Engineer | **ABV Technology** | **2017**
Aided in development of their first prototype vacuum beer distiller.

Postdoctoral Associate | **University of Minnesota** | **2015—2017**
Built power system model to estimate CO_2 geothermal potential. (GCAM, C#)

Doctoral Student | **University of Minnesota** | **2010-2015**
Wrote papers about a novel CO_2-based power cycle for geothermal electricity.

Teaching Assistant | **University of Minnesota** | **2007-2012**
Taught undergraduate ME laboratory sessions, design, and heat transfer.

Tour Guide & Tradesman | **Dells Duck Tours** | **2004-2010**
Guided and drove 742 amphibious 1-hour tours. Built driver history class series.

Education

Ph.D. | **Mechanical Engineering**
University of Minnesota—Twin Cities | 2010-2015

M.Sc. | **Mechanical Engineering**
University of Minnesota—Twin Cities | 2007-2010

B.Sc. | **Aerospace Engineering & Mechanics**
University of Minnesota—Twin Cities | 1999-2004

Awards

- Outstanding Teaching Assistant Award, Dept of Mechanical Engineering, University of Minnesota | **2009**

Patent Applications

1. ETH Zurich (applicant), Saar, M.O., & **Adams, B.M.** (**2018**). Geothermal Energy System. Patent: World Intellectual Property Organization. Approved Application: WO 2020/104327. *google patents*

Doctoral Theses Advised

1. Fleming, Mark. (February **2019**). (Acting Advisor from 2016; Official Advisor: Thomas Kuehn). Thesis title: The performance of a carbon-dioxide plume geothermal energy storage system. University of Minnesota. thesis: *http://hdl.handle.net/11299/206666*
2. Mostafa, Mohamed Ezzat. (**2018**-**2020**). (Acting co-Advisor with Daniel Vogler; Official Advisor: Martin Saar). Thesis topic: Fundamental physics of plasma pulse geo-drilling at large temperatures and depths. ETH Zurich.

Masters Theses Advised

1. Cremonesi, Selene. (June **2020**). (Acting Co-advisor; Official Advisor: Martin Saar). Thesis title: Assessment of the geothermal economic potential in the sedimentary basins of the Netherlands. Politecnico Milano. *http://hdl.handle.net/10589/153911*
2. van Brummen, Anna. (August **2019**). (Acting Advisor; Official Advisor: Martin Saar). Thesis title: Optimizing the size of a fully renewable power system to meet historical energy demand. ETH Zurich. *https://doi.org/10.3929/ethz-b-000383244*
3. Ravilov, Marat. (August **2019**). (Acting Advisor; Official Advisor: Martin Saar). Thesis title: Optimization of heat extraction within sedimentary reservoirs for CO_2 Plume Geothermal (CPG) electricity generation. ETH Zurich. *https://doi.org/10.3929/ethz-b-000387209*

Masters Projects Advised

1. C Malek, Adam. (Dec **2020**). (Acting Advisor; Official Advisor: Martin Saar). Project topic: Electricity generation and cost for closed-loop Advanced Geothermal Systems (AGS). ETH Zurich.
2. van Brummen, Anna. (Oct **2019**). (Acting Advisor; Official Advisor: Martin Saar). Project topic: Maximizing energy demand met with renewables for Minot, North Dakota. ETH Zurich.
3. Ravilov, Marat. (Aug **2018**). (Acting Advisor; Official Advisor: Martin Saar). Project topic: Calculating reservoir impedance in a porous sedimentary basin using MOOSE. ETH Zurich.
4. Simson, Anna. (Aug **2018**). (Acting Advisor; Official Advisor: Martin Saar). Project topic: Modeling a closed-loop deep conduction-based geothermal system with both CO_2 and water as working fluids. ETH Zurich.
5. Bröker, Kai. (Aug **2018**). (Acting Advisor; Official Advisor: Martin Saar). Coupling of the Earth Battery to Direct Air Capture (DAC). ETH Zurich.

Publications

- Cremonesi, S., **Adams, B.M.**, Saar, M.O., & Vogler, D. (**in preparation**). Sedimentary geothermal electricity potential for the Netherlands. *Renewable Energy*.
- Hefny, M., Ebigbo, A., **Adams, B.M.** (**submitted**). Feasibility of CO_2-Plume Geothermal (CPG) power generation in a hydrocarbon-depleted Nubian Sandstone reservoir in Egypt. *Renewable Energy*.

1. van Brummen, A., **Adams, B.M.**, Wu, R., Ogland-Hand, J.D., & Saar, M.O. (**2022**). Using CO_2-Plume Geothermal (CPG) energy technologies to support wind and solar power in renewable-heavy electricity systems. *Renewable and Sustainable Energy Transition*, 2, 100026. *https://doi.org/10.1016/j.rset.2022.100026*
2. Ogland-Hand, J.D., **Adams, B.M.**, Bennett, J.A., Middleton, R.S. (**2022**). A Geospatial Cost Comparison of CO_2 Plume Geothermal (CPG) Power and Geologic CO_2 Storage. *Frontiers in Energy Research*, 10 855120. *https://doi.org/10.3389/fenrg.2022.855120*
3. Malek, A.E., **Adams, B.M.**, Rossi, E., Schiegg, J.O., & Saar, M.O. (**2022**). Techno-economic analysis of advanced geothermal systems (AGS). *Renewable Energy*, 186, 927-943. *https://doi.org/10.1016/j.renene.2022.01.012*
4. Birdsell, D.T., **Adams, B.M.**, Ogland-Hand, J.D., Fleming, M.R., Bielicki, J.M., & Saar, M.O. (**in revision**). Analytical solutions for heat transfer and their application to sedimentary geothermal electricity generation. *Applied Energy*. *https://doi.org/10.26434/chemrxiv-2022-93cff*
5. Ezzat, M., **Adams, B.M.**, Saar, M.O., & Vogler, D. (**2022**). Numerical modeling of the effects of pore characteristics on the electric breakdown of rock for plasma pulse geo drilling. *Energies*, 15, 250. *https://doi.org/10.3390/en15010250*
6. Fleming, M.R., **Adams, B.M.**, Ogland-Hand, J.D., Bielicki, J.M., Kuehn, T.H., & Saar, M.O. (**2022**). Flexible CO_2-Plume Geothermal (CPG-F): Using geologically stored CO_2 to provide dispatchable power and energy storage. *Energy Conversion and Management*, 253, 115082. *https://doi.org/10.1016/j.enconman.2021.115082*
7. Ezekiel, J., **Adams, B.M.**, Saar, M.O., & Ebigbo, A. (**2022**). Numerical analysis and optimization of the performance of CO_2-Plume Geothermal (CPG) production wells and implications for electric power generation. *Geothermics*, 98, 102270. *https://doi.org/10.1016/j.geothermics.2021.102270*
8. Ezekiel, J., Kumbhat, K., Ebigbo, A., **Adams, B.M.**, & Saar, M.O. (**2021**). Sensitivity of reservoir and operational parameters on the energy extraction performance of combined CO_2-EGR-CPG systems. *Energies*, 14, 6122. *https://doi.org/10.3390/en14196122*

