Environmental Monitoring, Sampling and Assessment (EMSA)
A Job Preparation Program at City College of San Francisco

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INTRODUCTION

The Environmental Monitoring courses prepare students to enter the environmental field such as water quality technician, environmental technician or water operator at public and private industries.

EMSA COURSES

1. EMSA 22: Foundations of Environmental Instrumentation, Sampling and Monitoring. Skills learned in the course include:

- Correct sampling methods according to EPA and Standard Methods
- Documentation including chain of custody
- Calibration and use of field instruments that analyze physical parameters such as dissolved oxygen, pH, turbidity, temperature, chlorine.

2. EMSA 28: Environmental Microbiology Methods. Skills learned in this course include:

- Serial dilutions and calculations
- Making and using correct media for the detection of certain microbes
- Detection and enumerations of microbes according to EPA methods (membrane filtration, MTF, IDEXX)

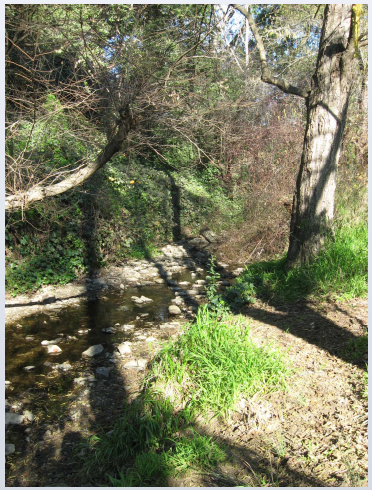
3. SUST 5: Sustainability and the Environment Speaker Series. Invited speakers from private, public and government industries talk about their career & educational paths to various fields including hydrologists, lab analysts, chemists, engineers.

4. EMSA 30A: Water Quality Analysis by Anion-based Chromatography. This course utilizes the ion chromatography instrument to examine bromide, fluoride, chloride, nitrate, nitrite levels according to EPA methods.

5. CRAM – California Rapid Assessment Method of wetlands. A scientifically defensible method for monitoring the health of wetlands.

6. Introductory GIS course – units on environmental monitoring to

ENVIRONMENTAL MONITORING, SAMPLING & ASSESSMENT (EMSA)



Sausal Creek, an urban stream in Oakland and a site for field study for EMSA students

Getting ready to sample by reading the enclosed directions and calibrating the instrument.

Documenting results

Taking Dissolved oxygen readings

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FUTURE PLANS - QAPP

Develop a QAPP (Quality Assurance Project Plan) for the parkland at Heron's Head Park (shown below)

The QAPP is an EPA-approved sampling and analysis plan for volunteer monitoring at a site that is currently being remediated and restored by various agencies. Monitoring of the physical parameters and wetlands habitat assessment using California's Rapid Assessment of Wetlands (CRAM) will be done by the students of EMSA 22 according to the QAPP and the data inputted into a public database, CEDEN, California Data Exchange Network.

FUTURE PLANS – COURSES, VIDEOS, CERTIFICATE

- Courses still need to be written and approved for the use of the GC-MS and the ICP-OES.
- Videos are in the planning stages for the use of equipment and analysis.
- Certificate for environmental monitoring is planned but cannot be finished until the courses have passed curriculum.

CHALLENGES

- Enrollment & recruitment
- Allowing a class to be held when <10 students are enrolled despite grant funding
- Staffing shortages
- Purchasing and correct allocation of funding

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