CEU COURSE DESCRIPTION

WET LAB PROCEDURES CEU TRAINING COURSE

This short CEU course will review commonly found water and wastewater diseases, symptoms and identification techniques. This course will cover water and wastewater sampling techniques, waterborne disease identification ND control, general water quality operations and definitions; disease symptoms; disease diagnosis; history; susceptibility; and disease sources of contamination. This course will apply to all categories of water treatment/distribution and wastewater treatment/collection. As water professionals, it is our responsibility to identify, stop and control all waterborne diseases.

This CEU course was designed for the enhancement of water laboratory technical abilities. This course is intended for Water Laboratory Analysts, but can be utilized by Wastewater Treatment, Collections, Water Distribution, Industrial/Pretreatment Inspectors, Pump Installers, and Water Treatment Operators. This course is also an excellent introduction for a person interested in working in the water quality field, water/wastewater treatment or distribution or a collections facility and wishing to maintain CEUs for a certification license or to learn how to do the job safely and effectively, and/or to meet education needs for promotion. Every operator or customer service person that has contact with the public should have this booklet accessible to help answer water quality and waterborne disease related questions.

Background

Less than 100 years ago, typhoid fever and amebiasis were the main causes of water-borne illnesses and deaths in the U.S. Thanks to contemporary water treatment measures, we have defeated old foes like typhoid fever, cholera, and dysentery.

However, new threats have emerged in our waters. Microbial contamination of water is rare, but it can and does occur, resulting in illness and even death.

Probably the best-known and most deadly case of contamination in the U.S. in recent years happened in Milwaukee in 1993, when the municipal water supply was contaminated by *Cryptosporidium*, an intestinal protozoan. At least 50 people died, and some 400,000 people became ill, 4,000 badly enough to be hospitalized.

Recognition of Illness Associated with the Intentional Release of a Biologic Agent

On September 11, 2001, following the terrorist incidents in New York City and Washington, D.C., CDC recommended heightened surveillance for any unusual disease occurrence or increased numbers of illnesses that might be associated with the terrorist attacks. Subsequently, cases of anthrax in Florida and New York City have demonstrated the risks associated with intentional release of biologic agents.

This course provides guidance for water providers and public health personnel about recognizing illnesses or patterns of illness that might be associated with intentional release of biologic agents.

Target Audience
The primary target audience for this course includes anyone who works in a water laboratory or treatment plant but is not limited to include water distribution workers, well drillers, pump installers, water treatment operators, wastewater operators and onsite/installers.

Also included are people interested in working in a water treatment/wastewater treatment or distribution facility and/or wishing to maintain CEUs for a certification license or to learn how to perform their job safely and effectively, and/or to meet education needs for promotion. There are no prerequisites, and no other materials are needed for this course.

Course Statement of Need
Many areas of operations will have a need for an operator or personnel to monitor laboratory or process control results for various purposes. This course was designed to provide these professionals a related continuing education course for license renewal requirements.

CEU Course Learning Objectives
Knowledge obtained by this CEU Course and the approximately average times the student will spend on each subject. This includes assignment reading, glossary review, and final examination.

General Course Goals and Learning Objectives
A. Explain various Definitions, Symbols and Characters used in the laboratory.
B. Define and utilize various Water and Wastewater Sampling Techniques
C. Define and explain the Chain of Custody form and sample security.
D. Explain various microbiological preservation techniques.
E. Define Microbiological MCLs and Heterotrophic Plate Count.
F. Identify the history of the microbiological life sciences and disease research.
G. Define and explain various biological and complex microbiological processes.
H. Define, identify and explain the difference between bacteria and viruses.
I. Define, identify and explain protozoan life.
J. Identify and explain various waterborne disease germs or microbes.
K. Define and explain various waterborne disease symptoms and illnesses.
L. Define and explain various waterborne disease testing and identification methods.
M. Define and explain various waterborne disease removal or disinfection techniques.
N. Understanding and identifying waterborne disease identification and collection.
O. Waterborne disease laboratory procedures.
P. Advanced waterborne disease application and competency.

Specific Learning Topics
Main Players Chapter 1
Bacteria
Prokaryotes
Gram Stain
Archaea, Bacteria, Eukaryotes
Eukaryotes
Paramecium
Viruses
Bacteriophages
Replication
Mutation
Protozoa
Amoebas
Protozoan Diseases
References

Giardiasis Chapter 2
Giardia Images
References

Cryptosporidiosis Chapter 3
Route of Transmission
Images
Symptoms
Prevention
Water Filters

Cholera Chapter 4
El Tor
Cholera Toxins

Legionnaire's Disease Chapter 5
L. Pneumophila
Chlorine Dioxide

Escherichia Coli Chapter 6
E. Coli 0157:57
Positive Test
Clonal Groups

Related Diseases Chapter 7
Amebiasis
Life Cycle
Amebic Meningoencephalitis
Naegleria
Calicivirus
Schistosomes
Gastroenteritis
Rotavirus
Noroviruses
Hepatitis A
Leptospirosis
Pseudomonas Aeruginosa
Pyoverdin
Pathogenesis
Shigellosis
Transmission
Reported Cases
Typhoid Fever
Tularemia
MIB Geosmin
Arsenic
Methemoglobinemia

EPA Regulations Chapter 8
Outbreaks
Water Quality Data
Unreported Outbreaks
Cross-Connections

Water Sampling - Procedures Chapter 9
Bacteriological Monitoring
MCLs
Heterotrophic Plate Count
Total Coliforms
Sample Handling
Chain of Custody

Laboratory Analysis Section
Method 1623
Method 1604
Method 1605
Wastewater Procedures (Process Control

General Water Quality Information Section

- Understand microbiological history and disease research.
- Understand the difference between bacteria and viruses.
- Define differences between Archaea, Bacteria and Eukaryotes.
- Define various Water Quality Processes, Terms, and Definitions.
- Explain and Summarize SDWA with regards to waterborne diseases.
- Know Stage 1 & proposed Stage 2 Disinfection Byproduct Rule (DBPR); the EPA's data gathering and monitoring programs under the Unregulated Contaminant Monitoring Rule.
- Know various Sampling Procedures, Proper Handling, QA/QC Measures, Chain of Custody procedures, Positive Coliform Samples, HPC, Total Coliforms.

Laboratory and Identification Section: Ability to describe, sample, test and differentiate various pathogens, Viruses, Protozoan diseases and related waterborne diseases. This includes epidemiologic Identification procedures and laboratory testing methods.

- Viral gastroenteritis or ***Rotavirus, Norwalk-like viruses*** found in human feces also, shellfish, lives in polluted waters; (Diarrhea and vomiting).
- ***Escherichia coli***-- E. coli O157:H7 (bacterium) found in human feces. Symptoms vary with type caused gastroenteritis Other *E. coli* organisms.
- **Typhoid *Salmonella typhi*** (bacterium) Human feces, urine. Inflamed intestine, enlarged spleen, high temperature— sometimes fatal.
- Shigellosis ***Shigella*** (bacterium) found in human feces. Diarrhea.
- Cholera ***Vibrio cholerae*** (bacterium) found in human feces also, shellfish, lives in many coastal waters; Vomiting, severe diarrhea, rapid dehydration, mineral loss —high mortality.
- **Hepatitis** viruses commonly found in human feces; shellfish grown in polluted waters. Symptoms yellowed skin, enlarged liver, fever, vomiting, weight loss, abdominal pain — low mortality, lasts up to four months.
- Amebiasis ***Entamoeba histolytica*** (protozoan) found in human feces. Mild diarrhea, dysentery, extra intestinal infection.
- Giardiasis ***Giardia lamblia*** (protozoan) Animal or human feces Diarrhea, cramps, nausea, and general weakness — lasts one week to months. ***Giardia*** is defined as a protozoan parasite found in water and other media. The two species of *Giardia* and their potential hosts are *G. intestinalis* (humans) and *G. muris* (mice). Laboratory procedures defined.
- Cryptosporidiosis ***Cryptosporidium parvum*** (protozoan) found in animal or human feces Diarrhea, stomach pain — lasts days to weeks.
- ***Legionella*** The first discovery of bacteria from genus *Legionella* came in 1976 when an outbreak of pneumonia at an American Legion convention led to 29 deaths. The causative agent, what would come to be known as *Legionella pneumophila*, was isolated and given its own genus. The organisms classified in this genus are Gram-negative bacteria that are considered intracellular parasites.
- 10 other related diseases, illnesses and identification methods and chemical related diseases like Methemoglobinemia, Arsenic Poisoning and taste and odor factors Geosmin, Methyl-isoborneol (MIB), and Cardin-4-ene-1-ol.

Specific Course Goals and Timed Outcomes (Beta Testing)
Originally, eleven students successfully completed this assignment out of seventeen students. The students were tested and the average time necessary to complete each task was recorded in the above objectives and timed outcome section. The students did not receive payment for their completed assignments. In the above timed outcome section area, the tasks were measured using times spent on each specific objective goal and final assignment grading of 70% and higher.

Seventeen students were originally selected and given a task assignment survey in which to track their times on the above learning objectives (course content) and utilized a multiple choice and essay style answer sheet to complete their final assignment. All students were given 30 days to complete this assignment and survey. Beta testing performed February 2004.

