



Michigan Tech Concrete Canoe 2014-2015

This past year was an exceptional season for Michigan Technological University's Concrete Canoe Team. Michigan Tech successfully defended its title at the regional level and proudly earned an 11th place finish at the National Competition in Clemson, South Carolina.

The people that live in Houghton, MI and the surrounding towns live a simple life that encompasses hockey, ice fishing, and copious amounts of snow. Michigan Tech students embrace all that winter has to offer in the Upper Peninsula and, therefore, chose winter as the theme for the 2014-2015 season. Talvi Sielu, Finnish for "Winter Soul," was chosen to represent this theme; the display table, cross section, and stands highlighted the winter activities and lifestyle of the Keweenaw.

Talvi Sielu built on the previous successes of Meseket and Katsuo Maru and included further improvements to the hull design. These developments were made to improve the canoe's turning ability along with design changes to embrace sustainability. This year's hull design provided natural rise to the bow of the canoe when paddling allowing for a smoother ride. Credit for Talvi Sielu is attributed to Sean Kuchta, who worked to make an innovative and advanced hull design.



| 2014 Michigan Tech Concrete Canoe at a Glance | |
|---|-------------|
| Name | Talvi Sielu |
| Weight | 140 lbs. |
| Width | 27.9" |
| Length | 19' |
| Depth | 15.6" |

2015 National Competition

In June, Michigan Tech traveled to the national competition in Clemson, South Carolina. Before the competition, Michigan Tech was externally ranked as a potential top 10 contender, but the team knew this was a huge understatement of our team's hard work and product. All of the team's research and training paid off in Clemson. The team left the judges in awe with a presentation that received an outstanding 4th place finish. In addition, the paddling team placed top 10 in all races. Our competition finish overall was rounded out by the unique hull design and amazing aesthetics.



The performance of our presenters this past year, achieving a 4th place finish, was due to their considerable effort and also from skills passed down by the previous year's team. The presenters held weekly meetings during the spring semester, becoming daily as we approached competition, to practice formal presentation skills. The team helped by quizzing each presenter with hundreds of questions to prepare for the Q & A session at competition.



With diligent preparation and rigorous studying, the presenters were prepared for every question that was asked.

In addition to the presentation, the team also made a number of strides forward in other categories. Madie Martin, a senior on the team, compiled a Technical Paper that took 1st place at the regional competition and 14th place at the national competition. Junior Captain, Kathrine Cipriano led the Aesthetics Committee to create a beautiful canoe that captured all the beauty of the Keweenaw Peninsula. Most importantly, due to unexpected problems with the final product, the team was forced to redefine the mix and recast a second boat. Despite these obstacles, the dedication and hard work was noticed by the judges at Nationals, and the team was awarded 11th.

| National Competition Breakdown | |
|--------------------------------|------------------|
| Presentation | 4 th |
| Final Product | 18 th |
| Technical Paper | 13 th |
| Races Overall | 11 th |
| Women's Endurance | 8 th |
| Men's Endurance | 11 th |
| Women's Sprint | 8 th |
| Men's Sprint | 7 th |
| Coed Sprint | 10 th |
| Final Results | 11 th |

2015-2016

For this upcoming year, the team plans to build upon the success and new knowledge gained from Talvi Sielu. Research and development will continue to make even greater strides than last year, while continuing to improve our portland cement-based mix. The hull design committee will be innovating another ground-breaking canoe design that will be tested with a prototype. Currently, the prototype is under construction. This year the hull design committee is further improving the turning ability and paddler ergonomics by reducing the "bulge" used in previous years. Credit to this

year's innovative hull design goes to Drew Roberts, a senior civil engineering student. New materials are being tested to improve upon the structural performance of the concrete.

Team Leadership

Returning for another year of leadership on the concrete canoe team are senior captains Kathrine Cipriano and Phil Doederlein. Kathrine is a mechanical engineering student and Phil is a civil engineering student who have both been on the team for the past four years. In the past Kathrine and Phil have competed as presenters and paddlers along with QC/QA and aesthetics committee heads.

Stepping into a leadership position as junior captain is Taylor Wiegand, a third year civil engineering student. Taylor has been a member of the team since her freshman year. Last year, Taylor designed the Cross Section by changing the traditional vertical mold to more fully incorporate the winter theme. Taylor was a stern paddler for the women's sprint race at the regional and national competitions.

