



Concrete Canoe in a Nutshell

Michigan Tech and 200 other Concrete Canoe teams around the nation design and construct a canoe for the competition ASCE holds at the end of the school year. In the Eastern Great Lakes Conference, around ten teams compete in the regional competition at the end of March.

Prior to competition, the team has to complete multiple design steps involved in constructing a concrete canoe. During the summer, before the season even starts, a hull is designed, with the goal of improving the hull design from last year. Afterwards, at the very beginning of the school year, structural analysis is performed on the hull design. The mix and reinforcement committees use this base structural information in order to prototype and design mix and reinforcements for the final product. These committees are in charge of maintaining the structural integrity during races by testing different combinations of mix and reinforcement leading up to the final canoe construction. Additionally, a theme for the season is chosen. The canoe is constructed all in one day, with the team waking up early in the morning in order to mix and trowel the concrete into the mold, cut in the shape of the designed hull. After the canoe cures, it is decorated in order to match the decided theme. Once the canoe is constructed, the aesthetics committee creates a display table to show information on the canoe and work that has been done throughout the year. This committee also constructs a stand for the canoe to be showcased during the competition. Both the display and stands tie into the annual theme and contribute to the overall competition score.

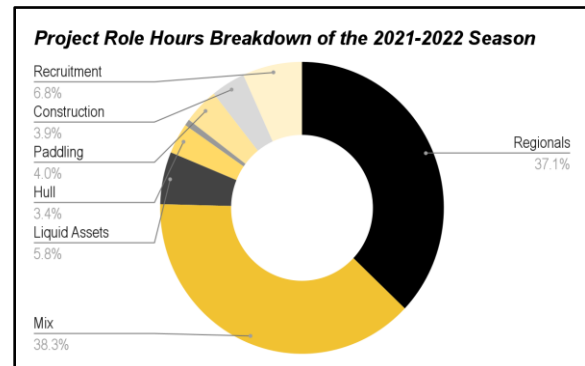


2021-2022 Michigan Tech Concrete Canoe with *The Kraken*

Michigan Tech Concrete Canoe 2021-2022

In the 2021-2022 season, the Michigan Tech Concrete Canoe team was inspired by the many nautical legends in Houghton and the Upper Peninsula. This past year, the team recruited more new members than they have in the past. Additionally, due to Covid, only a handful of members had experienced an in-person competition. In a way, these new and returning members dove into the unknown, so nautical myths based on the wonders of the unknown were a suitable fit for the year's theme.

The team put in over 1,000 person hours into constructing the canoe and preparing for competition. Time spent during paddling practice was not included in the 1,000-plus hours.





Last season's canoe, *The Kraken*, used a rounded bottom, similar to one of its predecessors, *Dozer*, to maintain the stability and velocity achieved in that design. *The Kraken* passed the swamp tests required for the team to race, and finished all of the races with minimal to no damage or water let into the canoe.

22' THE KRAKEN AT A GLANCE	
NAME	<i>The Kraken</i>
WEIGHT	205 lbs
WIDTH	24"
LENGTH	20'
DEPTH	15.5"

Last year, the team consisted primarily of new recruits, so a lot of the team's efforts were spent on transferring knowledge from the few veteran members to the new members. Having so little experience among the members of the team created a unique opportunity for both the new and old members. This challenge allowed the team to grow, as it provided learning and leadership opportunities. However, with a large number of new people learning the ropes, there was not as much room for major innovations in their processes. With the majority of the team now having at least a year under their belts, they eagerly await the new challenges and anticipate substantial improvement from last year's season.

2021-2022 Regionals

The 2021-2022 Regionals competition took place at Ohio University in Athens, Ohio. The team placed 1st in Presentation and 2nd in Races, taking 1st in Women's Slalom and 2nd in all other races. Overall, the team placed 3rd in the region, falling to Youngstown State University and University of Michigan. With a fire lit under them, this season's team is determined to take first this year.



2021-2022 Team at the Regional Competition Banquet

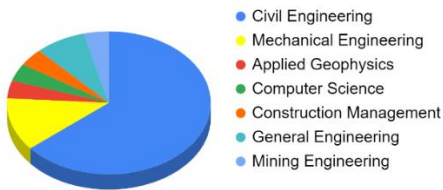
22' REGIONALS COMPETITION BREAKDOWN	
Presentation	1 st
Final Product	4 th
Technical Paper	5 th
EFA	5 th
Races Overall	2 nd
Women's Slalom	1 st
Men's Slalom	2 nd
Women's Sprint	2 nd
Men's Sprint	2 nd
Coed Sprint	2 nd
Final Results	3 rd

2022 Michigan Tech Concrete Canoe



Meet the 2022-2023 Team

The construction of this year's concrete canoe will require many skills, as well as a great deal of dedication, time, and materials. This year's team is very fortunate to have almost 30 members coming from a variety of different majors. With a number of different improvements in team structure and practices already in action, the team is devoted to producing a society-wide competition worthy boat!



2022-2023 Team Breakdown by Major

2022-2023 Season

Each year, a theme is selected to base the season's canoe, deliverables, and other items required in this year's request for proposal off of. This includes the canoe's name, aesthetic design, display, presentation, stand, etc. The theme for this year will be Casino Night. Over the last season, team members have bonded over card games. Our team wanted to incorporate this aspect of fun and lightheartedness into our theme this year. Additionally, we are trying out many new improvements in constructing the canoe that the team has never made before. We are taking a chance on our abilities and ambitions with these changes, just as Casino Night is a risk-reward event.

