2012 - 2013

Florida Department of Education
Curriculum Framework

Program Title: **Wastewater Treatment Technologies**
Program Type: **Career Preparatory**
Career Cluster: **Agriculture, Food and Natural Resources**

	PSAV
Program Number	P150527
CIP Number	0715050604
Grade Level	30, 31
Standard Length	405 hours
Teacher Certification	WSP OPER @7 G
CTSO	N/A
SOC Codes (all applicable)	51-8031
Facility Code	263 http://www.fldoe.org/edfacil/sref.asp (State Requirements for Educational Facilities)
Targeted Occupation List	http://www.labormarketinfo.com/wec/TargetOccupationList.htm
Perkins Technical Skill Attainment Inventory	http://www.fldoe.org/workforce/perkins/perkins_resources.asp
Industry Certifications	http://www.fldoe.org/workforce/fcpea/default.asp
Statewide Articulation	http://www.fldoe.org/workforce/dwdframe/artic_frame.asp
Basic Skills Level	Mathematics: N/A Language: N/A Reading: N/A

Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the career Agriculture, Food and Natural Resources cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of the Wastewater Treatment sector of the Agriculture, Food and Natural Resources career cluster.

The content includes but is not limited to source water or influent characteristics; treatment facility unit processes and operational techniques; water quality and identification; identifying treatment goals and measuring their achievement; disinfection; process control techniques; sampling, testing, and laboratory analysis; supervision; operation maintenance and inspection of facility equipment; application of current DEP regulations and standards; facility administration and management techniques; and troubleshooting operational control problems. The emphasis is on skills that are needed for effective treatment process control and troubleshooting.

Program Structure

This program is a planned sequence of instruction consisting of three occupational completion points.

When offered at the postsecondary adult career and technical level, this program is comprised of courses which have been assigned course numbers in the SCNS (Statewide Course Numbering System) in accordance with Section 1007.24 (1), F.S. Career and Technical credit shall be awarded to the student on a transcript in accordance with Section 1001.44(3)(b), F.S.

The following table illustrates the program structure:

OCP	Course Number	Course Title	Course Length	SOC Code
A	EVS0333	Wastewater Treatment Plant Operator C	155 hours	51-8031
B	EVS0343	Wastewater Treatment Plant Operator B	130 hours	51-8031
C	EVS0350	Wastewater Treatment Plant Operator A	120 hours	51-8031

Laboratory Activities

Laboratory activities are an integral part of this program. These activities include instruction in the use of safety procedures, tools, equipment, materials, and processes related to these occupations. Equipment and supplies should be provided to enhance hands-on experiences for students.

Special Notes

Cooperative Training – OJT

On-the-job training is appropriate but not required for this program. Whenever offered, the rules, guidelines, and requirements specified in the OJT framework apply.

Essential Skills

Essential skills identified by the Division of Career and Adult Education have been integrated into the standards and benchmarks of this program. These skills represent the general knowledge and skills considered by industry to be essential for success in careers across all career clusters. Students preparing for a career served by this program at any level should be able to demonstrate these skills in the context of this program. A complete list of Essential Skills and links to instructional resources in support of these Essential Skills are published on

the CTE Essential Skills page of the FL-DOE website (http://www.fldoe.org/workforce/dwdframe/essential_skills.asp).

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's IEP or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

In addition to accommodations, some secondary students with disabilities (students with an Individual Educational Plan (IEP) served in Exceptional Student Education or ESE) will need modifications to meet their needs. Modifications change the outcomes or what the student is expected to learn, e.g., modifying the curriculum of a secondary career and technical education course. Note postsecondary curriculum cannot be modified.

Some secondary students with disabilities (ESE) may need additional time (i.e., longer than the regular school year), to master the student performance standards associated with a regular Occupational Completion Point (OCP) or a Modified Occupational Completion Point (MOCP). If needed, a student may enroll in the same career and technical course more than once. Documentation should be included in the IEP that clearly indicates that it is anticipated that the student may need an additional year to complete an OCP/MOCP. The student should work on different competencies and new applications of competencies each year toward completion of the OCP/MOCP. After achieving the competencies identified for the year, the student earns credit for the course. It is important to ensure that credits earned by students are reported accurately. The district's information system must be designed to accept multiple credits for the same course number (for eligible students with disabilities).

Articulation

This program has no statewide articulation agreement approved by the Florida State Board of Education. However, this does not preclude the awarding of credits by any college through local agreements.