Beta Testing Group Statistics
Seventeen students were selected for this assignment. All the students held water treatment and/or wastewater treatment operator certification positions. None of the test group received credit for their assignment. Four students failed the final examination. Three students did not complete the reading assignment; no explanation given. The average times were based upon the outcome of eleven students.

Final Conclusion
The average time for the Wet Lab Course is 25.5 hours with an average score of 86 percent.

Assessment Implications
Core tasks have been statistically analyzed then reviewed and edited by the TLC'S Advisory Committee, SME Experts. These tasks now form a distinct definition of the course and assessment content. The emphasis for most of the levels of operation would be found in the duty/functions discussion above objectives.

Accreditation Formula for Figuring CEU Credit
The results of beta-testing were used in conjunction with a formula to determine average student time for accreditation purposes for intended audiences. This formula may not work for unintended audiences.

**CEU was awarded based on guidelines established by the International Association of Continuing Education and Training (IACET). We are former IACET providers.

Course Page Count Total
1 page of text = 2 minutes of student time.
1 exam question = 1 minute of student time

600 pages times 2 equals 1200 divided by 60 minutes =20 hours
400 questions equals 6.6 hours
Total time 26.6 hours *We are asking for 24 hours of credit.*

Beta Course Training/Assessment Short Summary

1. The difficulty of your course.

Very Easy	0	1	2	3	4	5	Very Difficult

2. Please rate the difficulty of the testing process.

Very Easy	0	1	2	3	4	5	Very Difficult

3. Please rate the subject matter on the exam to your actual field or work.

Very Similar	0	1	2	3	4	5	Very Different

Assessment Implications

Core tasks have been statistically analyzed then reviewed and edited by the Advisory Committee, SME Experts. These tasks now form a distinct definition of the course and assessment content. The emphasis for most of the levels of operation would be found in the duty/functions discussion bellow. To recap, bodies of knowledge and concepts that support the understanding and valid performance of the following duty/functions should be taught first. Based on the job-task survey data and beta-testing, the most useful parts of the course are beneficial for the following categories:

Suggested/Recommended for

Water Treatment Levels 1 and 2
Water Distribution Level 1 and 2
Wastewater Treatment Level 1 and 2
Water/Wastewater Samplers
Safe Drinking Water Act Rules and Regulations
Clean Water Act Rules and Regulations
Backflow Awareness
Water Chemistry
Onsite, Pretreatment Operators
The advance-level assignment. Based on the job-task survey data, the most useful part of the course is:

Permissible/Recommended for

Water Distribution Level 3 and 4
Water Treatment Level 3 and 4
Wastewater Treatment Level 3 and 4
Advanced Activated Sludge
Groundwater Protection
Safe Drinking Water Act Rules and Regulations
Clean Water Act Rules and Regulations
Reverse Osmosis/Point of Use
Storm Water Monitoring
Water/Wastewater Sampling

Task Analysis and Training Needs Assessment Process Information Gathering
Task Analysis and Training Needs Assessments have been conducted to determine or set Needs-To-Know for the basis of TLC's continuing education courses. The following is a listing of some of those who have conducted extensive valid studies from which TLC has based the continuing education program upon: the Environmental Protection Agency (EPA), the Arizona Department of Environmental Quality (ADEQ), the Texas Commission of Environmental Quality (TCEQ), Pennsylvania Depart of Environmental Protection (PDEP) and the Association of Boards of Certification (ABC).

TLC has primary used Training Provider Manual for the Pennsylvania Water and Wastewater System Operator Training Program for course goal setting and learning objectives for all three training formats; conventional classroom, distance paper based and web based training.

The titles or names of subjects (Learning Objectives) may be changed for readability purposes. Some of the terms used in this document may be part of a copyrighted adult learning assessment process and in these cases, we utilize generic terminology. The needs assessment/survey maintains our training and education materials criteria. Assessments and changes are performed based on changes in technology, evaluations of the students, regulatory changes and editorial corrections. Most of this information is considered intellectual property and may not be owned by TLC but by third –parties. All of TLC's information is proprietary.

