



WESTERN MICHIGAN UNIVERSITY

January 23, 2025

Dear Metal Casting Professionals:

Hope 2025 is off to a great start. The Short Course in Metal Casting at WMU has been a beneficial learning experience for the high school students that participated. We plan to offer the one-week metal casting course at WMU June 23rd through June 27th 2025.

The short course is designed with a goal of identifying and promoting the variety of viable metal casting careers. This hands-on program in metal casting is tailored towards 9th - 12th graders and the activities will appeal to the interest, attitude and motivation of our young people. It is our hope that each Chapter will select and support some young people for week at WMU. The fee is \$700 for each student, room & board is included in these prices.

Please send me name(s) and contact information for the student(s) that your Chapter will be supporting. I will in turn send them each (second week in May 2025) an agenda, directions to WMU and information on room & board at WMU. Attached is the description and schedule of activities for the short course. Thank you for your interest in metal casting education. If you have questions, please contact me at (269) 276-3373 or ramrattan@wmich.edu. Be good!

Sincerely,

Dr. Sam Ramrattan, Foundry Educational Foundation Key Professor
Department Engineering Design and Manufacturing
Western Michigan University

Short Course in Metal Casting

Presenter:

Dr. Sam Ramrattan is a Professor in the Department of Engineering Design and Manufacturing, College of Engineering and Applied Sciences, Western Michigan University and a Key Professor for the Foundry Educational Foundation.

Objective:

To educate young adults about the valuable career opportunities in metal casting.

Location:

Western Michigan University Metal Casting Laboratory

Who should attend?

High School Students (grades 9th through 12th) with an interest in math and science.

Prerequisites:

An interest in STEM

Type of presentation:

There will be short lectures related to metal casting with practical applications of the casting processes. Field trips to metal casting industries with opportunities to meet and converse with professionals.

Duration:

5 days (Monday, 23rd June through Friday, 27th June 2025)

Attendance limit:

18 students

Equipment:

Computers will be provided for the students.

Handouts:

Workbook designed as an instructional aid to be used by students during classroom activities. It has sections for answers, drawings, calculations, charts, and general note taking.

Topics Covered:

- The history of metal casting.
- Current trends in the metal casting industry.
- Interrelationship between manufacturing (molding, melting, filling and finishing), engineering, quality, purchasing, marketing and sales of castings.
- The application of computers in metal casting.
- The application of mathematics and sciences in metal casting.
- Career opportunities (AFS/NADCA/FEF) in the metal casting industry.



WESTERN MICHIGAN UNIVERSITY

SHORT COURSE IN METAL CASTING

College of Engineering and Applied Sciences
Department of Industrial & Manufacturing Engineering
Monday, June 23 - Friday, June 27, 2025
Room F-111 CEAS Parkview Campus

AGENDA

6/23/25

9:00 a.m. – 10:15 a.m.	Welcome & Introduction to Metal Casting
10:15 a.m. – 10:30 a.m.	<i>Break</i>
10:30 a.m. – 12:00 noon	Molding, Melting & Filling
12:30 noon – 1:30 p.m.	<i>Lunch</i>
1:30 p.m. – 2:30 p.m.	Metal Casting Demonstration PART I
2:30 p.m. – 2:45 p.m.	<i>Break</i>
2:45 p.m. – 4:00 p.m.	Metal Casting Demonstration PART II
4:00 p.m. – 5:00 p.m.	<i>Break</i>
5:00 p.m. – 6:00 p.m.	<i>Dinner</i>
6:00 p.m. – 9:00 p.m.	Tour Kalamazoo/Portage Metro Area

6/24/25

9:00 a.m. – 10:15 a.m.	Casting Materials & Processes
10:15 a.m. – 10:30 a.m.	<i>Break</i>
10:30 a.m. – 12:00 noon	Properties of Casting Alloys
12:30 noon – 1:30 p.m.	<i>Lunch</i>
1:30 p.m. – 2:30 p.m.	The ability of metal to flow PART I
2:30 p.m. – 2:45 p.m.	<i>Break</i>
2:45 p.m. – 4:00 p.m.	The ability of metal to flow PART II
4:00 p.m. – 5:00 p.m.	<i>Break</i>
5:00 p.m. – 6:00 p.m.	<i>Dinner</i>
6:00 p.m. – 9:00 p.m.	Meet WMU Administrators to discuss university entrance requirements and expectations.



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College of Engineering and Applied Sciences
Department of Industrial & Manufacturing Engineering

AGENDA (Continued)

6/25/25

5:00 p.m. – 6:00 p.m.	FOUNDRY TOUR
6:00 p.m. – 9:00 p.m.	<i>Dinner</i>
	Attend Sporting Event

6/26/25

9:00 a.m. – 10:15 a.m.	Using math to make metal casting decisions
10:15 a.m. – 10:30 a.m.	<i>Break</i>
10:30 a.m. – 12:00 noon	Using science to make metal casting decisions
12:30 noon – 1:30 p.m.	<i>Lunch</i>
1:30 p.m. – 2:30 p.m.	Metal Casting Project PART I
2:30 p.m. – 2:45 p.m.	<i>Break</i>
2:45 p.m. – 4:00 p.m.	Metal Casting Project PART II
4:00 p.m. – 5:00 p.m.	<i>Break</i>
5:00 p.m. – 6:00 p.m.	<i>Dinner</i>
6:00 p.m. – 9:00 p.m.	Meet with Foundry Industry Professionals

6/27/25

9:00 a.m. – 10:15 a.m.	Computers in metal casting PART I
10:15 a.m. – 10:30 a.m.	<i>Break</i>
10:30 a.m. – 12:00 noon	Computers in metal casting PART II
12:30 noon – 1:30 p.m.	<i>Lunch</i>
1:30 p.m. – 2:30 p.m.	Career opportunities in metal casting (AFS/FEF/NADCA)
2:30 p.m. – 2:45 p.m.	<i>Wrap-up</i>