For details on statewide articulation agreements which correlate to programs and industry certifications, refer to http://www.fldoe.org/workforce/dwdframe/artic_frame.asp.

Standards

After successfully completing this program, the student will be able to perform the following:

01.0 Identify professions related to the water technology field.
02.0 Identify scientific concepts common in water and wastewater treatment.
03.0 Identify safety hazards associated with water technologies.

04.0 Identify federal, state, and local regulations for the handling, storage, and use of toxic and hazardous materials.
05.0 Solve basic math problems common to water technologies.
06.0 Define pumping and basic hydraulic principles.
07.0 Define principles of disinfection.
08.0 Define sampling techniques.
09.0 Define federal, state, and local regulations that apply to water technologies.
10.0 Demonstrate employability skills.
11.0 Identify the basic characteristics and principles of wastewater treatment.
12.0 Identify sampling techniques and interpret the results.
13.0 Describe the sources of wastewater and the types of collection systems.
14.0 Describe the process and the operational principles for the preliminary, primary, secondary, and tertiary treatment (the treatment train); effluent disposal; and solids management.
15.0 Perform treatment-process control and troubleshooting for the treatment train, effluent disposal, and solids management.
16.0 Perform equipment inspection, and identify basic maintenance for the treatment train, effluent disposal, and solids management.
17.0 Identify and correct facility operational problems.
18.0 Identify federal, state, and local regulations governing wastewater technologies.
19.0 Describe federal, state, and local regulations for the handling, storage, and use of toxic and hazardous materials.
20.0 Identify the constituents of influent and its effects on the treatment process.
21.0 Identify the constituents of wastewater and select the appropriate treatment.
22.0 Demonstrate advanced sampling techniques and interpret results.
23.0 Describe process optimization for preliminary, primary, secondary, and tertiary treatment (the treatment train); effluent disposal, and solids management.
24.0 Describe advanced treatment process control for the treatment train, effluent disposal, and solids management.
25.0 Describe advanced equipment inspection and preventive maintenance for the treatment train, effluent disposal, and solids management.
26.0 Describe and correct facility operational problems.
27.0 Apply federal, state, and local regulations governing wastewater technologies.
28.0 Apply federal, state, and local regulations for the handling, storage, and use of toxic and hazardous materials.
29.0 Describe energy conservation and identify ways to conserve energy in the wastewater treatment facility.
30.0 Demonstrate supervisory skills.
31.0 Discuss facility management skills.
32.0 Demonstrate methods of organization and control.
33.0 Develop a plan for cost management.
34.0 Prepare budgets and personnel assignments.
35.0 Develop standard operating procedures for the training and orientation of new employees.
36.0 Demonstrate personnel selection and discipline.
37.0 Demonstrate contingency planning.
38.0 Develop a plan for energy conservation.
39.0 Demonstrate record keeping and use of computer applications in planning.
40.0 Demonstrate process optimization for water or wastewater treatment facilities.
41.0 Interpret permits and blueprints.
42.0 Develop a laboratory plan for process control.

43.0 Employ public-relations skills in community interactions.

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Florida Department of Education
Student Performance Standards

Program Title: Wastewater Treatment Technologies
PSAV Number: P150527

Course Number: EVS0333
Occupational Completion Point: A
Wastewater Treatment Plant Operator C – 155 Hours – SOC Code – 51-8031

01.0 Identify professions related to the water technology field--The student will be able to:

- 01.01 List duties of water technology workers such as wastewater operator, water operator, systems operator, stormwater operator, residual (bio-solids) hauler operator, cross connection operator, pretreatment operator, and meter reading/maintenance operator.
- 01.02 Identify the basic terms and concepts involved in processes used in these professions.
- 01.03 List potential employers in the water technology field: federal, municipal, county, state and private.
- 01.04 Identify resources to assist in finding employment in the field.
- 01.05 Identify professional organizations related to the water technology field.
- 01.06 Identify career ladder levels in the water technology field: trainee, C Level, B Level, A Level.

02.0 Identify scientific concepts common in water and wastewater treatment--The student will be able to:

- 02.01 Identify chemical symbols used in water and wastewater treatment.
- 02.02 Describe the hydrologic cycle.
- 02.03 Describe the basic concepts of the pH scale and its importance in the treatment process.
- 02.04 Identify the differences between mixtures, elements, and compounds, and organic and inorganic chemicals.
- 02.05 Identify principle states of matter: liquid, solid, and gas.
- 02.06 Identify the basic nitrogen, phosphorous, and carbon cycles.

