

Preparing for Technical Training: Essential Skills for Water/Wastewater Operators

Levels 1 and 2



Workplace
Education
Manitoba



August 2010

Workplace Education Manitoba would like to express appreciation to the following for supporting the development of this curriculum:

**Industry Workforce Development,
Entrepreneurship Training and Trade
and the Province of Manitoba**

Workplace Education Manitoba would like to thank the individuals from across Manitoba who provided consultation, content and feedback.

For more information,
visit www.wem.mb.ca
or contact the Project Coordinator
Sheila Kingswell at info@wem.mb.ca.

© Workplace Education Manitoba, 2010

All rights reserved; no part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical, photocopying, recording, or otherwise without either the prior written permission of the Publishers. This manual may not be lent, resold, hired out or otherwise disposed of by way of trade in any form binding or cover that in which it is published, without the prior consent of the Publishers.

ACKNOWLEDGMENTS





COURSE CONTENTS:

This course consists of eight classes of five hours each. There is a pre-assessment, along with eight modules in total to complete with the learners.

LMA Consent Forms

- Have learners complete the Manitoba Competitive, Training and Trades Consents and Privacy Notice Forms and the Client Intake Information form.
- Copies of these are included in this package but the latest version of these forms should be obtained from the WEM office.

Pre-assessment

- Administer the assessment which will help determine the starting point with the individual learners and the group.
- As each student finishes, correct the assessment with them, discuss what they thought their comfort areas were and where they thought they may need extra work to bring them up to a level to be able to proceed to more complex math.

9 Modules, each one contains:

- **Student module** titled “Module 1 – Basic Math Refresher”, for example.
 - Meant to be taught by a teacher or could be used as self study.
 - Contains information, examples and questions for the learner to complete with space to do the calculations.
 - Meant to be taught by a teacher one section at a time, then the student is given a bit of time to do one exercise, the teacher corrects it with the students and then moves on to teach the next bit.
 - Begins with a pre-test. If students do well on the pre-test they may be able to move on to the next module without having to do that module. It will also give them a sample of what they will be learning in the module. (No pre-test for module 5).
- **Teacher module** titled “Module 4 – Teacher Copy”, for example
 - Information to know or to share with the students.



Modules 3, 4, 6 and 7 also contain:

- **Practice Test** titled “Module 3 – Practice Test”, for example
 - Multiple choice word problems based on the lessons from the module.
 - This can be given to the students in the last part of the class and then can be taken home to complete and corrected the next class.

- **Answer Key** titled “Module 3 – Answer Key”, for example
 - Contains all the answers to the questions in the practice test along with how to do each problem.
 - This is meant to be given to the student to take home with the practice test so that they can check their answers and/or see how to solve the problems, which formula to use, etc. Have the students begin the practice test in class without the answer key.

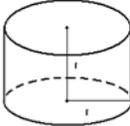
***Note:** Modules 1, 2, 5, 8 and 9 do not have Practice Tests or Answer Keys

Also Included:

- **Glossary of Terms**
 - Can be given to students at the beginning of the course.
 - Contains the important terms from all eight modules.

- **Formula Sheet**
 - To be given with module three and used for the remainder of the course.
 - This is the same formula sheet that they will be given at RRC to use in their certification exams.

COURSE OUTLINE:

	Class 1:	<ul style="list-style-type: none"> - Introductions and fill out LMA Consents and Privacy Notice (1 hr) - Pre-assessment (go over results, share answers) (2 hrs) - Module 1 – Basic Math Refresher (2 hrs)
	Class 2:	<ul style="list-style-type: none"> - Correct the remainder of Module 1 (1 hr) - Module 2 – Fractions, Decimals and Percents (4 hrs)
	Class 3:	<ul style="list-style-type: none"> - Correct the remainder of Module 2 (1 hr) - Module 3 – Measurement Conversions – (3 hrs) - Practice Test – 1 hour, take home
	Class 4:	<ul style="list-style-type: none"> - Do some Module 3 Practice Test questions on the board (1 hr) - Module 4 – Linear, Area and Volume Calculations (3 hrs) - Practice Test – 1 hour, take home
	Class 5:	<ul style="list-style-type: none"> - Do some Module 4 Practice Test questions on the board (3 hrs) - Module 5 – Solving Equations (2 hrs) (very short unit!)
	Class 6:	<ul style="list-style-type: none"> - Module 6 – Chemical Measurements (3 hrs) - Practice Test (2 hrs)
	Class 7:	<ul style="list-style-type: none"> - Correct Module 6 Practice Test (1 hr) - Module 7 – Hydraulics (3 hrs) - Practice Test – 1 hour, take home
	Class 8:	<ul style="list-style-type: none"> - Correct Module 7 Practice Test (1 hr) - Module 8 – Wastewater (1 hr) (short unit) - Module 9 – Electricity (1 hr) (very short unit!) - Final Assessment (2 hrs)

IMPORTANT TO KNOW:

- Go to Wikipedia, the online encyclopedia and type in “**Sewage Treatment**” and “**Water Treatment**” for an excellent overview of Wastewater and Water Treatment processes.
- It would be helpful if all students had the same scientific calculator. Students are allowed and encouraged to use their calculators at all times to solve the math problems and will be allowed to use them in the RRC certification courses.
- Student should get to know and use their formula sheets. The formula sheet provided is the same one used for the RRC courses.
- There are approximately 120 multiple choice questions on the RRC exam. Less than 20 of them have been math questions.
- Understanding how to convert units using a ratio is extremely important because most questions will have some type of conversion in them.
- Understanding how to use a formula is also extremely important. Using the proper units in the formula and converting when necessary is essential.
- Correcting the Practice Test questions on the board with students is time consuming but extremely important for their learning.
- It would be helpful to pair up stronger students with weaker students for in class work.

IMPORTANT CONTACTS AND LINKS

Manitoba Conservation

Donna Garcia

Certification Program Coordinator

Phone No.: (204) 945-7065

E-Mail: donna.garcia@gov.mb.ca

Responsible for implementation of sub-programs under the *Water and Wastewater Facility Operators Regulation*.

- classification program for water and wastewater facilities;
- certification program for operators of water and wastewater facilities; and
- water and wastewater certification examination program.

Water and Wastewater Facility Operators Certification Program

<http://www.gov.mb.ca/conservation/eal/certification/exams>

Manitoba Conservation contracts with the Association of Boards of Certification (ABC) for the provision of an examination service.

- ABC's Need-to-Know Criteria describes the core competencies that are covered on the exams
- Sample exam questions

http://www.abccert.org/testing_services/certification_study_resources.asp