MURRAY STATE UNIVERSITY

DEPARTMENT OF INDUSTRIAL AND ENGINEERING TECHNOLOGY

COURSE NUMBER: CET 330 CREDIT HOURS: 3.0

I. TITLE: Water Quality Technology I

II. CATALOG DESCRIPTION:
The course of study includes fundamental design and operation of water treatment and reclamation systems. Topics include analyses of water and wastewater characteristics, system design conforming to regulatory requirements, and related chemical, biological, and hydraulics concepts.

III. PURPOSE:
Successful completion of this course will enable a student to apply basic hydraulics, assess the impact of pollution on receiving waters, and conceptually design fundamental treatment systems.

IV. COURSE OBJECTIVES:
The course will introduce students to scientific and engineering technology concepts and computational methods needed to provide water treatment systems for potable and industrial uses and water reclamation systems for industrial and municipal dischargers. Hydrologic, public health, and regulatory considerations are included. At the conclusion of this course, successful students will be able to conceptually design the common components of treatment systems, understand the purpose of each process, and understand the potential public health and environmental impacts of incomplete treatment.

V. CONTENT OUTLINE:

A. Potable Water Quality
   - Regulations
   - Pollutant Sources and Impacts

B. Water Chemistry and Biology

C. Water Treatment
   - Introduction
   - Coagulation
   - Softening
   - Reactors
   - Mixing and Flocculation
   - Sedimentation
   - Filtration
   - Disinfection
   - Advanced Treatment

VI. INSTRUCTIONAL ACTIVITIES:
Classroom lectures, library research, and small group design projects will be included.

VII. FIELD, CLINICAL, AND/OR LABORATORY EXPERIENCES:
Laboratory and field exercises will be integrated into the course. Topics will include the following:

A. Laboratory safety
B. Sampling and statistical analyses
C. Laboratory reports and technical writing
D. Engineering Design
E. Mass and Flow

F. Jar Tests and Coagulation/Flocculation
G. Hardness and Alkalinity
H. Softening
I. Sedimentation
J. Water Treatment Plant Visit

VIII. RESOURCES:
Students will use computers for data analyses, graphics, and report presentation.

IX. GRADING PROCEDURES:

Quizzes (2)	- 30%
Homework/Lab	- 25%
Tech Report	- 15%
Final project	- 30%

Letter grades of A, B, C, D, and E will be assigned based on student performance.

The technical report will consist of 6 to 8 pages of text (double spaced, word processed) and a Power Point presentation. The topic will be student-selected. References from the internet, books, and journal articles mus be included. An oral presentation is required.

The final project will be the conceptual design of a water treatment system.

X. ATTENDANCE POLICY:
This course will adhere to the policy published in the MSU Undergraduate Bulletin.

XI. ACADEMIC HONESTY POLICY:
This course will adhere to the policy published in the MSU Undergraduate Bulletin. Cheating, plagiarism (submitting another person's material as one's own), or doing work for another person which will receive academic credit are all impermissible. This includes the use of unauthorized books, notebooks or other sources in order to secure or give help during an examination; the unauthorized copying of examinations, assignments, reports or term papers; or the presentation of unacknowledged material as if it were the student's own work. Disciplinary action may be taken beyond the academic discipline administered by the faculty member who teaches the course in which the cheating took place.

XII. TEXT AND REFERENCES:
Water and Wastewater Technology, Hammer and Hammer, current edition.

XIII. PREREQUISITES:
None

XIV. STATEMENT OF AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY:
Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or other provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities.