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# WESTERN MICHIGAN UNIVERSITY

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January 9, 2018

Dear Metal Casting Professionals:

Hope all is well with you. Last summer, the Short Course in Metal Casting at WMU was a beneficial learning experience for the high school students that participated. We plan to offer the one-week metal casting course at WMU June 25<sup>th</sup> through June 29<sup>th</sup> 2018. 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 10<sup>th</sup> - 12<sup>th</sup> 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 \$650 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 (first week in May 2018) 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](mailto:ramrattan@wmich.edu). Be good!

Sincerely,

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

## Short Course in Metal Casting

***Presenter:***

Dr. Sam Ramrattan is a Full Professor in the Department of Engineering Design, Manufacturing and Management Systems, 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 10<sup>th</sup> through 12<sup>th</sup>) with an interest in math and science.

***Prerequisites:***

None

***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, 25<sup>th</sup> June through Friday, 29<sup>th</sup> June 2018)

***Attendance limit:***

15 students

***Equipment:***

Computers and personal calculators 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.



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# WESTERN MICHIGAN UNIVERSITY

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## SHORT COURSE IN METAL CASTING

College of Engineering and Applied Sciences  
Department of Industrial & Manufacturing Engineering  
Monday, June 26 - Friday, June 30, 2017  
Room F-111 CEAS Parkview Campus

### AGENDA

#### 6/25/18

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

#### 6/26/18

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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# WESTERN MICHIGAN UNIVERSITY

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

## AGENDA (Continued)

### 6/27/18

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

### 6/28/18

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

### 6/29/18

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>