03.0 Identify safety hazards associated with water technologies--The student will be able to:

- 03.01 Identify the types of hazards common to water technology facilities.
- 03.02 Recognize unsafe conditions and prescribe corrective measures.
- 03.03 Identify and safely handle hazardous chemicals common to water technology facilities.
- 03.04 Recognize electrical hazards.
- 03.05 Recognize fire hazards, identify types of fires, and describe appropriate extinguishing techniques.

04.0 Identify federal, state, and local regulations for the handling, storage, and use of toxic and hazardous materials--The student will be able to:

04.01 Identify the kinds of information presented on Material Safety Data Sheets (MSDS).
04.02 Describe requirements for in-plant training and the accessibility of information on hazardous and toxic substances (chapter 442, F.S.).

05.0 Solve basic math problems common to water technologies--The student will be able to:

05.01 Perform basic arithmetic problems, including addition, subtraction, multiplication, division, fractions, decimals, percentages, rounding (significant figures), graphing, etc.
05.02 Identify metric measurements and perform conversions.
05.03 Perform calculations that involve areas, volumes, capacities, retention times, pounds, mg/L, velocities, flow rates, pressure, and head.

06.0 Define pumping and basic hydraulic principles--The student will be able to:

06.01 Identify types of pumps.
06.02 Discuss application and use of different types of pumps.
06.03 Identify components/characteristics of pumps including pump operation and basic pump curves including centrifugal pumps, positive displacement pumps, and air lift pumps.
06.04 Identify types of pipes, valves, and fittings.
06.05 Define cross connections.
06.06 Identify the appropriate equipment used in the treatment processes.

07.0 Define principles of disinfection--The student will be able to:

07.01 List the need/reasons for disinfection (list of waterborne diseases).
07.02 Define concepts related to disinfection.
07.03 List methods and chemicals used in disinfection.
07.04 Define the physical properties of chlorine.
07.05 List kinds of disinfection equipment used.

08.0 Define sampling techniques--The student will be able to:

08.01 Define the reasons for sampling and types of samples.
08.02 Define methods of sample collection and handling.
08.03 Define the basic procedure for quality control and quality assurance in sampling.
08.04 Define the chain of custody for samples.
08.05 Perform chlorine residual analysis.
08.06 Perform pH analysis.

09.0 Define federal, state, and local regulations that apply to water technologies--The student will be able to:

09.01 List regulatory agencies and their roles in monitoring the water technology field.
09.02 Define regulations associated with the appropriate federal, state or local agencies.
09.03 Define training and certification requirements for water technology workers.

10.0 Demonstrate employability skills--The student will be able to:

10.01 Conduct a job search.
10.02 Secure information about a job.
10.03 Identify documents that may be required for a job application.
10.04 Complete a job application.
10.05 Demonstrate competence in job-interview techniques.
10.06 Identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons.
10.07 Identify acceptable work habits.
10.08 Demonstrate knowledge of how to make job changes appropriately.
10.09 Demonstrate acceptable employee-health habits for the treatment facility environment.
10.10 Identify materials and documents needed for a professional library.
10.11 Demonstrate productive and positive customer interactions.
10.12 Demonstrate effective interpersonal communication skills.

11.0 Identify the basic characteristics and principles of wastewater treatment--The student will be able to:

11.01 Identify the sources of wastewater and the objectives of wastewater treatment.
11.02 Identify terms used in wastewater treatment.
11.03 Identify the impact of wastewater on receiving bodies of water.
11.04 Identify biological organisms present in treatment processes.
11.05 Identify waterborne diseases.
11.06 Identify commonly measured wastewater parameters.
11.07 Identify factors affecting raw wastewater.
11.08 Correlate treatment processes to types of facility influent and solids.

12.0 Identify sampling techniques and interpret the results--The student will be able to:

12.01 Identify the reasons for sampling and the types of samples (e.g., simple, representative, grab, composite).
12.02 Describe methods of sample collection and handling.
12.03 Identify specific samples (biological or chemical) and determine the significance of sample results required for process quality control, for compliance with standards, and for reporting.
12.04 Identify representative sampling points.
12.05 Identify the significance of the flow measurement on process control.

