

# Environmental Sustainability: One Year Program: Scope & Sequence

## Semester 1

ENS101- Environmental Sustainability I  
(90 days)

### District Pre-Assessment

#### Unit 1 (5 Days)

##### Orientation:

- West-MEC Handbook
  - Course Introduction
- CTSO Integration (Leadership Skills): SkillsUSA Officer Elections and Training  
Professional Skills: 1.A-D, 4.A-F, 7.A-C  
Academic Standards: ELA.11-12.RI.10, ELA.11.12.SL.4  
Work-based Learning: Career Exploration Activities

#### Unit 2 (10 Days)

##### Safety / Technical Skills:

- OSHA 1910.26
  - Treatment Plant Safety
  - Hand and Power Tools
- CTSO Integration (Leadership Skills): SkillsUSA Chapter Meetings, leadership lessons, Regionals Prep  
Professional Skills: 2.A-C, 4.A-F  
Academic Standards: ELA.11-12.W.4, ELA.11-12.W.5, ELA.11-12.SL.4, ELA.11-12.L.4, 5.NF.B.3 - 7  
Work-based Learning: Industry Guest Speaker  
Technical Standard: W-WWT-20.0 - 20.1

#### Unit 3 (30 Days)

##### Water / Engineering Science I:

- Microbiology
  - Math I
  - Operator Math
  - Pneumatics
  - Chemistry
- CTSO Integration (Leadership Skills): SkillsUSA Chapter Meetings, Fundraiser, Fall Leadership Conference, Regionals Prep  
Professional Skills: 3.A-E, 4.A-F  
Academic Standards: ELA.11-12.W.4, ELA.11-12.SL.4, ELA.11-12.L.4, 5.NF.B.3 - 7, 6.RP.A.3, 7.RP.A.3, 7.G.B.4, G-GMD.A.3, HS.P1U1.1, Essential HS.P1U1.2  
Work-based Learning: Resume and Cover Letter  
Technical Standard: W-WWT-1.0 - 1.5, W-WWT-2.0 - 2.1, W-WWT-22.3

#### Unit 4 (22 Days)

##### Water / Engineering Science II:

- Math II
  - Regulatory Overview
  - Physics
  - Water Sources and Treatment Options
  - Hydraulics
- CTSO Integration (Leadership Skills): SkillsUSA Chapter Meetings, Community Service, Regionals Prep  
Professional Skills: 2.A-C, 4.A-F  
Academic Standards: ELA.11-12.W.4, ELA.11-12.W.5, ELA.11-12.SL.4, ELA.11-12.L.4, 5.NF.B.3 - 7, 6.EE.A.2, 7.EE.B.3, 8.G.B.7, A-CED.A.1, A1.N-RN.B.3, A1.N-Q.A.1-3, A1.A.REI.A, HS.P3U1.6, HS.E1U1.11  
Work-based Learning: Mock Interview  
Technical Standard: W-WWT-2.0 - 2.1, W-WWT-3.0 - 3.1, W-WWT-4.0 - 4.2, W-WWT-22.4

#### Unit 5 (23 Days)

##### Water / Engineering Science III:

- Groundwater Quality and Wells
  - Piping and Instrument Diagrams
  - Surface Water Source Treatment
  - Materials
  - Treatment Plant Pretreatment
  - Thermodynamics
- CTSO Integration (Leadership Skills): SkillsUSA Chapter Meetings, Fundraiser, Fall Leadership Conference, Regionals Prep  
Professional Skills: 3.A-3.E  
Academic Standards: ELA.11-12.W.4, ELA.11-12.L.4 5.A-E, ELA.11-12.SL.4, 7.EE.A.2, 5.NF.B.3 - 7, HS.P4U1.8  
Work-based Learning: Resume and Cover Letter Development, Student-Based Enterprise Student Models  
Technical Standard: W-WWT-2.0 - 2.1, W-WWT-3.0 - 3.1, W-WWT-4.0 - 4.2, W-WWT-22.4

#### Certification: OSHA 10

## Semester 2

ENS102- Environmental Sustainability II  
(90 days)

### Unit 6 (22 Days)

#### **Water / Engineering Science IV:**

- Coagulation and Flocculation
- Precision Measurement
- Sedimentation and Clarifiers
- Filtration Fundamentals
- Disinfection

CTSO Integration (Leadership Skills): SkillsUSA Chapter Meetings, Leadership lessons, Regionals prep and State Competition

Professional Skills: 5.A-E, 6.A-C

Academic Standards: ELA.11-12.W.4, ELA.11-12.W.5, ELA.11-12.L.4, ELA.11-12.S, 5.NF.B.3 - 7, 6.RP.A.3, 7.RP.A.3, 7.G.B.4, G-GMD.A.3, HS.P1U1.1, Essential HS.P1U1.2

Work-Based Learning: Industry Guest Speaker, Resume and Cover Letter

Technical Standard: W-WWT-8.0 - 8.1, W-WWT-9.0 - 9.1, W-WWT-10.0 - 10.1, W-WWT-11.0 - 11.1

### Unit 7 (22 Days)

#### **Water / Engineering Science V:**

- Introduction to Fe and Mg Treatment
- Fluoridation
- Water Quality Testing
- Instrumentation
- Corrosion Control

CTSO Integration (Leadership Skills): SkillsUSA Chapter Meetings, Leadership Lessons, Regionals Competition, Fundraiser

Professional Skills: 1.A-D, 5.A-E, 8.A-I

Academic Standards: ELA.11-12.L.4, ELA.11-12.SL.5, 5.NF.B.3

Work-Based Learning: Job Application

Technical Standard: W-WWT-12.0 - 12.1, W-WWT-13.0 - 13.1, W-WWT-14.0 - 14.1, W-WWT-15.0 - 15.1

### Unit 8 (22 Days)

#### **Water / Engineering Science VI:**

- Lime Softening Basics
- Introduction to Specialized Treatment Processes
- Administration, Records and Reporting
- Introduction to Electrical Systems
- DC and AC Circuits

CTSO Integration (Leadership Skills): SkillsUSA Chapter Meetings, State Conference, State Competition prep, Community Service

Professional Skills: 5.A-E 7.A-C

Academic Standards: ELA.11-12.L.4, 5.NF.B.3 - 7

Work-Based Learning: Field Trip, Mock Interview

Technical Standard: W-WWT-16.0 - 16.1, W-WWT-17.0 - 17.1, W-WWT-21.0 - 21.1, W-WWT-18.0 - 18.1

### Unit 9 (23 Days)

#### **Water Science / Engineering Science VII:**

- Pumps
  - Mechanical Components
  - ADEQ Class 1 Water Treatment Operator Exam Preparation
- CTSO Integration (Leadership Skills): SkillsUSA Chapter Meetings, Fundraiser, State Competition, Nationals competition prep

Professional Skills: 8.A-I, 9.A-C

Academic Standards: ELA.11-12.W.4, ELA.11-12.W.5, ELA.11-12.SL.4, ELA.11-12.L.4, 5.NF.B.3 - 7

Work-Based Learning: Career Fair

Technical Standard: W-WWT-19.0 - 19.1, W-WWT-22.1 - 22.2

#### **Certification: ADEQ Water Treatment Operator Level 1**

#### **District Post Assessment**

Arizona Department of Environmental Quality (ADEQ)

Common AZCCR Math Standards (CAMS)

English Language Art Standards (ELAS)

National Coalition of Certification Centers (NC3) Occupational

Safety and Health Administration (OSHA)

The National Center for Construction Education & Research

(NCCER)