



Engine Operation and Maintenance Course

Co-operative Fuel Research (CFR) Engine Courses

What it is

- An extensive five-day training course in the operation and maintenance of CFR test engines including lectures, demonstrations, and hands-on training
- Two courses are available
 - Research Octane Number and Motor Octane Number Engines, ASTM test methods D2699 and D2700
 - Cetane Number Engine, ASTM test method D613

Course focus

- Operational training of single-cylinder CFR test engines according to ASTM test methods
- Performing and establishing a maintenance program
- Top overhaul of a CFR test engine
- Develop a comprehensive understanding of the CFR test engines
- The opportunity to learn on an engine without fear of damaging costly parts
- Use of reference and toluene standardization fuels

What the course offers

- Extensive hands-on training
- Opportunity to perform all the necessary steps of a top overhaul
- Certified experienced instructors
- Spacious lecture rooms and a modern and safe ignition-quality engine laboratory

Course topics

- A brief history of CFR testing
- Fuel detonation principles
- Reference fuels and their use
 - toluene standardization
 - iso-octane
 - n-heptane
 - leaded reference fuels
- Top overhaul of a CFR test engine
- Measurement of critical engine components
 - specifications
 - record keeping
- Personal and CFR test engine safety
- Initial operation checks
- Normal operating parameters
- Test engine operational techniques
 - bracketing
 - compression ratio
- Test engine equipment
 - humidity controllers
 - heaters
 - carburetor
 - cylinder
 - pistons and rings
 - clamping sleeve
 - valves, valve guides, and valve seat inserts
 - crankcase
 - exhaust system
 - induction motor
 - instrument panel
- Use of the ASTM Volume 05.05 Test Methods



What you receive

- Alberta Research Council CFR Test Engine Training Course Manual
- Guide to Operational and Maintenance Problems on ASTM-CFR Engines, Third Edition or later, Edited by R.A.Rose and G.M.Stott
- A certificate of achievement

Additional course material

- ASTM Volume 05.05 Test Methods for Rating Motor, Diesel, and Aviation Fuels (ASTM D2699, ASTM D2700, and D613)
- Engine equipment and cutaways (used for demonstration and practical purposes)

Logistics

- Courses are conducted at the Alberta Research Council Fuels & Lubricants research facility in Edmonton, Alberta, Canada.
- All students are required to wear the following personal protective equipment (PPE); safety glasses with side shields, lab coat and steel toed shoes. Students are encouraged to bring their own PPE for comfort and convenience.
- Contact us if you require travel and lodging information.

Cost

- The fee is \$1450.00 per person. It covers five days of instruction, training material and onsite lunches. The fee does not cover travel and lodging expenses.

About us

Fuels & Lubricants is an Alberta Research Council business unit with research capabilities covering a full range of petroleum product characterizations; from LPG's to refined products to crude oil assays to bitumen's. The laboratory maintains ISO 17025 accreditation through the Standards Council of Canada and is recognized by the Canadian Department of National Defence.



For more information, contact:

Dan Wispinski
Business Unit Manager
Fuels & Lubricants Group

Alberta Research Council
250 Karl Clark Road
Edmonton, Alberta T6N 1E4
Telephone: **(780) 450-5108**
Fax Number: (780) 998-9053
Email: wispinski@arc.ab.ca