Also stepping into leadership positions on the team are two new advisors, Dr. Tess Ahlborn and Dr. Larry Sutter, professors in the Civil and Environmental Engineering and Materials Science Engineering departments, respectively. This leadership change came from the unfortunate passing of Bill Baxandall, our advisor for the past several years. Bill sadly lost his battle with cancer in September 2014, which the team took with a heavy heart. Tess and Larry were welcomed with open arms and have made significant strides in helping the team stay at the top of their game.



2016 Regional Competition



Michigan Technological University will be attending the ASCE North Central Conference Regional Competition at Michigan State University in East Lansing, MI. The Michigan Tech team is very excited to bring innovative and advanced ideas to the competition.

2016 National Competition

The ASCE National Concrete Canoe Competition will be held at the University of Texas at Tyler in Tyler, Texas from June 9th-11th, 2016. Michigan Tech is working hard to earn the honor of representing the North Central Conference at the national level and place among the top finishers again.

We would like to thank the departments at Michigan Tech for their support!

Civil and Environmental Engineering
Mechanical Engineering – Engg. Mechanics
Material Science Engineering

We would also like to thank our corporate sponsors for their generous help!

3M
AGSCO Corporation
Atlas EPS
BASF Corporation
Betz Industries

Butterfield Color
ChemMasters
Huron Technologies, Inc.
Lafarge North America Inc.
Styron LLC
Superior Graphics
Tricel Honeycomb
Trojan Development Co Inc.
Xypex Chemical Corporation

Lastly, we would like to thank our friends, family, and alumni for supporting our team!

Anna M. Skoglund
Archbold Family
Barbara J. Earhart
Baxandall Family
Bill Bonanno & Company
Burdue Family
Cipriano Family
Jennifer S. Byle
Jerri Gray
Joseph J. Zellmer
Marilyn R. Schriener
Michael J. Zukoff
Patrick & Joan Bergmann
Thomas & Janet Byle
Wendi M. Herrick
Wiegand Family
William Leder



CONCRETE CANOE COMPETITION IN A NUTSHELL

Concrete Canoes? Nope, We're Not Kidding!

Each year the Michigan Tech Concrete Canoe Team, along with 200 other teams around the nation, designs and builds a concrete canoe which we take to a regional competition. Michigan Tech is a part of the North Central Regional Conference, which includes teams from the

University of Michigan, Michigan State, and Western Michigan University, among others. The winner of the regional competition then goes on to compete at the prestigious national level. Every year we choose a theme that resonates with the attitude throughout the team. The name of the boat, aesthetic design, display and presentation all tie into the chosen theme. The team works throughout the year and last year put in over 5000 man-hours before the regional competition.



Wait...How Can Concrete Float?

Traditional concrete is a mix of cement, water, sand and gravel. To make the canoe we use very small (less than 1mm in diameter) recycled hollow glass spheres, instead of sand and gravel. This results in concrete that is actually lighter than water! This is important because at competition the canoe is submerged in water and must rise back to the surface. Teams are disqualified if it does not.

So What Happens at Competition?

There are 4 parts to competition which are judged by a panel of seasoned engineers:

1. *Technical Paper:* The team writes a professional-quality design paper detailing the engineering behind our concrete mix proportions, management techniques, testing procedures, construction methods, innovations and sustainability.
2. *Technical Presentation:* A group of presenters summarize the Technical Paper into a presentation which can be no longer than five minutes. The challenge is to condense an entire year of work into a concise and dynamic presentation.
3. *Races:* There are five races: two-person Women's Sprint, two-person Men's Sprint, two-person Women's Endurance, two-person Men's Endurance, and a four-person Coed Sprint. Michigan Tech traditionally finishes among the top ten in races.
4. *Final Product:* The canoe is presented and judged for aesthetics and compliance against the official rules of competition which detail dimensions and materials allowable in construction. The judges also review how well the team's tabletop display, canoe stand and cross-section relate to the theme and contribute to an overall aesthetic.

We truly love what we do! We put a lot of dedication and hard work into producing outstanding canoes each year, and we have fun doing it. We'd like to thank our current sponsors, families, and friends for their amazing support and we hope that you will consider partnering with us this year!

MichiganTech