

**BOARD OF REGENTS
STATE OF IOWA
REGENT MERIT SYSTEM**

Class Title: Water Plant Operator

Class Code: 5511

Pay Grade: 212

GENERAL CLASS DESCRIPTION:

Under general supervision operates and maintains University water utility systems including main campus potable water production, distribution and storage; remote campus potable water systems and building water systems; including processes for coagulation, sedimentation, softening, chlorination, fluoridation, filtration, distillation, deionization, reverse osmosis, dewatering and industrial water treatment.

CHARACTERISTIC DUTIES AND RESPONSIBILITIES:

1. Performs chemical and water analyses, including 80 different types of laboratory analyses per eight-hour shift.
2. Inputs data obtained from analyses into computer-based systems for the purpose of determining the proper water treatment process, chemical dosage, type of chemical and rate of treatment in order to maintain a safe and reliable quantity and quality of water.
3. Performs constant surveillance of all processes, chemical feed rates, equipment, data, and supervisory control systems in order to alleviate any failure that would effect the systems.
4. Make proper chemical dosage adjustments, including loading, conveying, solution preparation and feeder changes, which involves handling of hazardous chemicals such as chlorine gas, acids and alkalies.
5. Reads and inputs flow measurements, storage levels and water demand to determine the pumps needed and the rate of treatment in order to maintain an adequate water supply and report water use.
6. Operates and maintains equipment for water treatment residuals processing including sludge dewatering and hauling equipment.
7. Performs general maintenance and calibration of all equipment, including heavy machinery, and/or delicate laboratory and plant instrumentation in order to maintain maximum performance of equipment and processes.

The tasks listed under the heading of Characteristic Duties and Responsibilities are examples of the variety and general nature of duties performed by employees in positions allocated in the class. The list is descriptive only and should be used for no other purpose. It is not intended that any position include every duty listed nor is it intended that related duties cannot be required.

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8. Computes water production, chemicals used, chemical dosage, and chemical inventory in order to prepare daily summary for computer input.
9. Assigns work and provides training in operations and maintenance of all water related systems to coworkers and student operators as necessary.
10. Collects and prepares water samples for tests to be performed by outside agencies, as required by law, including:
 - State Hygienic Laboratory
 - Iowa Department of Environmental Quality
 - Iowa Department of Natural Resources
 - U.S. Environmental Protection Agency
 - Iowa Water Plant Operation Certification Board
 - Iowa Department of Health
 - Iowa Department of Environmental Health
11. Performs duties outside the Water Plant, including work with ion-exchange softeners, swimming pools, deionizers, distillation equipment, reverse osmosis equipment, remote campus water and water distribution systems and water meter reading and maintenance.
12. Operates the chlorine dioxide generator, digitalized chlorine feed system, UV light disinfection, digitalized ferric sulfate chemical feed system and the digital lime slaker with interface controls.
13. Monitors flood levels according to the Facilities Management Flood Emergency Response Plans.
14. Performs distribution system cross-connection/contamination investigations.
15. Samples and monitors storm water systems and operates and maintains dechlorination treatment systems per NPDES permit requirements.
16. Operates and maintains building and central chilled water production equipment including chemical storage and treatment systems for disinfection and corrosion control.
17. Follows procedures and monitors security cameras and doors through Homeland Security recommendations.
18. Performs start-up and shutdown of the water plant's emergency power generator in case of electrical outage.
19. Attends conferences, meeting and/or schools required in order to obtain and maintain Iowa Grade II, or higher, Water Plant Operator certification, other required certifications and proficiency in mandated safety areas such as confined space entry, lock-out safety, fall safety, and other areas as required.

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KNOWLEDGE, SKILLS, AND ABILITIES:

1. Knowledge of mathematics including English/Metric system conversion factors and formulas for area, volume, density, dosage, pressure, flow, detention time, chemical feed rates and solution strength.
2. Knowledge of chemistry including chemical formulas for mass balances, softening reactions, neutralization reactions, disinfection reactions, corrosion reactions and other water treatment related processes.
3. Knowledge of biology, microbiology and human health including the life cycles, pathogenic characteristics and water treatment disinfection strategies for algae, bacteria, protozoa, viruses and other organisms.
4. Knowledge of quantitative laboratory procedures including tests for alkalinity, water hardness, stability index, free and total chlorine, fluoride, turbidity, color, total dissolved solids, suspended solids, settling times, pH, corrosion rates, phosphate, lead, copper, coliform bacteria, heterotrophic bacteria plate counts, and other water testing procedures.
5. Knowledge of computers, instrumentation and software systems for process analysis, supervisory control and data acquisition, data processing and report generation.
6. Knowledge of safety programs including confined space entry, falls, forklift, lockout, process safety and risk management, respirator, and chemical right to know.
7. Knowledge of Iowa Department of Natural Resources and U.S. Environmental Protection Agency regulations for water treatment, water distribution, wastewater treatment, recreational water use, backflow prevention and related water systems.
8. Knowledge of potable water sources and treatment operations including wells, surface water systems and processes for coagulation, flocculation, sedimentation, filtration, disinfection, fluoridation, softening, recarbonation, stabilization, and the handling and disposal of process wastes.
9. Knowledge of industrial water treatment operations including processes for distillation, demineralization, reverse osmosis, cooling water, chilled water, boiler feed water and corrosion control.
10. Knowledge of water pumping, distribution and storage system operations including power requirements, electric motors, pump characteristics, piping systems, water meters, backflow prevention devices, and water system hydraulic relationships.
11. Knowledge of maintenance procedures for pumps, electric motors, gear drives, chemical feed systems, other heavy process piping and equipment, laboratory testing equipment, process analysis instrumentation, telemetry equipment, and various analogue and digital control systems.

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12. Skill with interpersonal relationships and the ability to work well with others in a professional manner.
13. Skill with operating and maintaining multiple, complex water treatment processes simultaneously.
14. Ability to adapt to changes in the work environment and the ability to acquire new skills as needed.
15. Ability to read gages, charts, computer monitors, operations manuals and colorimetric test results.
16. Ability to communicate effectively in English orally, electronically and in writing.
17. Ability to climb ladders, lift a minimum of 50 pounds and work in hazardous environments.
18. Ability to hear warning alarms.
19. Ability to operate fork lifts, trucks and other motor vehicles.
20. Ability to use self contained breathing apparatus, respirators, face shields and other safety equipment.

MINIMUM ELIGIBILITY REQUIREMENTS:

1. Certification by the State of Iowa as a Grade II, or higher, Certified Water Plant Operator.
2. Possession of a valid Iowa Driver's License.
3. Possession of a Commercial Driver's License as required.
4. Certification as an Iowa Certified Swimming Pool Operator as required.
5. Other job related certifications as required.