9. **Adams, B.M.**, Ogland-hand, J.D., Bielicki, J.M., Schädle, P., & Saar, M.O. (**in review**). Estimating the geothermal electricity generation potential of sedimentary basins using genGEO (the generalizable GEOthermal techno-economic simulator). *Energy & Environmental Science*. preprint: *https://doi.org/10.26434/chemrxiv.13514440.v1*
10. Ezzat, M., Vogler, D., Saar, M.O., & **Adams, B.M.** (**2021**). Simulating plasma formation in pores under short electric pulses for Plasma Pulse Geo-drilling (PPGD). *Energies*, 14, 4717. *https://doi.org/10.3390/en14164717*
11. Birdsell, D.T., **Adams, B.M.**, & Saar, M.O. (**2021**). Minimum transmissivity and optimal well spacing and flow rate for high-temperature aquifer thermal energy storage. *Applied Energy*, 289, 116658. *https://doi.org/10.1016/j.apenergy.2021.116658*
12. Ogland-Hand, J.D., Bielicki, J.M., **Adams, B.M.**, Nelson, E.S., Buscheck, T.A., Saar, M.O. & Sioshansi, R. (**2021**). The value of CO_2-bulk energy storage with wind in transmission constrained electric power systems. *Energy Conversion and Management*, 228, 113548. *https://doi.org/10.1016/j.enconman.2020.113548*
13. **Adams, B.M.**, Vogler, D., Kuehn, T.H., Bielicki, J.M., Garapati, N., & Saar, M.O. (**2021**). Heat depletion in sedimentary basins and its effect on the design and electric power output of CO_2 Plume Geothermal (CPG) systems. *Renewable Energy*, 172, 1393-1403. *https://doi.org/10.1016/j.renene.2020.11.145*
14. Garapati, N., **Adams, B.M.**, Fleming, M.R., Kuehn, T.H., & Saar, M.O. (**2020**). Combining brine or CO_2 geothermal preheating with low-temperature waste heat: A higher-efficiency hybrid geothermal power system. *Journal of CO_2 Utilization*, 42, 101323. *https://doi.org/10.1016/j.jcou.2020.101323*
15. Fleming, M.R., **Adams, B.M.**, Kuehn, T.H., Bielicki, J.M., & Saar, M.O. (**2020**). Increased power generation due to exothermic water exsolution in CO_2 Plume Geothermal (CPG) power plants. *Geothermics*, 88, 101865. *https://doi.org/10.1016/j.geothermics.2020.101865*
16. Bielicki, J.M., **Adams, B.M.**, Choi, H., Jamiyansuren, B., Taff, S.J., Buscheck, T.A., Ogland-Hand, J.D., Randolph, J.B., & Saar, M.O. (**in revision**). Cost-competitive geothermal electricity for geologic CO_2 storage. *Energy Conversion and Management*.
17. Ezekiel, J., Ebigbo, A., **Adams, B.M.**, & Saar, M.O. (**2020**). Combining natural gas recovery and CO_2-based geothermal energy extraction for electric power generation. Applied Energy, 269, 115012. *https://doi.org/10.1016/j.apenenergy.2020.115012*.
18. Ogland-Hand, J., Bielicki, J.M., Wang, Y., **Adams, B.M.**, Buscheck, T.A., & Saar, M.O. (**2019**). The value of bulk energy storage for reducing CO_2 emissions and water requirements from regional electricity systems. *Energy Conversion and Management*, 181, 674-685. *https://doi.org/10.1016/j.enconman.2018.12.019*
19. Garapati, N., **Adams, B.M.**, Bielicki, J.M., Schädle, P., Randolph, J.B., Kuehn, T.H., & Saar, M.O. (**2017**). A hybrid geothermal energy conversion technology—A potential solution for production of electricity from shallow geothermal resources. *Energy Procedia*, 114, 7107-7117. *https://doi.org/10.1016/j.egypro.2017.03.1852*
20. **Adams, B.M.**, Kuehn, T.H., Bielicki, J.M., Randolph, J.B., & Saar, M.O. (**2015**). A comparison of electric power output of CO_2 Plume Geothermal (CPG) and brine geothermal systems for varying reservoir conditions. *Applied Energy*, 140, 365-377. *https://doi.org/10.1016/j.apenergy.2014.11.043*
21. **Adams, B.M.**, Kuehn, T.H., Bielicki, J.M., Randolph, J.B., & Saar, M.O. (**2014**). On the importance of the thermosiphon effect in CPG (CO_2 plume geothermal) power systems. *Energy*, 69, 409-418. *https://doi.org/10.1016/j.energy.2014.03.032*

Reports and Conference Papers

1. Ogland-Hand, J.D., Bielicki, J.M., **Adams, B.M.**, Buscheck, T.A., & Saar, M.O. (**2021**). Using sedimentary basin geothermal resources to provide long-duration energy storage. *World Geothermal Congress*, Reykjavik, 21-26 May, 2021. *https://doi.org/10.3929/ethz-b-000467595*
2. **Adams, B.M.**, Sutter, D., Mazzotti, M., & Saar, M.O. (**2021**). Combining direct air capture and geothermal heat and electricity generation for net-negative carbon dioxide emissions. *World Geothermal Congress*, Reykjavik, 21-26 May, 2021. *https://doi.org/10.3929/ethz-b-000449685*
3. Fleming, M.R., **Adams, B.M.**, & Saar, M.O. (**2021**). Using sequestered CO_2 as geothermal working fluid to generate electricity and store energy. *World Geothermal Congress*, Reykjavik, 21-26 May, 2021. *https://doi.org/10.3929/ethz-b-000449690*
4. Maldonado, S.B., Bielicki, J.M., Miranda, M.W., Ogland-Hand, J.D., Howard, C., **Adams, B.M.**, Buscheck, T.A., & Saar, M.O. (**2021**). Geospatial estimation of the electric power potential in sedimentary basin geothermal resources using geologically stored carbon dioxide. *World Geothermal Congress*, Reykjavik, 21-26 May, 2021. *https://doi.org/10.3929/ethz-b-000449699*
5. **Adams, B.M.**, Fleming, M.R., Bielicki, J.M., Garapati, N., & Saar, M.O. (**2021**). An analysis of the demonstration of a CO_2-based thermosiphon at the SECARB Cranfield site. *Stanford Geothermal Workshop*, Feb 15-17, 2021. *https://doi.org/10.3929/ethz-b-000467171*
6. Malek, A.E, **Adams, B.M.**, Schiegg, H.O., & Saar, M.O. (**2021**). Electric power generation, levelized cost of electricity, and specific power from advanced geothermal systems (AGS). *Stanford Geothermal Workshop*, Feb 15-17, 2021. *https://doi.org/10.3929/ethz-b-000467172*