This year, the Michigan Tech Concrete Canoe Team will continue their research, development, and innovation, focusing on improving aspects of the 2021-2022 season. These improvements started after regionals in the Spring 2022 semester when the team decided a restructure of team leadership positions was necessary to

equally spread out the workload. Another improvement the team is aiming to work on is optimizing the boat's mobility via hull design alterations from last year's design. This includes a cable post-tensioning process after troweling the canoe in order to strengthen it.

2023 Regional Competition

The Eastern Great Lakes Student Conference regional competition is being hosted by Wayne State University. Scoring for the competition was determined by ASCE (American Society of Civil Engineers) and is divided into four categories: Project Proposal, Technical Presentation, Final Product Prototype, and Race Demonstration.

2023 Society-Wide Competition

The 2023 society-wide national competition will be hosted by the University of Wisconsin-Platteville in early June of 2023. Teams will advance to this competition based on their scoring in the Regional competitions. The team has their sights set on the Society-Wide Competition, and they are determined to make it there.

Contact Us!

We'd Love to Talk About What We Do!

Lydia Lamey Project Manager llamey@mtu.edu	Sam Pendell Deliverables Lead sjpendel@mtu.edu
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Check Us Out on the Web!

<https://cege.mtu.edu/asce/canoe/index.html>
mtu_concrete_canoe on Instagram

Donate to Us Online!

<https://www.mtu.edu/givenow/?desig=The%20Concrete%20Canoe%20Team>

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 Eastern Great Lakes 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 1000 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 in order to be eligible to race the canoe.

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 Slalom, two-person Men's Slalom, and a four-person Coed Sprint. Michigan Tech has historically finished first in races at regionals and among the top ten in races at nationals.
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!



Concrete Canoe Team

Sponsorship Opportunities

The Michigan Tech Concrete Canoe Team has been growing larger, more organized, more experienced, and more independent over the recent years. Although Covid-19 caused some setbacks, our team is eager and confident, with big ambitions and a year of in-person competition under our belt. It is these advances and determination that have led to our establishment as a national power in the world of concrete canoeing. These results would not be possible without the dedication of team members and the support of our trusted sponsors.

We are personally asking you to assist us in our **goal of \$19,230 for the 2022-2023 competition year** in order to support another nationally ranked canoe. Donations of technical expertise, products, or funding of any sort will help lead us to this achievement. As tokens of our appreciation for your generosity, you will be recognized in the following ways based on your level of donation:

Level of Sponsorship	Donation Level	Recognition
Silver	\$50-\$250	- Company/Family name displayed on Race Day t-shirts
Gold	\$250-\$500	<i>Silver sponsorship benefits</i> - Michigan Tech Concrete Canoe baseball cap (based on current season's theme)
Platinum	\$500+	<i>Gold sponsorship benefits</i> - Team picture sent to company/family - Company/family name displayed with canoe at Michigan Tech

Interested? Here's how you can help!

Make an online donation: <http://www.mtu.edu/givenow/?desig=The%20Concrete%20Canoe%20Team>

OR

Send a check, made out to *The Michigan Tech Fund – Concrete Canoe*, to:

The Concrete Canoe Team
Michigan Technological University
Civil and Environmental Engineering
1400 Townsend Drive
Houghton, MI 49931

If either of these methods do not work for you, or if you are interested in a donation in-kind, please contact the team.

We will be happy to help you out!

Please do not hesitate to ask any questions about the team. Contact information can be found below or at our team website at <https://cege.mtu.edu/asce/canoe/index.html>. Additionally, feel free to check out our Instagram (mtu_concrete_canoe). Once again, we truly do love what we do, and we thank you for your time and consideration. We look forward to hearing from you!

Sincerely,

Lydia Lamey, Project Manager

llamey@mtu.edu

(763) 232-7085

Patrick Mungcal, Treasurer

pjmungca@mtu.edu

(815) 666-6705



**Michigan
Technological
University**

Concrete Canoe Team

Sponsorship Opportunities

What will my donation be used for?

Michigan Tech has a strong tradition of taking the entire team to competition. Each and every member takes time out of their busy lives to contribute to the team throughout the academic year. Because of this, we believe that every member earns a right to participate in competition and see their hard work realized. However, with registration at \$100 per person at regionals alone, that does put a strain in our budget. Our estimated expenses are detailed below:

ESTIMATED EXPENSES FOR 2022-2023 SEASON	
Regional Competition at Wayne State University (25 registrations @ \$100/person, transportation, lodging)	\$6,500
National Competition at University of Wisconsin-Platteville (20 registrations, transportation, lodging)	\$7,250
Construction Expenses (Reinforcement, display, stands, cables and other equipment for tensioning)	\$2,000
Lab Improvements (PPE, tools)	\$1,000
Mix Expenses (Ingredients used in mix, equipment needed to mix concrete)	\$1,500
Paddling (Renting out pool, trailer equipment, paddles)	\$980
2022-2023 ANNUAL FUNDRAISING GOAL	\$19,230

Past experience has taught us the cost of canoe and display construction is a mere fraction of the cost of getting the team to and from the competition sites. This year will be no different. The regional competition will be held in the spring of 2023 at Wayne State University in Detroit, MI. The team's goal is to compete at the national competition this year, which will be held at the University of Wisconsin-Platteville. As you can see from our estimated expenses, the team will spend upwards of \$13,000 just in competition expenses.

Please consider becoming a sponsor of the Michigan Tech Concrete Canoe Team. Questions about the team are always welcome, and if you are in the Houghton area, you are invited to come and see our progress. Thank you!

