

Sinclair Community College

Engineering Technology Design 2016

EGV 2297/2630

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TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
SYLLABUS	2
SUMMARY OF PROCEDURES	5
COURSE SCHEDULE	6
CHAPTER 1 – Overview of Wastewater Treatment	10
CHAPTER 2 – Basic Applied Wastewater Math	18
CHAPTER 3 – Pumps and Hydraulics	35
CHAPTER 4 – Preliminary Treatment	48
CHAPTER 5 – Primary Treatment	54
CHAPTER 6 – Attached Growth Treatment Systems	64
CHAPTER 7 – Process Control Testing	75
CHAPTER 8 – Activated Sludge	84
CHAPTER 9 – Natural Treatment Systems	92
CHAPTER 10 – Disinfection	99
CHAPTER 11 – Anaerobic Digestion	105
CHAPTER 12 – Aerobic Digestion and Other Stabilization Processes	113
CHAPTER 13 – Solids Management	119
CHAPTER 14 – Safety	127

**OAC Chapter 3745-07 Operator Certification of Public
Water System and Wastewater Treatment Works**

OAC Chapter 3745-38 Ohio NPDES General Permits

Course Content

EGV 2297/2630

Class Material:

This course uses the following;

1. California State University, Sacramento – Operation of Wastewater Treatment Plants Volume I, 7th Edition.
2. California State University, Sacramento – Operation of Wastewater Treatment Plants Volume II, 7th Edition

*****Student Needs to Obtain*****

1. Ohio EPA “Needs to Know Criteria”, Examination Supplement
2. The Ohio Administrative Code (OAC) administered by the OEPA Division of Surface of Water for this class
3. Math Equation Sheets provided by OEPA Certification Unit and ABC

Operation of Wastewater Treatment Plants – California Textbooks

The California State University course textbooks are utilized nationally for the training of Environmental students. Chapter Objective Tests may be reviewed by students and discussions held during this course.

GRADING PROCEDURE

A score of 70% must be obtained to pass the course.

Classroom

Attendance	10 %
Mid-Term #1	25 % (Take Home)
Mid-Term #2	25 % (Take Home)
Final Test	<u>40 % (In Class)</u>
	100 %

Daily sign-in sheets are required for each class. Failure to sign-in will result in no credit given for that class. Absence of the instructor will still require sign-in sheets completed and turned into the instructor at the next class.

All Examinations will cover both text reading assignments and related classroom materials. Equation Reference handouts by OEPA and ABC maybe used during all examinations.

COMPLETE THE COURSE IN THE FOLLOWING ORDER

WEEK 1 "Why we do what we do"

The "BIG PICTURE"

Operation of Wastewater Treatment Plants, Volume I – 7th Edition

Chapter 1 - The Treatment Plant Operator

Chapter 2 - Why Treat Waste

Chapter 3 – Wastewater Treatment Facilities

WEEK 2- "Math Review"

Math - Averages – Oper. of WW Treatment Plant Volume II, pg. 637 - Art. 18.4

Dimensional Analysis

Conversions

Linear Measurements

Area Measurements – Oper. of WW Treatment Plnt. Volume I, pg. 463, Art. A.2

Volume Measurements – Oper of WW Treatment Plnt. Volume I, pg. 466, Art. A.3

WEEK 3 "How & Why Move Liquids"

Operation of Wastewater Treatment Plants, Volume II – 7th Edition

Chapter 15 – Maintenance – Lessons 1 thru 7

Math -Density and Specific Gravity

Pressure and Force – Oper. of WW Treatment Plnt. Volume I, pg. 469, Art. A.6

Pumping Problems – Oper. of WW Treatment Plnt. Volume I, pg. 472, Art. A.8

Flow Rate Problems – Oper. of WW Treatment Plnt. Volume I, pg. 561, Art. A.71

WEEK 4 "Now let's start treating stuff"

Operation of Wastewater Treatment Plants, Volume I – 7th Edition

Chapter 4 – Racks, Screens, Communitors, and Grit Removal

Math - Preliminary Treatment – Oper. of WW Treatment Plnt. Volume I, pg. 483, Art. 130, 131

WEEK 5

Operation of Wastewater Treatment Plants, Volume I – 7th Edition

Chapter 5 – Sedimentation and Flotation

Math - Detention Time, Surface Overflow Rate, Weir Overflow Rate, Sedimentation-Solids

Loading Rate – Oper. of WW Treatment Plnt. Volume I, pg. 484, Art. 132

Exam 1 (Take Home)

Test to cover Weeks 1 thru 5

California Text – Chapters 1, 2, 3, 4, 5, 15

WEEK 6

Operation of Wastewater Treatment Plants, Volume I – 7th Edition

Chapter 6 – Trickling Filters

Chapter 7 – Rotating Biological Contactors (RBCs)

Math - Trickling Filters, Rotating Biological Contactors

Oper. of WW Treatment Plnt. Volume I, pg. 484, 485, Art.133, 134

WEEK 7

Operation of Wastewater Treatment Plants, Volume II – 7th Edition

Chapter 16 – Laboratory Procedures and Chemistry

Lessons 1 – 2 – 3 – 4

Math - Chemical Dosage Problems – Oper. of WW Treatment Plnt. Volume I, pg. 482, Art.12

Testing to Maintain a Properly Running Wastewater Plant

Oper. of WW Treatment Plnt. Volume II, pg. 793, Art.34

WEEK 8

Operation of Wastewater Treatment Plants, Volume I – 7th Edition

Chapter 8 – Activated Sludge (Package Plants and Oxidation Ditches)

Operation of Wastewater Treatment Plants, Volume II – 7th Edition

Chapter 11 – Activated Sludge (Operation of Conventional Activated Sludge Plants)

Math - Activated Sludge – Oper. of WW Treatment Plnt, Volume II, pg. 785, Art.30

WEEK 9

Operation of Wastewater Treatment Plants, Volume I – 7th Edition

Chapter 9 – Wastewater Stabilization Ponds

Math - Waste Ponds – Oper. of WW Treatment Plnt, Volume I, pg. 486, Art.136

WEEK 10

Operation of Wastewater Treatment Plants, Volume II – 7th Edition

Chapter 10 – Disinfection and Chlorination

Chapter 13 – Effluent Disposal

Math – Oper. of WW Treatment Plnt, Volume I, pg. 487, Art.137

Exam 2 (Handout)

Test to cover Weeks 6 thru 10

California Text – Chapters 6, 7, 8, 9, 10

WEEK 11

Sludge Digestion, Aerobic Digestion, Stabilization Processes and Solids Management
Operation of Wastewater Treatment Plants, Volume II – 7th Edition
Chapter 12 – Sludge Digestion and Solids Handling (thru to 12.8)

Math -Oper. of WW Treatment Plnt, Volume II, pg. 787, A.31

WEEK 12

Operation of Wastewater Treatment Plants, Volume II – 7th Edition
Chapter 19 – Records and Report Writing
Chapter 20 – Treatment Plant Administration (Sec 20.11)

WEEK 13

Operation of Wastewater Treatment Plants, Volume II – 7th Edition
Chapter 14 – Plant Safety

OTCO Workbook
Chapter #14 – Safety

WEEK 14

Final Exam Review

WEEK 15

Final Exam

A TOUR of the City of Dayton Wastewater Treatment Plant will be given during a class time schedule during the course. "Attendance is mandatory".