



***National Vocational Certificate Level 4 in Mining Process Technology
(Assistant Supervisor)***



**National Vocational Certificate Level 4 in Mining Process Technology”
(Assistant Supervisor)**



(Curriculum)



National Vocational Certificate Level 4 in Mining Process Technology (Assistant Supervisor)



National Vocational and Technical Training Commission (NAVTTTC) Government of Pakistan

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Introduction

Definition/Description of training program (Assistant Supervisor)

Mining sector is one of the booming industries of Pakistan. There is an increasing demand of the Assistant Supervisor. Therefore, the skills are required to be inducted in the future generation. If an individual is planning to pursue a career in mining, this program will be helpful in targeting various commercial and non-commercial projects etc. If an individual is planning to take up Assistant Supervisor course, this course will help him weigh their choices better.

Keeping in view of the above the competency based national vocational qualifications have been developed by NAVTTC to train the unskilled human resource on the technical and entrepreneurial skills to be employed / self-employed and inevitably set sustainable impact on their lives by increasing their livelihood income.

Training Course is based on competency standards which are defined by the industry and the traditional role of a trainer changes and shifts towards the facilitation of training. A trainer encourages and assists trainees to learn for themselves. Trainees are likely to work in groups (pairs) and all doing something different. Some are doing practical tasks in the workshop, some writing, some not even in the classroom or workshop but in another part of the building using special equipment. As trainees learn at different pace they might be at different stages in their learning, thus learning must be tailored to suit individual needs. The following facilitation methods (teaching strategies) are generally employed.

Purpose of the training program:

The purpose of the training is to provide skilled manpower to improve the existing construction industry. More than 96 % of the Pakistani manpower is working in GCC countries where Saudi Arabia (50.90%) and UAE (33.10%) are the largest destination countries followed by Oman (7.26%), Kuwait (1.90%), Bahrain (1.58%), and Qatar (1.41%). The overseas Pakistanis are playing a pivotal role to support the economy in the form of remittances. According to new labor laws, a large number of skilled labors is demanded by Saudi Government especially for the construction sector. For this purpose, new qualifications have



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been developed by NAVTTTC on CBT&A mode in order to train the unskilled human resource with employable skills and cater the demand of Saudi Government. Moreover, the availability of skilled professionals will bring socio-economic benefits to all stakeholders.

Overall objectives of training program:

The main objectives of the National Vocational Certificate Level 4 in Mining Process Technology (Assistant Supervisor) are as follows:

- Improve the professional competence of mining process
- Capacitate the local community and trainers in modern CBT training, methodologies and processes as envisaged under NVQF
- Provide flexible pathways and progressions in the mining sector
- Enable the trainees to perform their duties in efficient manner
- Establish a standardized and sustainable system of training for Mining Process technology across globe

Competencies to be gained after completion of course:

At the end of the course, the trainee has attained the following core competencies:

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1. Analyze with Workplace Policy and Procedures
2. Perform Advance communication
3. Establish and Maintain the Occupational Health and Safety System
4. Maintain Professionalism in Workplace
5. Operate Machines for Mining
6. Perform Underground Mining Technique
7. Install Ground Support
8. Operate Underground Mining Machines



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9. Conduct Dredging Operations
10. Perform Surface Mining Technique
11. Perform Basic Green Skills for Mining

Possible available job opportunities, available immediately and later in the future:

Possible Career paths

- Assistant Supervisor
- Technician
- Operations Manager
- Mine Manager
- Process Manager
- Production manager
- Maintenance Manager
- Site Manager
- Superintendent



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Trainee entry level:

The entry level for National Vocational Certificate Level 4 in Mining Sector (**Assistant Supervisor**) is given below:

Title	Entry requirements
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Minimum qualification of trainer:

A. Must be a holder of DAE/Level 5 Diploma in Civil Technology with at least 2 years relevant experience

OR

B. B.Sc Engineering Technology (Civil) / B.E Civil /B.Sc Civil Engineering

Recommended trainer: trainee ratio

The recommended maximum trainer: trainee ratio for this program is 1 trainer for 25 trainees.

Medium of instruction i.e. language of instruction:

Instructions will be in Urdu/ English/ Local language.