Assessment Implications
Core tasks have been statistically analyzed then reviewed and edited by the Advisory Committee, SME Experts. These tasks now form a distinct definition of the course and assessment content. The emphasis for most of the levels of operation would be found in the duty/functions discussion below. To recap, bodies of knowledge and concepts that support the understanding and valid performance of the following duty/functions should be taught first. Based on the job-task survey data and beta-testing, the most useful parts of the course are beneficial for the following:

ADDIE
TLC utilizes a five-phase instructional design model consisting of Analysis, Design, Development, Implementation, and Evaluation for our continuing education courses. Each course design step has an outcome that feeds into the next step in the sequence. The five phases of ADDIE are as follows:

ANALYSIS
During the Training Needs Assessment Process Information Gathering Analysis phase, the course designer(s)(see Subject Matter Experts and Contributing Editors) identifies the learning need, the goals and objectives, the student's needs, existing knowledge, Course Statement of Need**,** and any other relevant characteristics (State or Federal Need-to-Know) and to ensure that students are learning what is relevant for their job**.**

DESIGN
This is the systematic process of specifying learning objectives from the Training Needs with a focus on Bloom's Taxonomy. A detailed storyboard following the Needs Assessment/Survey and/or Course Statement of Need will determine the course content.

DEVELOPMENT
The actual creation (production) of the training content will begin based upon the Design phase using Bloom's Taxonomy. At this time, a decision is make to proceed or table the course.

IMPLEMENTATION
During implementation, the Alpha testing plan is put into action and a procedure for course and/or assessment revision is implemented. These course materials and assessments are delivered or distributed to the student group. After delivery, the effectiveness of the training materials is evaluated in Beta testing phase. All of our courses have extensive Alpha and Beta testing to ensure job relevancy, correct information and course learning objectives are met.

EVALUATION
This phase consists of (1) formative and (2) summative evaluation from Alpha and Beta testing. Formative evaluation is present in each stage of the ADDIE process. Summative evaluation consists of tests designed for criterion-related referenced items and providing opportunities for feedback from the students and proctor. Administrative and instructional staff will collect all student concerns (verbal, written and surveys) and distribute these to TLC Administrative personnel for evaluation and course corrections. Course and/or Assessment revisions are made as necessary.

Precept-Based (Micro-Learning) Training Course
TLC's training courses are based upon a form of induction training, made of topical and technical precepts that are discovered in the Needs Assessment/Survey and/or Training Needs Assessment Process Information Gathering. The training topics or learning objectives are made up of "micro-content" or "precepts"– or small chunks of information that can be easily digested. These bite-size pieces of technical information are considered to be one of the most effective ways of teaching students new or important information (regulatory or technical) because it helps the mind retain knowledge easier.

Micro-learning or precept-based training doesn't rely on the student to process a large amount of information before breaking it down. Our method includes short modules with clearly defined learning goals for each section. This method allows a student to hone in on a particular skill, then given the opportunity to exhibit their knowledge in the final assessment (assignment).

Course Training/Assessment Needs Methodology
Technical Learning College identified training/assessment needs by placing identifying them in two categories; internal and external.

Internal Methods include:
- ✓ Observation
- ✓ Interviews
- ✓ Instruments: Perception instruments and Knowledge based assessments
- ✓ Student records and reports
- ✓ Group problem analysis (Classroom or Seminars)
- ✓ Performance or Survey appraisals

External Methods include:

- ✓ Outside consultants (Completion)
- ✓ Government Certification Reviews (Training Needs)
- ✓ Records and reports from other agencies

The needs assessment/survey maintains our training and education materials criteria. Assessments and course material changes are performed based on changes in technology, evaluations of the participants and regulatory changes. Materials are assessed yearly or as needed to insure course integrity.

Melissa Durbin, Author and Dean of Instruction.

30 years' experience in laboratory procedure training along with 18 years of college instruction. Call me or any of the other Instructors for course assistance. I welcome your input and comments and hope you enjoy this course

Primary Course Designers Melissa and Jeff Durbin
Melissa Durbin
This course was co-designed by Melissa Durbin; she has over 20 years of teaching water and wastewater treatment experience as a college instructor. Melissa has written the several nationally accepted water and wastewater treatment manuals. Melissa has taught approximately 10,000 students about water and wastewater treatment and related classes. She will be available to answer questions relating this course.

Jeff Durbin
This course was co-designed by Jeff Durbin, over 10 years of water and wastewater treatment experience as a backflow inspector for the City of Phoenix and 20 years of water and wastewater treatment experience. Jeff has taught approximately 10,000 students about water and wastewater treatment primarily in water distribution, and pollution control (water quality) related classes. Jeff will also be able to answer any question pertaining to water and wastewater treatment or related questions.

Extensive Academic Research
Technical Learning College's (TLC's) continuing education course material development was based upon several factors; field experience working in the water quality field, extensive academic research (teaching in the community college system), advice from subject matter experts(State officials and industry leaders), data analysis, task analysis and training needs assessment process information gathered from other states.

Both Melissa and Jeff Durbin are the two primary Instructors, Subject Mater Experts (S.M.E. and Technical Writers. See below for more information.

