

ND Rural Water Systems Association

July 16, 2014

Bruce Emmil – Associate Vice President
National Energy Center of Excellence

Water & Wastewater Technology Certificate
Program

BISMARCK STATE COLLEGE



NATIONAL ENERGY CENTER OF EXCELLENCE

ON-CAMPUS PROGRAMS

- lineworker (1970)
- power plant technology (1976)
- process plant technology (1982)
- mechanical maintenance (2007)
- instrumentation & control (2008)
- renewable generation technology (2010)
- petroleum engineering technology (2012)

NATIONAL ENERGY CENTER OF EXCELLENCE

ONLINE PROGRAMS

- *power plant technology (2000)
- *process plant technology (2000)
- electric power technology (2001)
- electrical transmission systems technology (2003)
- nuclear power technology (2004)
- *instrumentation & control (2008)
- bachelor applied science energy management(2008)
- *renewable generation technology (2010)
- petroleum production technology (2011)
- water & wastewater technician (2012)

* also offered on-campus

WATER & WASTEWATER TECHNOLOGY PROGRAM

- designed for entry-level employment in water and wastewater treatment plants of all types; city and rural utilities, power plants, process and other industrial facilities



WATER AND WASTEWATER TREATMENT TECHNOLOGY

- [tuition and fees](#)
 - approximately \$3820 each semester
 - including 15 credits and additional course fees
 - certificate program is two semesters and 30 total credits
 - approximate total tuition and fees = \$7640
 - approximate total textbook costs = \$800
 - 11 courses required for certificate completion

PROGRAM COURSES – FIRST SEMESTER

- WATR 101 introduction to the water industry
- ENRT 105 safety, health & environment
- ENRT 107 mechanical fundamentals
- ENRT 103 applied math
- ENRT 112 print reading
- WATR 116 control systems

PROGRAM COURSES – SECOND SEMESTER

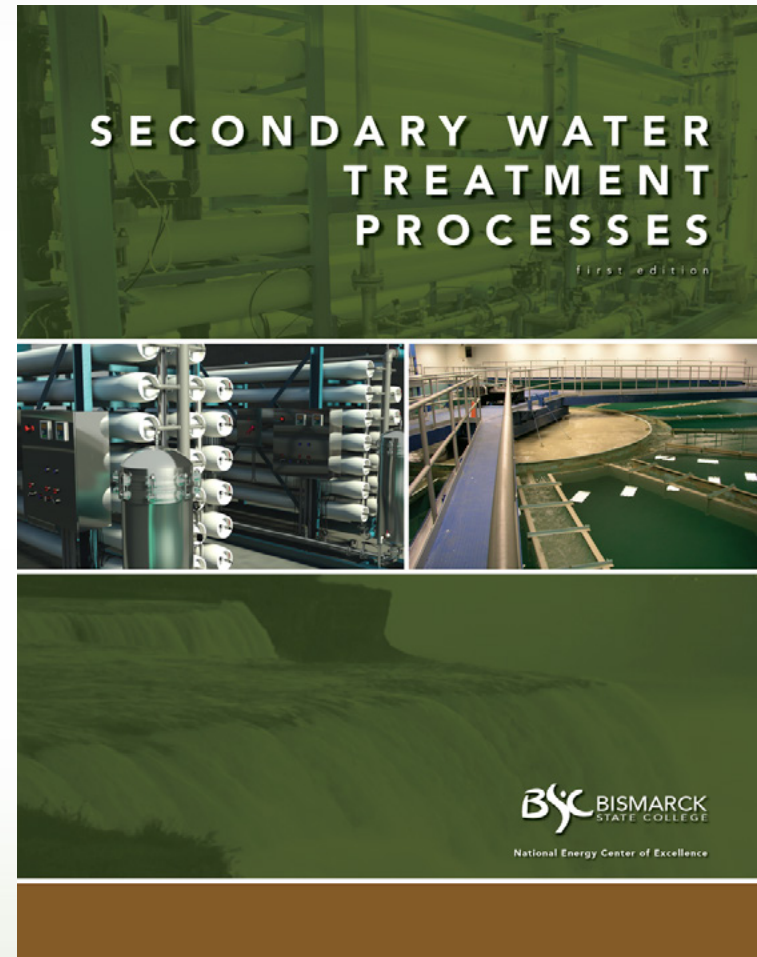
- WATR 105 laboratory procedures
- WATR 110 water treatment I
- WATR 115 water treatment II
- WATR 120 wastewater treatment
- WATR 220 practical applications

COURSE SCHEDULING

- courses are offered in blocks of 3-5 weeks per class
- students spend approximately 15-20 hours a week working on a course
- all students are assigned to an online academic advisor for assistance

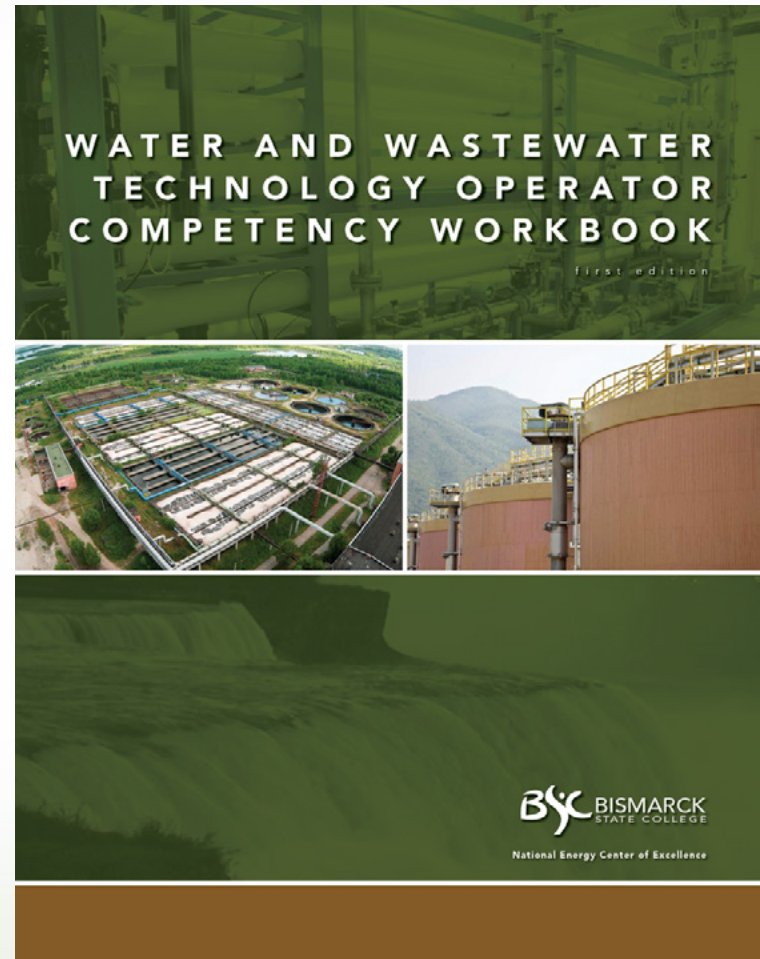
TEXTBOOKS

- 15 textbooks used throughout the curriculum
- 8 textbooks specifically designed and completed by NECE for the program



WATR 220 PRACTICAL APPLICATIONS

- internship/job shadow experience at a water treatment facility or hands-on lab activities at BSC's national energy center of excellence
- students observe and assist in the daily operations of a functional water or wastewater treatment facility
- hands-on lab activities include lab testing, process checks, basic problem-solving and routine maintenance activities



WATER & WASTEWATER TECHNOLOGY

- the program is taught entirely online and focuses on treatment processes and equipment



INTERACTIVE LEARNING TOOLS

simulations and animations

- used to help illustrate technical components and processes



Course Author

Course Home

[Syllabus](#)
[Course Schedule](#)
[Welcome](#)
[Introduction](#)
[Instructors Only*](#)

Pumps
Compressors
Associated Equipment
Exam I
Collection
Pretreatment

[Reading Assignment](#)
[Lecture](#)
[Assignment](#)
[Discussion](#)
[Quiz](#)

Exam II
Clarification
Filtration
Exam III

Pretreatments

As outlined in Chapter 2 of your textbook, there are several physical processes applied as pretreatments: screening, aerating, and degasifying. A travelling screen in action is displayed on this page.

For more information on screening and pretreatments, here's a video from the virtual water plant (when it opens, click on the small button on the lower right of the screen for full screen mode): [Traveling Screen](#) (click [here](#) for the written text)



There are also several chemical processes that may be applied and include chemical additions for pH adjustment, corrosion and scale prevention, disinfectants, oxidation, and coagulation. Be sure to read your chapter and take note of the pretreatment objectives listed in section 2.1.

For more information on aeration processes here's a training video: [Aeration](#) (click [here](#) for the written text)

THESE ARE SNAPSHOTS OF THE VIRTUAL WATER TREATMENT PLANT THAT IS UTILIZED THROUGHOUT THE PROGRAM TO REINFORCE CONCEPTS AND ALLOW FOR MORE PRACTICAL TRAINING.



SCHOLARSHIP OPPORTUNITIES FOR PROGRAM STUDENTS

- frank bavendick scholarship
- xcel energy scholarship
- scholarships can be developed and awarded according to program specific majors
- north prairie rural water district (nprwd)
 - water cents scholarship
 - eligibility – nprwd members & family members

FINANCIAL AID AVAILABLE

- assists students who would otherwise be unable to attend college
- can be used for tuition, textbooks and other student expenses
- bsc's financial aid office works with the student to determine amount given

GROW YOUR OWN WORKFORCE

- joint marketing
 - increase awareness of company and job opportunities
 - career and education fairs
- access and exposure to facilities
 - tours, job shadowing, internship
- financial assistance
- recruit bsc students for hire

BAS IN ENERGY MANAGEMENT

- designed for individuals interested in supervisory and management positions in the energy industry
- entirely online
- eligible students
 - must have completed an aas degree, certificate, or diploma in an approved energy related program of study from a regionally accredited institution

LEARN MORE

bismarckstate.edu/energy