13.0 Describe the sources of wastewater and the types of collection systems--The student will be able to:

13.01 Describe the types of wastewater collection systems.
13.02 Identify flow variations and conditions that affect plant treatment, including infiltration, inflow, and lift stations.
13.03 Identify methods to detect and correct infiltration.
13.04 Identify dissolved gases in wastewater and the effect of their presence/absence on treatment.

14.0 Describe the process and the operational principles for the preliminary, primary, secondary, and tertiary treatment (the treatment train); effluent disposal; and solids management--The student will be able to:

14.01 Describe concepts related to preliminary and primary treatment.
14.02 Describe the types of preliminary treatment equipment, the way they function, and the relationship of each to the treatment train.
14.03 Describe the types of primary treatment equipment, the way they function, and the relationship of each to the treatment train.
14.04 Describe concepts related to secondary treatment, including attached growth processes, suspended growth processes, aeration, and clarification.
14.05 Describe the types of secondary treatment equipment, the way they function, and the relationship of each to the treatment train.
14.06 Describe concepts related to tertiary treatment processes, including sand filtration, nitrification/denitrification, oxic/anoxic, activated carbon, and artificial wetlands.
14.07 Describe the types of tertiary treatment equipment, the way they function, and the relationship of each to the treatment train.
14.08 Describe concepts related to disinfection and effluent disposal, including surface water, reuse reclamation, deep well, and ocean outfall.
14.09 Describe the types of disinfection and the types of effluent-disposal equipment, the way they function, and the relationship of each to the system.
14.10 Describe concepts related to solids management, including thickening, aerobic and anaerobic digestion, stabilization, de-watering, and reuse.
14.11 Describe the types of solids-management equipment, the way they function, and the relationship of each to the system.

15.0 Perform treatment-process control and troubleshooting for the treatment train, effluent disposal, and solids management--The student will be able to:

15.01 Describe the grit-removal process and the operational efficiency of each step.
15.02 Describe the laboratory tests performed on influent.
15.03 Describe the primary-clarifier removal efficiencies, including settleable solids, suspended solids, total solids, BOD, and bacteria.
15.04 Describe sampling points, frequency of sampling, and the laboratory tests and results that are used for the proper operation of the primary clarifier.
15.05 Select and plot on a trend chart the parameters for primary clarification.
15.06 Use the operational data required to evaluate the performance of secondary-treatment processes, including attached growth, suspended growth, aeration, and clarification.
15.07 Describe sampling points, the frequency of sampling, and the laboratory tests and results used for proper operation of the secondary-treatment processes.
15.08 Select and plot on a trend chart the parameters for secondary clarification.
15.09 Describe how nitrification affects secondary processes and clarification.
15.10 Describe how denitrification affects secondary processes and clarification.
15.11 Use operational data to evaluate the performance of sand filtration.
15.12 Describe sampling points, the frequency of sampling, and the laboratory tests and results used for checking the proper operation of sand filtration. Select and plot on a trend chart the parameters for sand filtration.
15.13 Use operational data to evaluate the nitrification/denitrification process.

15.14 Use operational data to evaluate the performance of effluent-disposal processes, including disinfection and dechlorination.
15.15 Describe sampling points, the frequency of sampling, and the laboratory tests used for checking the proper operation of effluent disposal.
15.16 Select and plot on a trend chart the parameters for effluent disposal.
15.17 Describe various methods of effluent disinfection including UV, chlorination, and ozonation.
15.18 Describe the chemical and physical properties of chlorine, and describe the reactions of chlorine with water, ammonia compounds, and sulfides.
15.19 Describe the safe storage and handling of chlorine, including the use of testing compounds.
15.20 Explain the points of application of chlorine in wastewater treatment.
15.21 Describe the methods of dechlorination.
15.22 Describe the methods commonly used to dispose of wastewater effluents, including reuse applications.
15.23 Describe the laboratory tests commonly used on the reuse of effluent.
15.24 Describe the types of sludge and their characteristics.
15.25 Use operational data to evaluate the performance of solids management, including sludge thickening, digestion, de-watering, and disposal processes.
15.26 Describe sampling points, the frequency of sampling, and the laboratory tests and results used for checking the proper operation of solids management and for compliance with Chapter 62-640 F.A.C.