Advice from Subject Matter Experts
Both Melissa and Jeff Durbin are professional trainers and have been educated in current trends in professional education and continuing education needs.

Course Complier
Peter Easterberg, Detail-oriented technical writer/technical editor/desktop publisher/copy editor. 17 years' experience editing and writing feasibility and trade-off studies, test procedures, specifications, user manuals, company policies, HR forms, and ISO-9000 documents. Exceptional grammatical/written communication skills. "Go-to" person for Microsoft Word, Outlook, and general computer questions. Internet Webmaster Certificate (including HTML)

Contributing Editors
James L. Six Received a Bachelor of Science Degree in Civil Engineering from the University of Akron in June of 1976, Registered Professional Engineer in the State of Ohio, Number 45031 (Retired), Class IV Water Supply Operator issued by Ohio EPA, Number WS4-1012914-08, Class II Wastewater Collection System Operator issued by Ohio EPA, Number WC2-1012914-94

Joseph Camerata has a BS in Management with honors (magna cum laude). He retired as a Chemist in 2006 having worked in the field of chemical, environmental, and industrial hygiene sampling and analysis for 40 years. He has been a professional presenter at an EPA analytical conference at the Biosphere in Arizona and a presenter at an AWWA conference in Mesa, Arizona. He also taught safety classes at the Honeywell and City of Phoenix, and is a motivational/inspirational speaker nationally and internationally.

James Bevan, Water Quality Inspector S.M.E.. Twenty years of experience in the environmental field dealing with all aspects of water regulations on the federal, state, and local levels. Experience in the water/wastewater industry includes operation of a wastewater facility, industrial pretreatment program compliance sampling, cross-connection control program management, storm water management, industrial and commercial facility inspections, writing inspection reports for industry, and technical reports per EPA permit requirements. Teacher and Proctor in Charge for Backflow Certification Testing at the ASETT Center in Tucson for the past 15 years and I possess an Arizona Community College, Special Teaching Certificate in Environmental Studies. Extensive knowledge and experience in college course and assignment/assessment writing.

Pete Greer S.M.E., Retired biology instructor, chemistry and biological review.

Jack White, Environmental, Health, Safety expert, City of Phoenix. Art Credits.

Ongoing Course Evaluation
Administrative and instructional staff will collect all student concerns (verbal, written and surveys) and distribute these to the Course Editor or Copy-editors for evaluation and course corrections. Administrative and instructional staff will collect all student concerns (verbal, written and surveys) and distribute these to TLC Administrative personnel for evaluation and course corrections. Course and/or Assessment revisions are made as necessary.

Editor's Discretion
The Course Editor may change the course assessment (assignment), course text, objective, artwork and topical order as necessary for security, corrective, printing, readability or typesetting purposes. The assessment may be rotated for security purposes and the course material may be updated to reflect any regulatory updates and/or corrections. The overall course objective or topic guide may be in a different order than the course manual for the reason of typesetting, adult learning principles and copy-editing purposes. Course materials, charts and artwork amendments, adjustments, modifications may be performed to reflect regulatory/safety text/artwork updates, Bloom's taxonomy, adult learning principle changes, error adjustments and comprehension. These changes generally do not reflect major course material changes, but are minor in nature.

Course Procedures for Registration and Support

All of Technical Learning College's correspondence courses have complete registration and support services offered. Delivery of services will include e-mail, web site, telephone, fax and mail support. TLC will attempt immediate and prompt service.

When a student registers for a distance or correspondence course, he/she is assigned a start date and an end date. It is the student's responsibility to note dates for assignments and keep up with the course work. If a student falls behind, he/she must contact TLC and request an end date extension in order to complete the course.

It is the prerogative of TLC to decide whether to grant the request. All students will be tracked by a unique number assigned to the student.

Course Assignment Material

Most of the EPA questions will come from the EPA summary, waterborne disease section identification, MCL listing, water sampling and laboratory procedures. Other detailed information will come from the Center of Disease Control. The EPA rules and laboratory procedures are also available on line at the EPA Web site: **www.epa.gov**. You are expected to read and understand all these rules and laboratory procedures.

Instructions for Written Assignments

The ***Wet Lab Procedures*** distance learning course uses a multiple-choice style answer key. You can find the answer key in the rear of the assignment. You may have the option of completion of the laboratory assignment, either the heterotrophic plate count, Method 1623 - Cryptosporidium and Giardia or most EPA's data gathering and monitoring programs under the Unregulated Contaminant Monitoring Rule. To receive alternate credit for the course, please contact TLC to receive permission from your Instructor.

Feedback Mechanism (examination procedures)

Each student will receive a feedback form as part of his or her study packet. You will be able to find this form in the rear of the course or lesson.

Security and Integrity

All students are required to do their own work. All lesson sheets and final exams are not returned to the student to discourage sharing of answers. Any fraud or deceit and the student will result in forfeiture of all fees and the appropriate agency will be notified.

Student's Identity, Attendance, and Participation Verification

A proctoring report and/or computer-tracking program validates proper identity, attendance and participation. The student shall submit a driver's license for signature verification and track their time worked on the assignment. The student shall also sign an affidavit verifying they have not cheated and worked alone on the assignment. We follow up with telephone confirmation and/or quiz review assessment. All student attendance is tracked on TLC's student attendance database.

Teaching Techniques and Assessment Tools

Our training courses are based upon a form of induction training, made of topical and technical precepts. The training topics are made up of "micro-content" or "precepts"– or small chunks of information that can be easily digested. These bite-size pieces of technical information are considered to be one of the most effective ways of teaching people new

information because it helps the mind retain knowledge easier. Micro-learning or precept-based training doesn't rely on the student to process a large amount of information before breaking it down. Our method includes short modules with clearly defined learning goals for each section with a post quiz and a final assessment (quiz). This method of pre-quiz allows a student to hone in on a particular skill, then given the opportunity to exhibit their knowledge in the final assessment.

Educational Learning Objective Topics
The CEU course covers several educational topics/functions/purposes/objectives. The topics listed are to assist in determining which educational objective or goal is covered for a specific topic area. This information is available in the detailed beta-testing information and may be found in the course's table of contents. The titles or names of subjects may be changed for readability purposes.

Required Texts
The ***Wet Lab Procedures*** course comes complete with a short summary of the EPA's Rules and Regulations and related drinking water standards. If you need more information or a complete set of Rules, you can download them off the EPA's web page, www.epa.gov or contact your local state environmental agency. You may need to contact a laboratory or state agency for certain sampling information.

Educational Learning Objective Topics
The CEU course covers several educational topics/functions/purposes/objectives. The topics listed are to assist in determining which educational objective or goal is covered for a specific topic area. This information is available in the detailed beta-testing information and may be found in the course's table

Feedback Mechanism (Examination Procedures)
Each student will receive a feedback or survey form as part of his or her study packet. The student will be able to find this form in the front of the assignment or lesson(assessment). The student can e-mail, snail mail or telephone TLC for any concern at any time.

Student Concerns
Most of student/training course related concerns are generally answered within 2 hours but not more than 24 hours. TLC has three support staff administrators with computers and telephones and have excellent communication and computer skills and able to respond and track all students and obtain or submit required forms and assignments. TLC has a dedicated computer student tracking system database that is backed-up on a daily bases and this information is secured and stored at a secure offsite location in case of fire or security problems. All student website information is tracked and documented for security measures.

Recordkeeping and Reporting Practices
TLC keeps all student records for a minimum of five years. It is the student's responsibility to give the completion certificate and/or paperwork to the appropriate government agencies. If necessary, we will electronically submit the required information to New York, Colorado, Texas, Indiana, Pennsylvania and any other required state for your certification renewals.

TLC Record Storage
TLC's training records include the following elements:
1. Individual course training (assessment) and registration page (Customer Order Record) is recorded in Excel format and the hard copies are scanned and stored in a computer database for 5 years and include the following:
a. the instructor(s) who taught each session on that date the of the training session or grading was offered (in comments section registration page) as well as which instructor was considered to be the lead instructor(s) and by the Director.
b. the name of the instructor(s) and facilitator(s) who proctored and/or graded the examination for each training session if applicable (in comments section registration page);
c. the attendance sign-in sheet(s) (registration page) for each training course or session;
d. all graded and dated validated examination answer (Assessment) sheets for each examination attempt including an explanation (written in comments and/or Excel list) for any retests as well as a narrative explaining any assistance provided to the attendee before the re-test; and
e. session evaluation(survey)forms (in comments section registration page and or Excel list).

Grading Criteria
TLC offers students the option of either pass/fail or assignment of a standard letter grade. If a standard letter grade is not requested, a pass/fail notice will be issued. Final course grades are based on the total number of possible points. The grading scale is administered equally to all students in the course. Do not expect to receive a grade higher than that merited by your total points. No point adjustments will be made for class participation or other subjective factors. For security purposes, please fax or e-mail a copy of your driver's license and always call us to confirm we've received your assignment and to confirm your identity.