7. **Adams, B.M.**, Saar, M.O., Bielicki, J.M., Ogland-Hand, J.D., & Fleming, M.R. (**2020**). Using geologically sequestered CO_2 to generate and store geothermal electricity: CO_2 Plume Geothermal (CPG). Proceedings of *MIT A+B Applied Energy Symposium*, 12-14 Aug, 2020. *https://doi.org/10.3929/ethz-b-000444911*
8. Rossi, E., **Adams, B.M.**, Vogler, D., von Rohr, P.R., Kammermann, B., & Saar, M.O. (**2020**). Advanced drilling technologies to improve the economics of deep georesource utilization. Proceedings of *MIT A+B Applied Energy Symposium*, 12-14 Aug, 2020. *https://doi.org/10.3929/ethz-b-000445213*
9. Sudhoff, R., Glos, S., Wechsung, M., **Adams, B.M.**, & Saar, M.O. (**2019**). Next Level Geothermal Power Generation (NGP) – A new sCO_2-based geothermal concept. *German Geothermal Congress DGK 2019*, München, Germany, 19-21 Nov 2019. *https://doi.org/10.3929/ethz-b-000449693*
10. **Adams, B.M.**, Fleming, M.R., Bielicki, J.M., Hansper, J., Glos, S., Langer, M., Wechsung, M., & Saar, M.O. (**2019**). Grid scale energy storage using CO_2 in sedimentary basins: The cost of power flexibility. *European Geothermal Congress*, Hague, Netherlands, 11-14 June, 2019. *paper*
11. Hansper, J., Grotkamp, S., Glos, S., Langer, M., Wechsung, M., **Adams, B.M.**, & Saar, M.O. (**2019**). Assessment of performance and costs of CO_2 plume geothermal (CPG) systems. *European Geothermal Congress*, Hague, Netherlands, 11-14 June, 2019. *paper*
12. Ezekiel, J., Ebigbo, A., **Adams, B.M.**, & Saar, M.O. (**2019**). On the use of supercritical carbon dioxide to exploit the geothermal potential of deep natural gas reservoirs for power generation. *European Geothermal Congress*, Hague, Netherlands, 11-14 June, 2019. *paper*
13. Fleming, M.R., **Adams, B.M.**, Kuehn, T.H., Bielicki, J.M., & Saar, M.O. (**2019**). Benefits of using active reservoir management during CO_2-plume development for CO_2-plume geothermal systems. *Proceedings, 44th Workshop on Geothermal Reservoir Engineering*, 11-12 Feb, 2019. *paper*
14. Fleming, M.R., **Adams, B.M.**, Randolph, J.B., Ogland-Hand, J.D., Kuehn, T.H., Buscheck, T.A., Bielicki, J.M., & Saar, M.O. (**2018**). High efficiency and large-scale subsurface energy storage with CO_2. *Proceedings, 43rd Workshop on Geothermal Reservoir Engineering*, 12-14 Feb, 2018. *paper*
15. Bielicki, J.M., **Adams, B.M.**, Choi, H., Jamiyansuren, B., Saar, M.O., Taff, S.J., Buscheck, T.A, & Ogland-Hand, J.D. (**2016**). Sedimentary basin geothermal resource for cost-effective generation of renewable electricity from sequestered carbon dioxide. *Proceedings, 41st Workshop on Geothermal Reservoir Engineering*, 22-24 Feb, 2016. *paper*
16. Buscheck, T.A., Bielicki, J.M., Randolph, J.B., Chen, M., Hao, Y., Edmunds, T.A., **Adams, B.**, & Sun, Y. (**2014**). Multi-fluid geothermal energy systems in stratigraphic reservoirs: Using brine, N_2, and CO_2 for dispatchable renewable power generation and bulk energy storage (No. LLNL-CONF-650283). *Proceedings, 39th Workshop on Geothermal Reservoir Engineering*, 24-26 Feb, 2014. *paper*
17. **Adams, B.M.**, Kuehn, T. H., Randolph, J.B., & Saar, Martin O. (**2013**). The reduced pumping power requirements from increasing the injection well fluid density. *Geothermal Resources Council Transactions*, 37: 667-672. *paper*
18. Randolph, J.B., **Adams, B.**, Kuehn, T.H., & Saar, M.O. (**2012**) Wellbore heat transfer in CO_2-based geothermal systems. *Geothermal Resources Council Transactions*, 36: 549-554. *paper*
19. **Adams, B.** & Kuehn, T.H. (2012). The complementary nature of CO_2-plume geothermal (CPG) energy production and electrical power demand. *Proceedings of the ASME 2012 International Mechanical Engineering Congress & Exposition*, IMECE2012-88704, November 9-15, **2012**, Houston, Texas, USA. *https://doi.org/10.1115/IMECE2012-88704*
20. Durfee, W.K., **Adams, B.M.**, Appelsies, A., & Flash, P. (**2011**). A Writing Program for Mechanical Engineering. *Proceedings of the ASEE 2011 Conference & Exposition*. *paper*