16.0 Perform equipment inspection, and identify basic maintenance for the treatment train, effluent disposal, and solids management--The student will be able to:

16.01 Identify the appropriate equipment used in the treatment train, effluent disposal, and solids management.
16.02 Describe a preliminary site inspection of the equipment used in the treatment train, effluent disposal, and solids management.
16.03 Identify the maintenance needs of equipment used in the treatment train, effluent disposal, and solids management, including safe procedures for maintenance.
16.04 Describe proper record keeping for preventive and corrective maintenance.
16.05 Describe preventive and corrective maintenance procedures for equipment used in the treatment process, effluent disposal, and solids management.

17.0 Identify and correct facility operational problems--The student will be able to:

17.01 Describe common facility operational problems in the treatment train, effluent disposal, and solids management.
17.02 Describe methods to evaluate operational problems in preliminary, primary, secondary, and tertiary treatment, effluent disposal, and solids management.
17.03 Select appropriate corrective actions for common problems in preliminary, primary, secondary, and tertiary treatment, effluent disposal, and solids management.
17.04 Describe the methods for monitoring results of corrective action taken for common problems in preliminary, primary, secondary, and tertiary treatment, effluent disposal, and solids management.

18.0 Identify appropriate federal, state, and local regulations--The student will be able to:

18.01 Identify federal, state and local regulations that apply to the operation of a wastewater-treatment facility.
18.02 Describe the operator's duties and responsibilities, certification requirements, testing, renewal, staffing, and facility classification (sections of Chapter 62-602 F.A.C.).
18.03 Explain and describe the contents of an operating permit.
18.04 Identify state regulations that apply to procedures such as reclaimed water, reuse, and residuals management.

19.0 Describe federal, state, and local laws for the handling, storage, and use of toxic and hazardous materials--The student will be able to:

19.01 Identify the kinds of information presented on the MSDS.
19.02 Describe requirements for in-plant training and the accessibility of information on hazardous and toxic substances (Chapter 442, F.S.).
19.03 Identify the reporting requirements as specified in SARA Title III and Chapter 252, F.S.
19.04 Describe the responsibilities toward the community as specified in SARA Title III and Chapter 252, F.S.

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Occupational Completion Point: B
Wastewater Treatment Plant Operator B – 130 Hours – SOC Code – 51-8031

20.0 Identify the constituents of influent and its effects on the treatment process--The student will be able to:

20.01 Explain the significance of dissolved gases in the influent and the effects of dissolved gases on treatments.
20.02 Explain the sources of infiltration and inflow, and discuss the effects of infiltration and inflow on treatment processes.
20.03 Explain the effect of lift-station performance on the overall treatment process.
20.04 Describe solutions for lift-station problems, such as surging flows, septic conditions, and power outages.

21.0 Identify the constituents of wastewater, and select the appropriate treatment--The student will be able to:

21.01 Identify the specific physical, chemical, and biological characteristics of wastewater.
21.02 Describe respiration, gas production, aerobic and anaerobic conditions, different methods of effluent disposal, and solids management.
21.03 Identify levels of wastewater treatment and limits on facility discharges.

22.0 Demonstrate advanced sampling techniques and interpret the results--The student will be able to:

22.01 Develop standard operating procedures for taking samples for process quality control, for compliance with standards, and for reporting requirements.
22.02 Identify microorganisms present in wastewater, and discuss the significance of changes in their populations.

22.03 Demonstrate laboratory quality-control/quality-assurance procedures and required documentation.
22.04 Demonstrate the reasons for measuring the flows of treated and untreated wastewater, and the effects of those flows on process control.

23.0 Describe process optimization for preliminary, primary, secondary, and tertiary treatment (the treatment train); effluent disposal; and solids management--The student will be able to:

23.01 Interpret laboratory data commonly obtained on incoming wastewater to monitor the efficiency of the selected treatment.
23.02 Describe possible adjustments to achieve process optimization for handling influent.
23.03 Interpret laboratory data commonly obtained on wastewater during primary treatment to monitor the efficiency of the selected treatment.
23.04 Describe possible adjustments to achieve process optimization for handling primary treatment.
23.05 Interpret laboratory data commonly obtained on wastewater during secondary treatment to monitor the efficiency of the selected treatment.
23.06 Describe possible adjustments to achieve process optimization for secondary treatment.
23.07 Interpret laboratory data commonly obtained on wastewater during tertiary treatment to monitor the efficiency of the selected treatment.
23.08 Describe possible adjustments to achieve process optimization for tertiary treatment.
23.09 Interpret laboratory data commonly obtained on reclaimed water during disinfection and disposal to monitor the efficiency of the selected treatment.
23.10 Describe possible adjustments to achieve process optimization for disinfection and disposal processes.
23.11 Interpret laboratory data commonly obtained during solids management, including solids-content tests, to monitor the efficiency of the selected treatment.
23.12 Describe possible adjustments to achieve process optimization in solids management.
23.13 Describe options for solids disposal, based on the analysis of constituents, including all accountability records, and the costs.

24.0 Describe advanced treatment process control for the treatment train, effluent disposal, and solids management--The student will be able to:

24.01 Describe concepts related to advanced laboratory tests taken in the secondary-treatment processes.
24.02 Describe concepts related to advanced laboratory tests taken in advanced or tertiary treatment.
24.03 Describe concepts related to advanced laboratory tests for disinfection, effluent disposal, and solids management.

25.0 Describe advanced equipment inspection and preventive maintenance for the treatment train, effluent disposal, and solids management--The student will be able to:

25.01 Describe a preventive maintenance plan for a specific piece of equipment and/or unit process.

25.02 Describe trends analysis used in preventive maintenance planning.
25.03 Describe the monitoring of facility equipment operation and usage with remote sensing equipment.

26.0 Describe and correct facility operational problems--The student will be able to:

26.01 Describe troubleshooting techniques to locate operational problems.
26.02 Select appropriate corrective actions for advanced operational problems.
26.03 Describe advanced methods of monitoring results of corrective actions taken.
26.04 Describe actions that should be taken to prevent recurrence of identified advanced operational problems.

27.0 Apply federal, state, and local regulations governing wastewater technologies--The student will be able to:

27.01 Describe supervisory tasks related to duties, responsibilities, certification requirements, testing, renewal, staffing, and facility classification (Chapter 62-602 F.A.C.).
27.02 Apply rules concerning samples and analyses at wastewater-treatment facilities (Chapter 62-601, F.A.C.).
27.03 Complete the DEP monthly operating report (MOR) Form correctly.
27.04 Complete a National Pollution Discharge Elimination System (NPDES) MOR form.
27.05 Follow DEP rules that apply to procedures such as reclaiming and reusing water and managing residuals.
27.06 Follow federal rules that apply to the operation of a wastewater-treatment facility.

28.0 Apply federal, state, and local laws for the handling, storage, and use of toxic and hazardous materials--The student will be able to:

28.01 Identify the kinds of information presented on the MSDS.
28.02 Demonstrate requirements for in-plant training and the accessibility of information on hazardous and toxic substances (Chapter 442, F.S.).
28.03 Identify the reporting requirements as specified in SARA Title III and Chapter 252, F.S.
28.04 Describe the responsibilities toward the community as specified in SARA Title III and Chapter 252, F.S.

29.0 Describe energy conservation, and demonstrate ways to conserve energy in the wastewater-treatment facility--The student will be able to:

29.01 Identify the causes of energy loss.
29.02 Rank various pieces of equipment in order of energy consumption.
29.03 Demonstrate procedures for performing an energy survey.
29.04 Demonstrate methods to conserve energy, such as equipment and process adjustments.

30.0 Demonstrate supervisory skills--The student will be able to:

30.01 Identify supervisory skills and various leadership styles.
30.02 Delegate responsibility and assign tasks to employees.

30.03 Follow the proper procedure for handling employee grievances.
30.04 Follow the proper procedure for disciplining employees.
30.05 Follow staffing guidelines in planning.
30.06 Conduct an orientation of a new employee, and follow the training program.
30.07 Evaluate employees objectively.
30.08 Identify emergency situations and respond appropriately.
30.09 Identify the components of the budgeting process.
30.10 Demonstrate inventory control procedures.
30.11 Explain the importance of ethics in supervision.
30.12 Identify the role of the supervisor in a facility safety program.
30.13 Identify the role of the supervisor in customer relations

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Occupational Completion Point: C
Wastewater Treatment Plant Operator A – 120 Hours – SOC Code – 51-8031

31.0 Discuss facility-management skills--The student will be able to:

31.01 Describe the principles of management and supervision.
31.02 Describe concepts related to management and supervision.

32.0 Demonstrate methods of organization and control--The student will be able to:

32.01 Demonstrate organizational methods.
32.02 Develop an organizational chart.
32.03 Develop a staffing pattern.
32.04 Identify formal and informal lines of communication.

