

## University of Minnesota Power Puzzle Event Schedule

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9:00 a.m.	Opening session
9:30 – 10:30	First learning session
10:45 – 11:45	Second learning session
11:45 – 12:15	Closing session
12:15 – 12:45	Lunch

### Minneapolis Campus Power Puzzle Sessions

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Session Title:	<b>Efficient Fluid Powered Water Rockets</b>
Faculty Leader:	Kim Stelson
Description:	After experiments showing how fluid power works, students will go outside and launch water-powered rockets, trying to figure out how much water is needed for the rocket to reach optimum height and get the most power per fuel payload.
Students per session:	30
Location:	Mechanical Engineering, Room 1130 111 Church St. SE, Minneapolis
Time:	9:30-10:30 a.m. and 10:45-11:45 a.m.

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Session Title:	<b>Wind Energy</b>
Faculty Leader:	Paul Imbertson
Description:	In this hands-on session students will learn about wind resources and wind turbine technology. They will try their hand at building electric motor and generators and will hear from University students who are using the "build it from scratch" approach to bring wind turbines to Nicaragua.
Students per session:	20
Location:	Electrical Engineering/Computer Science Building, Room 3-130 200 Union St. SE, Minneapolis
Time:	9:30-10:30 a.m. and 10:45-11:45 a.m.

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Session Title:	<b>Solar power: Using the sun to power your life</b>
Faculty Leader:	Uwe Kortshagen
Description:	Students in this session will experience concepts of solar power utilization. These concepts will be demonstrated by simple interactive experiments for solar-thermal energy conversion and solar-to-electric energy conversion.
Students per session:	15
Location:	Mechanical Engineering building, meet in Atrium 111 Church St. SE, Minneapolis
Time:	9:30-10:30 a.m. and 10:45-11:45 a.m.

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Session Title:	<b>The Energy in Fuels</b>
Faculty Leader:	Lanny Schmidt
Description:	In this exciting session, students will see demonstrations of how to harness energy from various materials including food (Gummy Bears), methane, ethanol and hydrogen. Students will see an ethanol-powered rocket, a fuel cell car, a model alternative energy car developed by University chemical engineering students and much more.
Students per session:	30
Location:	Amundson Hall, Room 454 421 Washington Ave. SE, Minneapolis

## Saint Paul Campus Power Puzzle Sessions

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Session Title: **Bioenergy, Biodiesel and Ethanol**  
Faculty Leader: Ulrike Tschirner  
Description: In this interactive session, students will make their own biodiesel from soy oil and produce ethanol in a small scale fermentation process. Students will also learn about the advantages and disadvantages of these alternative fuels.  
Students per session: 25  
Location: Kaufert Laboratory, Room 55 (basement) Pilot Plant area  
2004 Folwell Ave., St. Paul  
Time: 9:30-10:30 a.m. and 10:45-11:45 a.m.

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Session Title: **Conversion of Biofuel into Electricity: Biofuel Cells**  
Faculty Leader: Ping Wang  
Description: Students will learn concepts of fuel cells and the nature of biofuel cells through demonstrations of power generation from hydrogen, glucose and ethanol. Students will also learn about frontier research in biofuel cells that utilize bio-based resources.  
Students per session: Up to 10  
Location: Snyder Hall, Room 322  
1475 Gortner Ave., St. Paul  
Time: 9:30-10:30 a.m. and 10:45-11:45 a.m.

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Session Title: **Energy from corn residues and other biomass sources**  
Faculty Leaders: Matt De Kam, Kevin Hennessy, Roger Ruan  
Description: Students will learn about pyrolysis and gasification technologies through demonstrations and hands-on experiments. These concepts will be introduced by touring the lab where researchers turn corn residues and other biomass into bio-oil. Students will see a demonstration of a wood-fueled gasifier and work in teams to make their own wood gasifiers.  
Students per session: 15  
Location: Biosystems and Agricultural Engineering Building  
Center for Biorefining Pilot Lab  
1390 Eckles Ave., St. Paul  
Time: 9:30-10:30 (first session only)

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Session Title: **Making biopolymer from biomass**  
Faculty Leaders: Yuanhua Wang, Kevin Hennessy, Roger Ruan  
Description: Students will learn about biopolymer synthesis technologies through demonstrations and hands-on experiments. These concepts will be introduced by touring the lab where researchers turn biomass into bio-oil and bio-oil into biopolyurethane foams. Students will see demonstrations of the production of biopolyurethane foam and will work in teams to make their own polyurethane foams.  
Students per session: 15  
Location: Biosystems and Agricultural Engineering Building  
Center for Biorefining Pilot Lab  
1390 Eckles Ave., St. Paul  
Time: 10:45 – 11:45 (second session only)