Oral Presentations and Guest Lectures

1. McGinnis, K & **Adams, B.** (**2021**). Colectica Version 6.2 and 7.0. European DDI User Conference, virtual, 30 November to 1 December, 2021. *https://doi.org/10.5281/zenodo.5747668*
2. **Adams, B.M.**, Sutter, D., Mazzotti, M., & Saar, M.O. (**2021**). Combining direct air capture and geothermal heat and electricity generation for net-negative carbon dioxide emissions. *World Geothermal Congress*, Reykjavik, 21-26 May, 2021. *https://www.youtube.com/watch?v=EmdQpVhH8u8*
3. **Adams, B.M.**, Fleming, M.R., Bielicki, J.M., Garapati, N., and Saar, M.O. (**2021**). An analysis of the demonstration of a CO_2-based thermosiphon at the SECARB Cranfield site. Stanford Geothermal Workshop, February 16-18, 2021. *YouTube video*
4. **Adams, B.M.** and Saar, M.O. (**2020**). Generating electricity from sequestered CO_2: CO_2 Plume Geothermal (CPG). *18th Swiss Geoscience Meeting*, Online, 6-7 Nov, 2020. *YouTube video*
5. **Adams, B.M.**, Bielicki, J.M., Ogland-Hand, J.D., & Saar, M.O. (**2020**). Using geologically sequestered CO_2 to generate and store geothermal electricity: CO_2 Plume Geothermal (CPG). Video Presentation, *MIT A+B Applied Energy Symposium*, Online, 12-14 Aug, 2020. *YouTube video*

