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**American
Iron and Steel
Institute**

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eng.mcmaster.ca/training-courses

25TH McMASTER UNIVERSITY BLAST FURNACE IRONMAKING COURSE

May 13 - 18, 2018



eng.mcmaster.ca/training-courses

Course Objectives

The blast furnace has been and will remain the "centrepiece" of integrated facilities in the steel industry. Present day Ironmaking technology has evolved over many years through innovations in raw materials preparation, blast furnace design and blast furnace practice. Improvements in blast furnace operation usually have significant impact on the well-being of the company.

The blast furnace and its ancillary facilities are very complex and dynamic systems. This course is designed to present "state-of-the-art" knowledge of the systems

to operators, researchers and suppliers of refractories, raw materials and equipment to the industry. The course content is continuously updated by the expert lecturers.

In addition to the lectures, there is a Blast Furnace Game, a Case Study related to Operations and at the end of the Course, an optional Plant Tour. Lecture notes will be distributed at the beginning of the course.

The Organizing Committee reserves the right to modify course material or to substitute lecturers without notice.

2018 Lectures

Principles, Design and Raw Materials

Historical Development and Principles of the Iron Blast Furnace
John Ricketts
ArcelorMittal USA

Blast Furnace Reactions
Bob Nightingale
University of Wollongong/
Retired from Bluescope Steel

Fundamental Principles Applied to Blast Furnace Safety and Environment
Ronald Koprash and Fred Post
Algoma

Blast Furnace Energy Balance and Recovery: Rules of Thumb
John Busser
Hatch

Blast Furnace Design I
Dave Berdusco
Paul Wurth Inc.

Blast Furnace Design II
Peter Martin
Primetals Technologies

Blast Furnace Design III Campaign Extension
Salustiano Pinto
ArcelorMittal

Ironmaking Refractories
Floris van Laar
Allied Mineral Technical
Services, Inc.

Iron-Bearing Burden Materials
Marcelo Andrade
ArcelorMittal USA

Blast Furnace Control - Measurement Data and Strategy
Bob Nightingale
University of Wollongong/
Retired from Bluescope Steel

Maintenance Reliability Strategies in an Ironmaking Facility
Johan van Ikelen
van Ikelen Blast
Furnace Consultant

Operations

Coke Production for Blast Furnace Ironmaking
Lous Giroux
Canmet-Energy

Day-to-Day Blast Furnace Operation
Art Cheng
Cheng Technical
Services LLC

Challenging Blast Furnace Operations
John Ricketts
ArcelorMittal

Burden Distribution and Aerodynamics
Steve Yaniga
U. S. Steel

Ironmaking/Steelmaking Interface
Mike Price
ArcelorMittal Dofasco

Fuel Injection in the Blast Furnace
Donald Zuke
ArcelorMittal Steel USA

Casthouse Practice and Blast Furnace Casthouse Rebuild
Barry Hyde
Hatch

Ironmaking in Western Europe
TBD

Chinese Blast Furnace Practice
Dennis Lu
ArcelorMittal USA

Japanese Blast Furnace Practice
Dr. Koji Saito
Nippon Steel & Sumitomo
Metal Corporation

Future Trends in Ironmaking
Joe Poveromo
Raw Materials & Ironmaking
Global Consulting

Blast Furnace Modelling and Visualization
Chenn Zhou
Purdue University Calumet

Optional Lecture

Introduction to Ironmaking
Ken Coley
McMaster University

Optional lecture
Sunday Evening

ENGINEERING



Course Information:

There is an enrollment limit of 110 registrants. The course fee is \$1,999.00 up to April 15 or \$2,150.00 after April 15. The course fee includes USB with lecture notes, Welcome Reception, a shirt, lunches and coffee breaks. You can register online at eng.mcmaster.ca/training-courses. Receipt of payment is the only guarantee of registration.