Final Assignment
The final examination assignment is determined by the examination administrator or the instruction and there are generally three versions that are readily available. There are also three levels of the examination from average, (5 Answers) Difficult (5 +All of the above) and very difficult (Six answers and All of the above). The student is provided the average rated examination unless there is a condition or concern that requires a more difficult exanimation. Example, two or more students at the same address or any suspicion of cheating or potential fraud. We try to ensure the security and learning experience. Assignments/answer keys are only accessible to instructors and administrative staff that have a need to know clearance.

Failure
If the student fails the examination, they are provided with two more chances to successfully pass the exam with a score of 70% or better. The student may receive a different and randomly generated exam. Upon failure of an exam, the student can submit their concerns in writing or submit a survey form and has the option to receive instructor assistance that would be equivalent to conventional classroom assistance in discovering the areas that are deficient. The instructor has the option in describing the assistance method or procedure depending upon the student's deficiencies.

Grading Criteria
TLC will offer the student either pass/fail or a standard letter grading assignment.
A 900 – 1000 points
B 800 – 899 points
C 700 – 799 points
D 600 – 699 points
F <600 points

In order to successfully pass this course, you will need to have 70% on the final exam. The entire assignment is available on TLC's Website in a Word document format for your convenience.

Forfeiture of Certificate (Cheating)
If a student is found to have cheated on an examination, the penalty may include--but is not limited to--expulsion; foreclosure from future classes for a specified period; forfeiture of certificate for course/courses enrolled in at TLC; or all of the above in accordance with TLC's Student Manual. A letter notifying the student's sponsoring organization (State Agency) of the individual's misconduct will be sent by the appropriate official at TLC. No refund will be given for paid courses. An investigation of all other students that have taken the same assignment within 60-day period of the discovery will be re-examined for fraud or cheating. TLC reserves the right to revoke any published certificates and/or grades if cheating has been discovered for any reason and at any time. Students shall sign affidavit agreeing with all security measures. The student shall submit a driver's license for signature verification and track their time worked on the assignment. The student shall sign an affidavit verifying they have not cheated and worked alone on the assignment.

Note to students: Keep a copy of everything that you submit.
If your work is lost, you can submit your copy for grading. If you do not receive your certificate of completion or quiz results within two or three weeks after submitting it, please contact us immediately. We expect every student to produce his/her original and independent work.

Any student whose work indicates a violation of the Academic Misconduct Policy (cheating, plagiarism) can expect penalties as specified in the Student Handbook, which is available through Student Services; contact them at (928) 468-0665. A student who registers for a distance learning course is assigned a "start date" and an "end date." It is the student's responsibility to note due dates for assignments and to keep up with the course work. If a student falls behind, she/he must contact the instructor and request an extension of her/his *end date* in order to complete the course. It is the prerogative of the instructor to decide whether or not to grant the request.

Your assignments are due on time. Any assignment or mailed-in examination that is one to five days late will be marked down one letter grade. Any assignment or mailed-in examination that is turned in *later* than five days will not be accepted and will be recorded in my grade book as "non-participating" and you can be withdrawn from class. (See final grade options.)

Proctoring Instructions
Students enrolled in Technical Learning College's CEU courses that require proctored testing and **who do not live in the physical service area** of the Technical Learning College Test Center must nominate and gain prior approval of a proctor who will monitor course tests. A new proctor nomination form is required for each term and for each class.

PROCTORS, *If Necessary…*
A proctor is an individual who agrees to receive and administer a student's test(s) from Technical Learning College at the proctor's business email address. The test(s) will be ethically and professionally administered in a suitable testing environment (e.g., college/library or professional office). The proctor will return the test(s) to the Technical Learning College Test Center via fax immediately after administration, and the proctor will mail the exam within one (1) work day of administration to the Technical Learning College Test Center.

Proctors certify in writing to the Technical Learning College Test Center that the student completed the test according to all of the specific directions provided in the proctor guidelines letter. As the Proctor Nomination Form indicates, the student will identify the specific test(s) the proctor will monitor.

Any proctor the student nominates must be acting in the official capacity in one of the following positions:

- **College or University Personnel:** Dean, Department Chair, Student Records, Professional Staff Member of an adult/continuing education office or counseling center, Librarian, Professor, or any official testing center personnel if the tests are administered in the center.
- **Armed Forces Education Office Personnel**
- **Public or Private School Personnel:** Superintendent, Principal, Guidance Counselor, or Librarian.
- **Other:** Civil Service Examiner, Librarian for City/County, HR Professional, or Education/Training Coordinator.

The following persons do not qualify as proctors:

- Co-workers, someone who reports to you or your immediate supervisor
- Friends
- Neighbors
- Relatives

Nominating a Proctor
Students are responsible for identifying, nominating, and making all of the arrangements for the proctoring of their course tests, including the payment of any fees for services and the return of test materials to Technical Learning College Test Center (cost of FAX or postage). The proctor must be able to receive the student's test(s) via email as attachments. The Technical Learning College Test Center does not accept Yahoo, AOL, G-mail, Hotmail, or etc. email addresses.