6. Rossi, E., **Adams, B.M.**, Vogler, D., von Rohr, P.R., Kammermann, B., & Saar, M.O. (**2020**). Advanced drilling technologies to improve the economics of deep georesource utilization. Video Presentation, MIT A+B Applied Energy Symposium, Online, 12-14 Aug, 2020. *YouTube video*
7. **Adams, B.M.**, Saar, M.O., Fleming, M., & Bielicki, J.M. (**2019**). The gasometer-based CO_2 plume geothermal (CPG) energy storage system. The Swiss Competence Center for Energy Research: Supply of Electricity (SCCER-SOE) Annual Conference, 3-4 Sept, 2019. *program*
8. Saar, M.O., **Adams, B.M.**, & Kong, X.Z. (**2019**). CCUUUS: Utilizing CO_2 Capture and Storage for 1) Geothermal Power Generation, 2) Subsurface Energy Storage, and 3) Direct-air CO_2 Capture. 2019 ARMA-CUPB Geothermal International Conference, Beijing, China, 5-8 August, 2019.
9. **Adams, B.M.** (**2019**). "Grid scale energy storage using CO_2 in sedimentary basins: The cost of power flexibility," European Geothermal Congress, Hague, Netherlands, 11-14 June, 2019.
10. **Adams, B.M.** (**2019**). "Grid-scale Electricity Generation and Energy Storage using CO_2 Plume Geothermal (CPG)," Gordon Research Seminar on Carbon, Capture, Utilization, and Storage, Les Diablerets, Switzerland, May 5-10, 2019.
11. **Adams, B.M.** (**2017**). "Keynote: CO2-Storage-Based Geothermal Electricity Generation Potential of Sedimentary Basins in the United States." AAPG & SEG International Conference and Exhibition. Excel, London, October 15-18, 2017.
12. **Adams, B.M.** (**2017**). "Carbon Dioxide as a Geothermal Heat Mining Fluid in Sedimentary Basins—Technical and Economic Analysis of its Use in Hydrocarbon Fields." AAPG & SEG International Conference and Exhibition. Excel, London, October 15-18, 2017.
13. **Adams, B.M.** (**2014**). "Development of discipline-specific writing and teaching guides in the mechanical engineering department," 12th International Writing Across the Curriculum Conference, Mpls, MN, June 2014.
14. **Adams, B.M.** (**2013**). "The reduced pumping power requirements from increasing the injection well fluid density," Geothermal Resources Council Annual Meeting, Las Vegas, NV, October 2013.
15. **Adams, B.M.** (**2012**). "The complementary nature of CO_2-plume geothermal (CPG) energy production and electrical power demand," ASME Intl. Mechanical Engineering Congress & Exposition, Houston, TX, Nov 2012.
16. **Adams, B.M.** (**2012**). "Wellbore heat transfer in CO_2-based geothermal systems," Geothermal Resources Council Annual Meeting, Reno, NV, October 2012.
17. **Adams, B.M.** (**2012**). "The future of WAC is WEC: Infusing relevant writing into diverse undergraduate curricula," 11th International Writing Across the Curriculum Conference, Savannah, GA, June 2012.

Instructional Materials

1. **Adams, B.M.** (**2020**). Geothermal Power Generation (CO_2 Geothermal) Lecture. YouTube. *https://www.youtube.com/watch?v=4ZHGSMDvdaU*
2. **Adams, B.M.** (**2020**). Geothermal Power Generation (Hydrothermal) Lecture. YouTube. *https://www.youtube.com/watch?v=XfGxnq_aYGI*
3. **Adams, B.M.** (**2012**). Basic data acquisition using LabView. *YouTube*. *https://www.youtube.com/watch?v=GBhJk5Tnshc*.
4. **Adams, B.M.** & Durfee, W.K. (**2011**). Student writing guide: How to write a problem set. *http://www.me.umn.edu/education/undergraduate/writing/*.
5. **Adams, B.M.** (**2010**). Wiring a thermistor and acquiring temperatures in LabView. *YouTube*. *https://www.youtube.com/watch?v=7znlYLkk-mw*.
6. **Adams, B.M.** (**2010**). Frequency analysis of microphone data using LabView. *YouTube*. *https://www.youtube.com/watch?v=DKQT4M7M2Fg*.
7. **Adams, B.M.** (**2010**). Plotting XY graphs and linear regression in LabView. *YouTube*. *https://www.youtube.com/watch?v=zyYq6K7_WDM*.
8. **Adams, B.M.** (**2010**). Creating confidence intervals for linear regression in EXCEL. *YouTube*. *https://www.youtube.com/watch?v=aSOUQKqIYak*.
9. **Adams, B.M.** & Durfee, W.K. (**2009**). Student writing guide: How to write a lab report. *http://www.me.umn.edu/education/undergraduate/writing/*.
10. **Adams. B.M.** & Durfee, W.K. (**2009**). Student writing guide: How to write a design report. *http://www.me.umn.edu/education/undergraduate/writing/*.

Teaching Experience

ETH Zurich

1. Geothermal Energy (Graduate Course; co-instructor), **2019-2020**, 2 sems.

University of Minnesota

2. Mechanical Engineering Department Teaching Assistant Orientation, **2014**, 1 sem.
3. University-wide Teaching Assistant Writing Workshop, **2014**, 1 sem.
4. Basic Mechanical Measurements Laboratory, **2007-2012**, 9 sems.
5. Introduction to Engineering, **2007-2011**, 4 sems.
6. Departmental Writing Teaching Assistant, **2008-2011**, 4 sems.

7. Thermal Sciences III (Heat Transfer), **2010**, 1 sem.
8. Design Projects (Senior Capstone), **2009**, 1 sem.