



Horizontal Directional Drilling – Level 1 Syllabus

Course Information

Organization	Kansas Institute of Underground Technology
Course Number	HE 125
Credits	2
Contact Hours	40
Instructor	Lowell Marsh and Don Thomas
E-mail Address	lmarsh@ncktc.edu
Course/Faculty Website	undergroundtech.com
Office	North Room Diesel
Campus	North Central Kansas Technical College
Address	3033 Highway 24, PO Box 507
City/State/Zip	Beloit, KS 67420
Office Hours	Monday through Friday 8:00 AM -3:00 PM
Office Phone	800-658-4655 or 785-738-9012
Number of Weeks	1 (5 days)
Meeting Times/Location	Meeting times and locations are to be announced

Description

This course is designed to equip participants with knowledge and develop skill for basic operation of horizontal directional drilling equipment. The course includes instruction, in-field exercises simulation and professional coaching for the following:

- 1.HDD Safety
- 2.Prep-Planning
- 3.Tracking Electronics
- 4.Maintenance/Safety
- 5.Drilling Fluids and mixing
- 6.Downhole Tooling
- 7.Field Operation

Simulation for training will take an operator through modules that must be performed on the Jet Trac® Directional Drilling Simulator.

Textbooks

Charles Machine Works. *Ditch Witch JT1220 Mach 1*. Ditch Witch Technical Publications. **Edition:** Issue 2.1. **ISBN:** 054-114.

Core Abilities

- A. Demonstrate ability to identify major components of the JT 1220 drill. Identify service area for maintenance requirements as described in the operator's manual.

Program Outcomes

- A. Complete assigned tasks and class time on underground technologies. Complete simulation assignments and successfully complete assigned projects with the 750 Tracker Receiver and JT1220 directional drill.
- B. Complete written exam with an outcome above 70%.

Competencies

1. Participant will identify equipment and components and describe key functions.
Linked Core Abilities
Demonstrate ability to identify major components of the JT 1220 drill. Identify service area for maintenance requirements as described in the operator's manual.
2. Participant will be able to demonstrate ability to setup the Electric Strike System (ELS).
3. Participant will explain proper procedures required in the event of an electrical strike and gas strike.
4. Participant will list four (4) underground hazards associated with directional drilling.
5. Participant will state the proper method of verifying a specific "locate" that will cross the planned bore path.
6. Participant will describe proper classification of jobsite.
7. Participant will demonstrate the ability to mix fluid additives for a prescribed job.
8. Participant will demonstrate the proper procedure for calibrating the Tracker to the beacon.
9. Participant will demonstrate the ability to set up the directional drilling machine according to the instructions in the Operator's manual.
10. Using the "Downhole Tool Catalog", participant will identify bits and backreamer used with applicable soil conditions and job specifications.
11. Participant will identify maintenance portion of Operator's Manual and identify daily (weekly) maintenance points on the directional drill machine.
12. Participant will list three "conditions" or "situations" that reduce drill pipe life.
13. Participant will demonstrate the ability to initialize the Tracker Control feature.
14. Participant will explain the purpose of the "override" feature (associated with Tracker Control) and state two reasons for using the "override".
15. Participant will demonstrate the ability to locate and take a depth estimate of the beacon.
16. Participant will demonstrate the ability to change and match transmitting channels to ensure proper communication between Tracker and Remote Display equipment.
17. Participant will demonstrate the ability to operate the directional drill machine according to the instructions in the Operator's Manual.

Grading Information

Grading Rationale

Scores are accumulated through participation in lecture classes as well as outside lab projects. A final assessment of student's knowledge may be administered over covered class material.

Grading Scale

- | | |
|---|--|
| A | The participant has completed with proficiency 90% to all Project Competencies during the allowed class period your performance will be successful in earning and A. |
| B | The participant has completed 80% up to 89% of the 17 Project competencies during the allowed class period. |
| C | The participant has completed 70% up to 79% of the 17 Project competencies during the allowed class period. |
| D | The participant has completed 60% up to 69% of the 17 Project competencies during the allowed class period. |

F The participant has completed less than 60% of the 17 Project competencies during the allowed class period.

Guidelines for Success

Late Assignment Policy: Assignments are hands-on and assigned while at the class. Late assignments will be according to attendance of the class.

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Inclement Weather Policy: Students that miss the assigned allotted time are to notify the instructor no later than 30 minutes prior to the schedule event.

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Due Dates for Assignments:

There is no homework or text book with this course. The assignments are during class time for the student to accomplish skill assessment with equipment and complete lessons.

Date of Final Examination: The final will be given after the allotted hands on training of the equipment. A written exam of the material covered in the training will consist of the final 10 points.

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Late Assignment Policy:

Assignments are hands-on and assigned while at the class. Late assignments will be according to attendance of the class.

Attendance Policy:

Student is assigned an allotted time to practice. The student is expected to complete each assigned module before moving to the next assignment.

Absence record and tardiness is not tolerated in the class. When you are assigned to a time (a schedule card will be provided each student) complete training with the simulator program. If you expect to be absent, you must notify my office 785-783-9012 no later than 30 minutes prior to your class schedule. Time is important in completing this training, if you are absent without being excused this could reflect against the course grade.

Inclement Weather Policy:

Students that miss the assigned allotted time are to notify the instructor no later than 30 minutes prior to the schedule event.

Services for Students with Disabilities:

Students, with either a permanent or temporary disability, who require accommodation for more than one week, should request services by contacting the Student Services Office. Students requesting accommodations must present written documentation from a certified professional, which should include a statement identifying the disability as well as recommendations for accommodations. Contact, at least one month in advance, the Dean of Student Services (785) 738-2276 to make requests for accommodations.

Policy Regarding Academic Dishonesty:

Academic dishonesty of any kind will not be tolerated while attending North Central Kansas Technical College. The examples of academic dishonesty are plagiarism, cheating, falsification or forgery of any

assignments or examinations. Any student who participates in any form of academic dishonesty must accept the consequences of their actions. These consequences may include but are not limited to the following (a) verbal or written warning, (b) lowering of grade for assignment/activity, (d) failure of class assignment or exam.

Reading Assignments and Dates Due:

Reading assignments will be during class. Each student is expected to read the student guide located on the table. Follow the instructions and activate the computer to begin the module.

Writing Assignments and Dates Due:

There are no specific writing assignments in this class. The class is hands-on with the equipment operation during class time. The projects offer a planning session to complete a pre-plan form for the project. This will then be a plan for recording results. There may be a final assessment to show student's knowledge.

Research Assignments and Dates Due:

There is no specific research assigned with this class. However, any constructive suggestion for improvement or development that may apply to this class is welcomed. Any suggestions will be taken under advisement for adding to the training program.