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Duration of the course (Total time, Theory & Practical time):

The distribution of contact hours is given below:

Total	-	1200 hours
Theory	-	240hours (20%)
Practical	-	960 hours (80%)

Proposed Course Duration-12 Months

Sequence of modules:

Module-1 Analyze with Workplace Policy and Procedures	Module-6 Perform Underground Mining Technique	Module-8 Install Ground Support
Module-2 Perform Advance Communication		Module-4 Maintain Professionalism in Workplace
Module-3 Establish and Maintain the Occupational Health and Safety System	Module-7 Perform Surface Mining Technique	Module-9 Operate Underground Mining Machines
Module-5 Operate Machines for Mining		



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Module-10 Conduct Dredging Operations

Module-11 Perform Basic Green
Skills for Mining



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Summary Template-Overview of the Curriculum:

Following is the structure of the course:

Sr. No	Code	Competency Standards	Occupation	NVQF Level	Category	Estimated Contact Hours			Cr Hr
						Th.	Pr	Total	
Level 4									
1.	724MP14-A	Analyze with Workplace Policy and Procedures	Assistant Supervisor	4	Generic	12	18	30	3
2.	724CO09-B	Perform Advance Communication		4	Generic	20	30	50	5
3.	724MP14-C	Establish and Maintain the Occupational Health and Safety System		4	Generic	20	30	50	5
4.	724MP14-D	Maintain Professionalism in Workplace		4	Generic	14	66	80	8
5.	724MP14-E	Operate Machines for Mining		4	Technical	31	99	130	13
6.	724MP14-F	Perform Underground Mining Technique		4	Technical	26	114	140	14



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7.	724MP14-G	Perform Surface Mining Technique		4	Technical	26	114	140	14
8.	724MP14-H	Install Ground Support		4	Technical	24	126	150	15
9.	724MP14-I	Operate Underground Mining Machines		4	Technical	29	171	200	20
10.	724MP14-J	Conduct Dredging Operations		4	Technical	29	171	200	20
11.	724MP14-K	Perform Basic Green Skills for Mining		4	Generic	9	21	30	3
		Total				240	960	1200	120
		Percentage				20	80		



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Summary – overview of the curriculum

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
<p>Module 1: Analyze with Workplace Policy and Procedures</p> <p>Aim: After successful completion of this module, the trainee is competent in analyzing with workplace policy and procedures</p>	<p>LU1: Manage work timeframes LU2: Manage to convene meeting LU3: Set and meet own work priorities at instant LU4: Develop and maintain professional competence LU5: Follow and implement work safety requirements</p>	12	18	30
<p>Module 2: Perform Advance Communication</p> <p>Aim: After successful completion of this module, the trainee is competent in performing advance communication</p>	<p>LU1: Demonstrate basic communication skills LU2: Plan and Organize work LU3: Conduct Professional Activities Ethically</p>	20	30	50



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Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
<p>Module 3: Establish and Maintain the Occupational Health and Safety System</p> <p>Aim: After successful completion of this module, the trainee is competent in establishing and maintaining the occupational health and safety system</p>	<p>LU1: Carryout Risk assessment at workplace LU2: Follow emergency response protocol/procedure LU3: Perform safe storage and disposal of waste LU4: Maintain ergonomics condition at workplace</p>	20	30	50
<p>Module 4: Maintain Professionalism in Workplace</p> <p>Aim: After successful completion of this module, the trainee is competent in maintaining professionalism in workplace</p>	<p>LU1: Respect Work Timeframes LU2: Maintain Personal Appearance and Hygiene LU3: Maintain Adequate Distance with Colleagues and Clients LU4: Work in An Ethical Manner</p>	14	66	80



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Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
<p>Module 5: Operate Machines for Mining</p> <p>Aim: After successful completion of this module, the trainee is competent in operating machines for mining</p>	<p>LU1: Operate Shovel/Excavator LU2: Operate Scraper LU3: Conduct dozer operations LU4 : Operate mining dumper operations</p>	31	99	130
<p>Module 6: Perform Underground Mining Technique</p> <p>Aim: After successful completion of this module, the trainee is competent in performing underground mining technique</p>	<p>LU1: Perform Room and Pillar Method LU2: Perform Long Wall Method</p>	26	114	140



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Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
<p>Module 7: Perform Surface Mining Technique</p> <p>Aim: After successful completion of this module, the trainee is competent in performing surface mining technique</p>	<p>LU1: Perform Open Pit Mining LU2: Perform Strip Mining LU3: Perform Placer Mining</p>	26	114	140
<p>Module 8: Install Ground Support</p> <p>Aim: After successful completion of this module, the trainee is competent in installing ground support</p>	<p>LU1: Prepare for Installation LU2: Assemble and Install Ground Support</p>	24	126	150



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Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
<p>Module 9: Operate Underground Mining Machines</p> <p>Aim: After successful completion of this module, the trainee is competent in operating underground mining machines</p>	<p>LU1: Operate Mining Drill LU2: Operate Underground Loader LU3: Operate Crane Lift LU4 : Operate Shotcrete Machine LU5: Operate Machines in Long Wall Mining</p>	29	171	200
<p>Module 10: Conduct Dredging Operations</p> <p>Aim: After successful completion of this module, the trainee is competent in conducting dredging operations</p>	<p>LU1: Dredge materials LU2: Perform retreat LU3: Conduct Centre-line changes LU4: Conduct anchor moves LU5: Conduct side-line cable replacement LU6: Conduct plant moves</p>	29	171	200



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Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
<p>Module 11: Perform Basic Green Skills at Mining Site</p> <p>Aim: After successful completion of this module, the trainee is competent in performing basic green skills for mining</p>	<p>LU1: Manage sustainability of materials used at site LU2: Manage mining waste</p>	9	21	30



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Module 1: Analyze with Workplace Policy and Procedures

Objective: This competency standard covers the skills and knowledge required to analyze with workplace policy and procedures condition at site .Your underpinning knowledge will be sufficient to provide you the basis for your work.

Duration: 30Hours

Theory: 12 Hours

Practice: 18 Hours

Credit Hours: 3

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1:Manage work timeframes	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Complete work tasks within deadlines in according to order of priority 2. Supervisors are informed of any delays in work times or projects 	<ul style="list-style-type: none"> • Importance of time management strategies <p>Activity</p> <ul style="list-style-type: none"> • Practice to complete assignment within deadline. 	<p>Total:07hrs Theory:03hrs Practical:04hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system 	Class room



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU2:Manage to convene meeting	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Develop agenda in line with meeting purpose 2. Select participants and notify them accordingly 3. Carryout meeting arrangements according to the time 4. Record the minutes of the meeting 	<ul style="list-style-type: none"> • Explain meeting terminologies • Importance of structures and arrangement of meeting • Explain the organizational procedures and policies regarding meetings, chairing and minutes. <p>Activity</p> <ul style="list-style-type: none"> • Practice to develop an agenda for a meeting • Practice to write minutes of minutes. 	<p>Total:07hrs Theory:03hrs Practical:04hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system 	Class room
LU3: Set and	The trainee will be		Total:06hrs	Consumable	Class room



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
meet own work priorities at instant	<p>able to:</p> <ol style="list-style-type: none"> 1. Take initiative to prioritize and facilitate competing demands to achieve organizational goals and objectives 2. Use technology efficiently and effectively to manage work priorities and commitments 3. Maintain appropriate work-life balance 	<ul style="list-style-type: none"> • Describe Healthy work life balance <p><u>Activity</u> Practice to set and meet own work</p>	<p>Theory:02hrs Practical:04hrs</p>	<ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system 	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU4: Develop and maintain professional competence	The trainee will be able to: <ol style="list-style-type: none"> 1. Assess personal knowledge and skills against competency 2. Participate in networks to enhance personal knowledge, skills and work relationships 3. Seek feedback from employees, clients and colleagues to develop and improve competence 	<ul style="list-style-type: none"> • Explain the professional competence • Importance of feedback <p style="text-align: center;"><u>Activity</u></p> <ul style="list-style-type: none"> • Practice to fill different feedback forms 	Total: 05hrs Theory: 02hrs Practical: 03hrs	<div style="background-color: #d3d3d3; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen • Feedback forms <div style="background-color: #d3d3d3; padding: 2px;">Non</div> <div style="background-color: #d3d3d3; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system 	Class room



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU5: Follow and implement work safety requirements	The trainee will be able to: <ol style="list-style-type: none"> 1. Identify and report emergency incidents 2. Practice organizational policy and procedures for responding to emergency incidents 3. Identify and implement workplace procedures and work instructions for controlling risks 	<ul style="list-style-type: none"> • Explain the emergency incidents • Importance of organizational policy and procedures for emergency incidents <p>Activity</p> <ul style="list-style-type: none"> • Practice to prepare report on emergency incidents 	Total: 05hrs Theory: 02hrs Practical: 03hrs	<div style="background-color: #cccccc; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen <div style="background-color: #cccccc; padding: 2px;">Non Consumable</div> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system 	Class room



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Module 2: Perform Advance Communication

Objective of the module: The aim of this module to get knowledge, skills and understanding to perform advance communication

Duration: 50 Hours

Theory: 20 Hours

Practice: 30 Hours

Credit Hours: 05

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Obtain and convey Workplace information	The trainee will be able to: <ol style="list-style-type: none"> 1. Assess the specific and relevant information from the appropriate sources 2. Convey the information using the appropriate medium and ideas 3. Use appropriate non-verbal communication 4. Identify appropriate 	<ul style="list-style-type: none"> • Describe the importance of effective communication • State different Sources of information • State different mode of communication • Explain types of non-verbal communication • Explain mode of communication while operating machines • Explain the method of recording the information/instructions. <p>Activity:</p>	<p>Total:18hrs</p> <p>Theory:6hrs</p> <p>Practical:12hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen • White board marker • Duster <p>Non-Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer 	<ul style="list-style-type: none"> • Class Room



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>lines of communication with supervisors and colleagues</p> <p>5. Use the defined workplace procedures for storage of information</p> <p>6. Inform co-workers and superiors about any deviation</p>	<ul style="list-style-type: none"> • Role Play each trainee introduce himself. • Convey the job description and company general rules and regulations to fellow workers 		<p>system</p>	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU2: Plan and Organize work	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> Express your own opinions Listen other's point of view without interruption Prepare simple questions about workplace procedures 	<ul style="list-style-type: none"> Describe the protocol of meeting Describe the role and objective of team. <p>Activity:</p> <ul style="list-style-type: none"> Participate in mock meeting for preparation to perform job. 	<p>Total:16hrs</p> <p>Theory:7hrs</p> <p>Practical:9hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpener White board marker <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Internet Computer system 	<ul style="list-style-type: none"> Class Room/Lab
LU3: Conduct Professional Activities Ethically	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> Identify the individual role and 	<ul style="list-style-type: none"> Describe the importance of creating cooperative work environment Describe the role and objective of team. 	<p>Total:16hrs</p> <p>Theory:7hrs</p> <p>Practical:9hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpener 	<ul style="list-style-type: none"> Class Room



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>responsibilities within the team environment.</p> <p>2. Recognize the roles and responsibility of other team members.</p> <p>3. Report relationships within team and external to team</p> <p>4. Share report with co-workers.</p>	<ul style="list-style-type: none"> • Explain risk of failure team work on the project. • Describe the importance of resolving the co-worker's problems • State plan work and organize required resources in coordination with team <p><u>Activity:</u></p> <p>Role Play, get instruction regarding job order from supervisor and convey it to coworkers according</p>		<ul style="list-style-type: none"> • White board marker • Duster Non Consumable • White board • Multimedia • Internet • Computer system 	



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Module 3: Establish and Maintain the Occupational Health and Safety System

Objective of the module: The aim of this module is to get knowledge, skills and understanding to establish and maintain the occupational health and safety system.

Duration: 50Hours

Theory: 20Hours

Practice: 30Hours

Credit Hours: 5

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Carryout Risk assessment at workplace	The trainee will be able to: <ol style="list-style-type: none"> 1. Identify potential hazards at workplace 2. Evaluate the risk 3. Take corrective/preventive action to mitigate the risk 4. Record your findings 5. Review the risk assessment 	<ul style="list-style-type: none"> • Recognize different types of hazards causing harm to workers. • Knowledge about health and safety precautions • Describe the methods to identify the risks and/or hazards at workplace • Knowledge about methods of dealing with hazard to avoid any accident or injury <p><u>Activity:</u></p> <ul style="list-style-type: none"> • Perform risk assessment at work place 	Total: 14hrs Theory: 5hrs Practical: 9hrs	<div style="background-color: #d9ead3; padding: 2px; display: inline-block;">Consumable</div> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker <div style="background-color: #d9ead3; padding: 2px; display: inline-block;">Non</div> <div style="background-color: #d9ead3; padding: 2px; display: inline-block;">Consumable</div> <ul style="list-style-type: none"> • White board • PPES • Multimedia • Computer 	<ul style="list-style-type: none"> • Class Room • Simulated environment
LU2: Follow	The trainee will be		Total: 14hrs	<div style="background-color: #d9ead3; padding: 2px; display: inline-block;">Consumable</div>	<ul style="list-style-type: none"> • Class Room



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
emergency response protocol/procedure	<p>able to:</p> <ol style="list-style-type: none"> 1. Identify emergency exits at workplace 2. Select suitable positions for the 3. Identify assembly area at workplace 4. Follow procedure and instructions to evacuate the building 5. Report immediately at designated assembly area in case of emergency 	<ul style="list-style-type: none"> • Explain different types of emergencies at work place • Knowledge about emergency protocol/procedures for fire, hazardous chemical spillage, major power failure, terrorism activities and natural disasters • Understanding of current safety /emergency principles and practices at workplace <p>Activity:</p> <ul style="list-style-type: none"> • Perform mock drill for emergency response plan 	<p>Theory: 5hrs</p> <p>Practical: 9hrs</p>	<ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • PPEs • Computer System 	<ul style="list-style-type: none"> • Simulated environment
<p>LU3: Perform safe storage and disposal of waste</p>	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Identify different types of waste material 2. Identify types of containers to store the 	<ul style="list-style-type: none"> • Explain standard working posture/position at workplace • Explain standard procedure for sufficient light at workplace • Describe types of noises at workplace 	<p>Total:11hrs</p> <p>Theory: 5hrs</p> <p>Practical: 6hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners 	<ul style="list-style-type: none"> • Class Room • Simulated environment



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>different types of waste material</p> <p>3. Use required labels on storage containers</p> <p>4. Store the waste materials according to standards</p> <p>5. Identify types of waste bins</p> <p>6. Dispose- off waste material according to the safety procedure</p>	<ul style="list-style-type: none"> • Knowledge about types of hazardous waste • standard procedure for ventilation at workplace <p><u>Activity:</u> Practice of preparing ergonomic workstation</p>		<ul style="list-style-type: none"> • White board marker <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • PPEs • Multimedia • Computer 	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU4: Maintain ergonomics condition at workplace	<p>The trainee will be able to:</p> <p>P1. Follow standard working posture/position at workplace</p> <p>P2. Follow standard procedure to provide sufficient light at workplace</p> <p>1. Use ergonomic workstations to avoid muscle fatigue</p>	<ul style="list-style-type: none"> • Recognize different types of hazards causing harm to workers. • Knowledge about health and safety precautions • Describe the methods to identify the risks and/or hazards at workplace • Knowledge about methods of dealing with hazard to avoid any accident or injury <p>Activity: Perform risk assessment at work place</p>	<p>Total: 12hrs</p> <p>Theory: 5hrs</p> <p>Practical: 7hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • PPEs • Multimedia • Computer 	<ul style="list-style-type: none"> • Class Room • Simulated environment



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Module 4: Maintain Professionalism in Workplace

Objective of the module: The aim of this module is to get knowledge, skills and understanding to maintain professionalism in workplace