If the student is unable to find a suitable proctor, they must contact the Technical Learning College Test Center for assistance immediately via email.

Proctor Nomination Form
Students will use the Proctor Nomination Form for nomination and approval of a proctor. The student will complete the top part of the form for each course s/he is taking, even if the same proctor is used for all tests. The student must click on the submit button for the data to be electronically transmitted to the Technical Learning College Test Center.

Disclaimer Notice
It is ultimately the student's responsibility to ensure that this CEU course is either approved or accepted in my State for CEU credit. The student shall understand State laws and rules change on a frequent basis and believe this course is currently accepted in their State for CEU or contact hour credit, if it is not, the student shall will not hold Technical Learning College responsible. The student shall also understand that this type of study program deals with dangerous conditions and that the student shall will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable for any errors or omissions or advice contained in this CEU education training course or for any violation or injury caused by this CEU education training course material. The student shall will call or contact TLC if help or assistance is needed and double-check to ensure the registration page and assignment has been received and graded.

Affidavit of Exam Completion
The student shall affirm that they alone completed the entire text of the course. The student shall affirm that they completed the exam without assistance from any outside source. The student shall understand that it is their sole responsibility to file or maintain their certificate of completion as required by the state.

Refund Policy
We will beat any other training competitor's price for the same CEU material or classroom training. Student satisfaction is guaranteed. We will refund course fees if the course is not accepted for credit by the State. Otherwise, any other problem will be given an exchange credit towards an acceptable or approved course for the State. Once we are notified of the refund or exchange, we will generally issue a refund in 30 days of the problem and exchange within the same day.

Continuing Education Units
You will have 90 days from receipt of this manual to complete it in order to receive your Continuing Education Units (**CEUs**) or Professional Development Hours (**PDHs**). A score of 70% or better is necessary to pass this course. If you should need any assistance, please visit our Assistance Page on the website. Please e-mail all concerns and the final test to info@tlch2o.com.

Mission Statement
Our only product is educational service. Our goal is to provide you with the best possible education service possible. TLC will attempt to make your learning experience an enjoyable opportunity.

ADA Compliance
TLC will make reasonable accommodations for persons with documented disabilities. Students should notify TLC and their instructors of any special needs. Course content may vary from this outline to meet the needs of this particular group. There is an option course assignment available, please contact an Instructor for further assistance.

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Educational Mission
The educational mission of TLC is:
To provide TLC students with comprehensive and ongoing training in the theory and skills needed for the environmental education field,

To provide TLC student's opportunities to apply and understand the theory and skills needed for operator certification,

To provide opportunities for TLC students to learn and practice environmental educational skills with members of the community for the purpose of sharing diverse perspectives and experience,

To provide a forum in which students can exchange experiences and ideas related to environmental education,

To provide a forum for the collection and dissemination of current information related to environmental education, and to maintain an environment that nurtures academic and personal growth.

When the Student finishes this course…
At the finish of this course, you (the student) should be able to explain and describe the various water/wastewater laboratory procedures/process control techniques in regard to various and commonly found waterborne diseases and bacteria identification. You will also be able to understand and describe various water sampling techniques and related terminology.

The student is required to submit the following information for assignment grading…

1. 70 PERCENT ON FINAL ASSESSMENT
2. DRIVER'S LICENSE
3. SCHEDULE OF TIME WORKED ON ASSIGNMENT
4. AFFIDAVIT OF EXAM COMPLETION
5. PROCTOR CERTIFICATION
6. TELEPHONE CONFIRMATION

CUSTOMER SERVICE RESPONSE CARD

NAME: _____

E-MAIL_____PHONE_____

PLEASE COMPLETE THIS FORM BY CIRCLING THE NUMBER OF THE APPROPRIATE ANSWER IN THE AREA BELOW.

1. Please rate the difficulty of your course.
   Very Easy 0 1 2 3 4 5 Very Difficult

2. Please rate the difficulty of the testing process.
   Very Easy 0 1 2 3 4 5 Very Difficult

3. Please rate the subject matter on the exam to your actual field or work.
   Very Similar 0 1 2 3 4 5 Very Different

4. How did you hear about this Course? _____

5. What would you do to improve the Course?

_____

_____

How about the price of the course?

Poor_____ Fair ____ Average ____ Good____ Great_____

How was your customer service?

Poor___ Fair ____ Average ____ Good _____ Great_____

Any other concerns or comments.

_____

_____