Course Registration

Sunday, May 13 from 4:00 p.m. to 7:00 p.m. at the main lobby of Les Prince Hall (Sterling Street access). Monday, May 14, from 8:00 a.m. to 9:15 a.m. at the registration desk, outside lecture room at the Michael G. DeGroot Centre for Learning & Discovery (MDCL) building.

Accommodation Registration

To promote interaction among registrants and lecturers, we strongly recommend accommodation in residence at the rate of \$650.00 CDN. Accommodation fee includes five nights in McMaster University residence, five breakfasts and two dinners. Extra nights are available at CDN \$100.00 + 13% taxes/night.

On site accommodation registration will be Sunday May 13 from 4:00 p.m. to 7 p.m. at the main lobby of Les Prince Hall (Sterling street access), but for early and late arrivals a front desk is open 24/7 in the main lobby of the Commons building. Daily maid service is provided. Please note there is no wake-up service available.

Computer Game

This is an excellent opportunity to meet and interact with colleagues from all over the world.

On the first day the class will be divided into teams. Each team objective is to be the lowest cost hot metal producer.

Case Study

Team work activity on a real-world case to analyze operating and process data to determine the root cause(s) of a blast furnace upset, identify corrective actions and reflect on lessons learned.

Course Books

Cost: \$75.00

Printed version of lecture notes.

Reception – Sunday, May 13

A Welcome Reception will be held from 7 - 9 p.m. at the The University Club of McMaster. Registrants are invited to meet lecturers, members of the Organizing Committee, and fellow participants.

Banquet – Wednesday, May 16

Cost: \$75.00

Enjoy the food and the spectacular view of the ArcelorMittal and Stelco plants from the other side of Lake Ontario at the **Burlington Golf and Country Club**. (Business casual attire, no jeans allowed)

Optional Plant Tours – Friday May 18

Cost: \$50.00

Each tour will be limited to 40 registrants on a first come, first served basis.

No short sleeves shirts, short pants or open shoes are allowed. Hard hats and safety glasses will be provided.

Driving tour of the Primary division and walking tour of Blast Furnace 3.

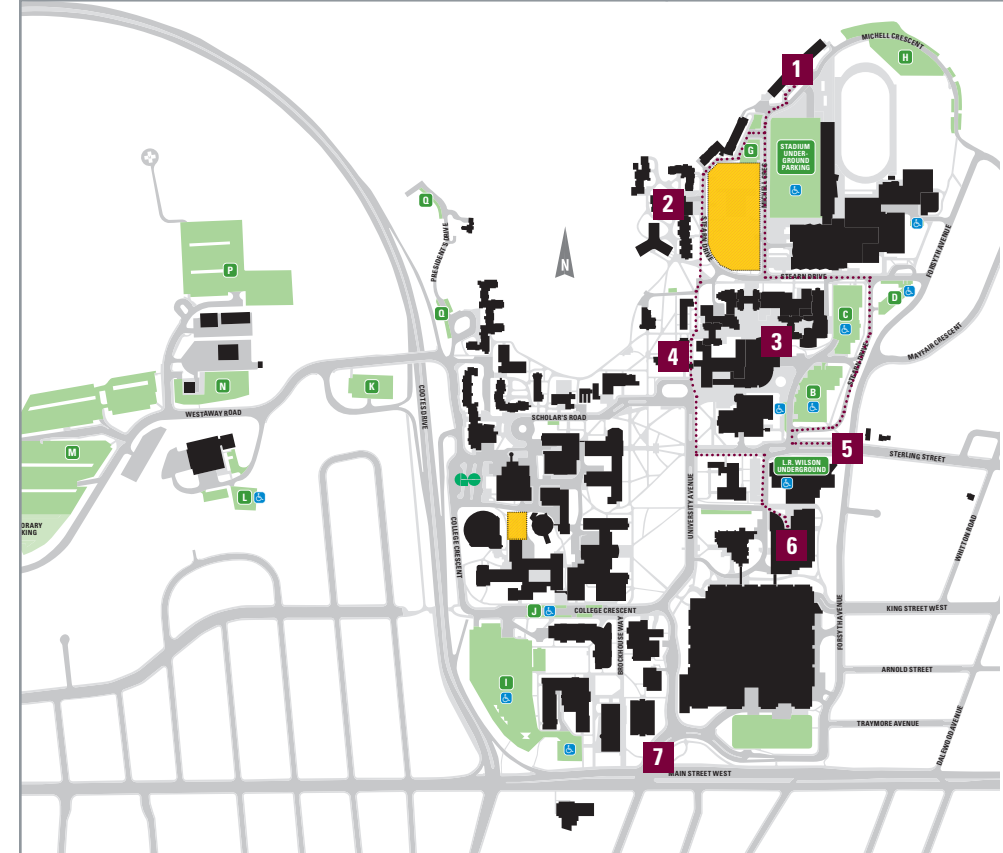
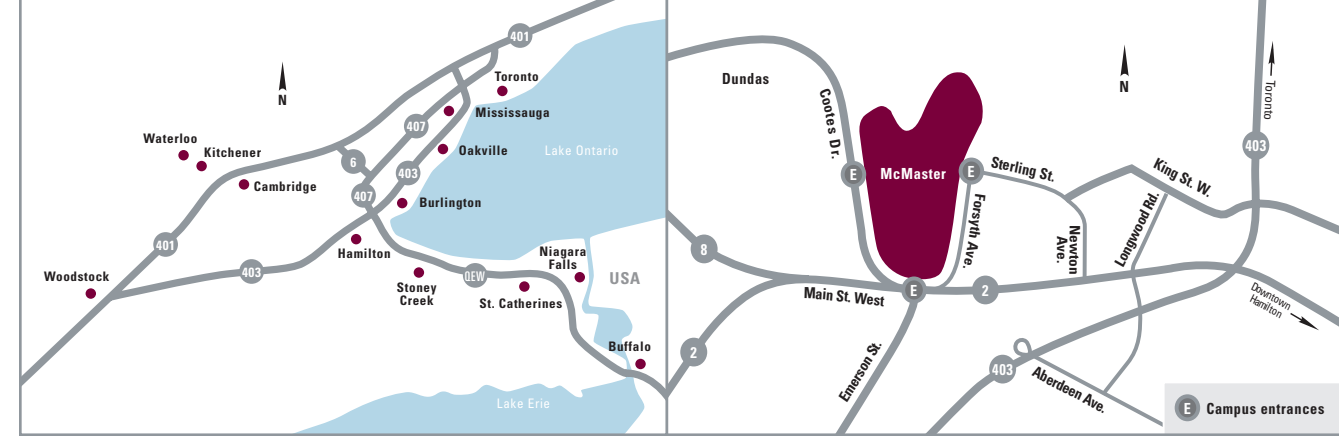
Bus will leave at 1:30 to approximately 4:30 p.m.

Visit Stelco Lake Erie Blast Furnace 1

Bus will leave at 1:30 to approximately 5:30 p.m.

Cancellation Policy

After April 19, 2018 refund 50%. There will be no refunds after May 1, 2018. Registration is not official until the registration fee has been paid. Substitutions can be made.



McMaster Campus

- 1 Les Prince Hall
 - 2 Commons building
 - 3 TwelvEighty Restaurant, Room B118 McMaster University Student Centre
 - 4 Convocation Hall
 - 5 **Sterling St.** entrance for course and residence registration on Sunday
 - 6 Michael G. DeGroot Centre for Learning and Discovery
 - 7 **Main St.** entrance
- P Parking Zones

Travel Information:

Location: Hamilton is situated midway between Toronto and Niagara Falls. McMaster University is located in the west end of the city.

Getting Here: The nearest large airport is Pearson International in Toronto. Frequent limousine or bus service is available and it takes about one hour.

There are also flights from Buffalo NY which is approximately 120 km from Hamilton.

Parking Fees: Residents and non-resident attendees will be charged \$72.00 if purchased at course registration or the course registration desk. McMaster University Parking fee: \$20.00/per day.