33.0 Develop a plan for cost management--The student will be able to:

33.01 Identify the costs of operation such as personnel, inventory, operations, energy consumption, and equipment maintenance.
33.02 Perform cost surveys.
33.03 Develop a plan for efficient operations.
33.04 Explain system-efficiency balance.

34.0 Prepare budgets and personnel assignments--The student will be able to:

34.01 Identify budget activities and categories of expense accounts related to water- or wastewater-treatment facilities.
34.02 Identify techniques of budget control.
34.03 Prepare a budget, including long-range projections.
34.04 Prepare a staffing schedule, including the appropriate levels of staff for all required shifts.

35.0 Develop standard operating procedures for the training and orientation of new employees--The student will be able to:

35.01 Develop a written plan for an in-house orientation program for new employees.
35.02 Identify information that a supervisor should give new employees, including leave procedures, insurance procedures, safety procedures, chain of command, etc.

35.03 Develop a written plan for an in-house training program that includes safety measures and hazardous or toxic materials in the work place.
35.04 Develop a written plan for a cross-training program in facility operations.

36.0 Demonstrate personnel selection and discipline--The student will be able to:

36.01 Identify appropriate interviewing and hiring practices.
36.02 Develop a job description.
36.03 Identify control factors that are important in an organizational plan and that set limits on delegated authority.
36.04 Identify appropriate actions of the supervisor, the employee, etc., in a grievance procedure.
36.05 Identify characteristics important to the role of a supervisor.
36.06 Determine requirements for a new position.
36.07 Advertise for the position, including the job description, job responsibilities, education requirements, and job conditions.
36.08 Analyze job applications to select qualified candidates to interview.
36.09 Conduct interviews.
36.10 Notify interviewees of the results, and conduct follow-up activities.
36.11 Use appropriate human-relations and communication skills.
36.12 Train, evaluate, and discipline employees objectively.
36.13 Identify appropriate actions of a supervisor in evaluating personnel performance.

37.0 Demonstrate contingency planning--The student will be able to:

37.01 Analyze potential emergency situations that can occur in a facility.
37.02 Develop a plan for handling problems caused by emergency situations, including what equipment would be used and what sampling would be needed.
37.03 Develop procedures for responding to customer complaints.
37.04 Develop procedures to ensure employee safety.
37.05 Develop procedures to ensure continuous operations, including preventive maintenance, alternative procedures, etc.

38.0 Develop a plan for energy conservation--The student will be able to:

38.01 Describe concepts related to energy conservation.
38.02 Identify energy-conservation measures.

39.0 Demonstrate record-keeping and use of computer applications in planning--The student will be able to:

39.01 Develop a plan for inventory control.
39.02 Develop a plan for an analysis of operation and maintenance (O & M) logs and for the optimum operation of equipment.
39.03 Identify the various types of facility automation.
39.04 Review available hardware and software, based on record-keeping needs.

40.0 Demonstrate process optimization for water or wastewater treatment facilities--The student will be able to:

40.01 Develop a plan for process control to achieve efficient, energy-saving, cost-effective operation.
40.02 Develop a plan for testing and analyzing the treatment operations for use in long-range facility operations.
40.03 Develop a plan for the systematic troubleshooting of operational problems.
40.04 Develop a plan for documenting operations and problems in order to anticipate and avoid potential problems.

41.0 Interpret permits and blueprints--The student will be able to:

41.01 Read and interpret blueprints for water and wastewater facilities.
41.02 Read the facility construction and operating permits, and relate permit requirements to facility operations.

42.0 Develop a laboratory plan for process control--The student will be able to:

42.01 Identify laboratory equipment for process control.
42.02 Develop a plan for equipment calibration and maintenance.
42.03 Develop a laboratory-staffing plan.
42.04 Determine whether in-house laboratory operations are cost-effective.
42.05 Review procedures for quality assurance/quality control in a facility laboratory.
42.06 Review procedures for obtaining certification for a facility laboratory.
42.07 Develop a sampling/analysis schedule for effective process control.

43.0 Employ public-relations skills in community interactions--The student will be able to:

43.01 Plan facility tours for the public.
43.02 Demonstrate how to handle press and public inquiries appropriately.
43.03 Demonstrate how to inform the public if a potential emergency situation arises.