Duration: 80 Hours

Theory: 14Hours

Practice: 66Hours

Credit Hours: 8

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Respect Work Timeframes	The trainee will be able to: <ol style="list-style-type: none"> 1. Demonstrate punctuality in meeting, set working hours and times. 2. Utilize working hours only for working and follow company regulations. 3. Complete work tasks within deadlines according to order of priority 4. Perform extra ordinary during working hours 	<ul style="list-style-type: none"> • Define company regulations <p>Activity:</p> <ul style="list-style-type: none"> • Prepare worksheet of duties 	<p>Total:18hrs</p> <p>Theory:3hrs</p> <p>Practical: 15hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system 	<ul style="list-style-type: none"> • Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU2. Maintain Personal Appearance and Hygiene	The trainee will be able to: <ol style="list-style-type: none"> Clean hair, body and nails regularly. Wear suitable cloths for the workplace, and respect local and cultural contexts Meet specific company dress code requirements Keep smiling and have positive body language during working hours 	<ul style="list-style-type: none"> Define company safety requirements or rules during working <p>Activity:</p> <ul style="list-style-type: none"> Demonstrate the specific mine dress code and conduct 	Total: 17hrs Theory: 2hrs Practical: 15hrs	Consumable <ul style="list-style-type: none"> Notebooks Erasers Sharpener White board marker Duster Non Consumable <ul style="list-style-type: none"> White board Multimedia Internet Computer system 	Class Room/site
LU3. Maintain Adequate Distance with Colleagues and Clients	The trainee will be able to: <ol style="list-style-type: none"> Respect personal space of colleagues and clients with reference to local customs and cultural contexts. Avoid cross transmission 	<ul style="list-style-type: none"> Define ways to transmit infections How to behave with clients <p>Activity:</p> <p>Demonstrate adequate distance</p>	Total: 22hrs Theory: 4hrs Practical: 18hrs	Consumable <ul style="list-style-type: none"> Notebooks Erasers Sharpener White board marker Duster 	Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	of infections (especially through respiration).	with colleagues and clients		<p>Non-Consumable</p> <ul style="list-style-type: none"> White board Multimedia Internet Computer system 	
LU4. Work in An Ethical Manner	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> Follow company values/ethics codes of ethics and/or conduct, policies and guidelines. Use company resources in accordance with company ethical standards. Undertake work practices in compliance with company ethical standards, organizational policy and guidelines. 	<ul style="list-style-type: none"> Define ethic codes Define ethical standards Understanding of organizational policies Define company protocols <p>Activity:</p> <ul style="list-style-type: none"> Demonstrate mines values/ethics codes of ethics and conduct. 	<p>Total:23hrs</p> <p>Theory:5hrs</p> <p>Practical:18hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Erasers Sharpeners White board marker Duster <p>Non-Consumable</p> <ul style="list-style-type: none"> White board Multimedia Internet 	Class Room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<ol style="list-style-type: none">4. Instruct co-workers on ethical, lawful and reasonable directives.5. Share Company values/practices with co-workers using appropriate behavior and language.6. Report works incidents/situations and/or resolved in accordance with company protocol/guidelines.			<ul style="list-style-type: none">• Computer system	



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Module 5- Operate Machines for Mining

Objective of the module: The aim of this module is to get knowledge, skills and understanding to operate machines for mining

Duration: 130 Hours

Theory: 31 Hours

Practice: 99 Hours

Credit Hours: 13

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Operate Shovel/Excavator	The trainee will be able to: <ol style="list-style-type: none"> 1. Select appropriate type of equipment attachments 2. Carry out start-up, park and shut-down procedures 3. Operates equipment within recommended speed, engine capability and limitations 4. Dig and load material 5. Adjust load as per machine capacity 6. Adjust pushing speed 	<ul style="list-style-type: none"> • Define job specifications • Explain start-up and shut down procedures • Explain minimize spillage during digging • Describe importance of housekeeping <p>Activity:</p> <ul style="list-style-type: none"> • Practice to operate given equipment within recommended speed, engine capability and limitations • Practice to dig and load material at given specifications 	<p>Total: 27hrs</p> <p>Theory:6hrs</p> <p>Practical:21hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • PPEs 	<ul style="list-style-type: none"> • Class Room/ workshop



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>and direction</p> <p>7. Minimize spillage and contamination through digging and loading techniques</p> <p>8. Conduct housekeeping activities</p>			<ul style="list-style-type: none"> • Tool kit • Excavator • Safety signs 	
<p>LU2: Operate Scraper</p>	<p>The trainee will be able to:</p> <p>1. Select appropriate type of equipment attachments</p> <p>2. Carry out start-up, park and shut-down procedures</p> <p>3. Operates equipment within recommended speed, engine capability and limitations</p> <p>4. Scrape and load</p>	<ul style="list-style-type: none"> • Define job specifications • Explain start-up and shut down procedures • Explain minimize spillage during digging • Describe importance of housekeeping <p>Activity:</p> <ul style="list-style-type: none"> • Practice to operates equipment within recommended speed, engine 	<p>Total: 39hrs</p> <p>Theory:9hrs</p> <p>Practical:30hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board 	<p>Class Room/ workshop</p>



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>material</p> <p>5. Adjust bowl, apron and ejector to ensure constant flow of material from bowl</p> <p>6. Adjust pushing speed and direction</p> <p>7. Conduct housekeeping activities</p>	<p>capability and limitations</p> <ul style="list-style-type: none"> Practice to scrape and load material 		<ul style="list-style-type: none"> Multimedia Internet Computer System Tool kit Scraper Safety signs PPEs 	
LU3: Conduct dozer operations	<p>The trainee will be able to:</p> <p>1. Perform all safety and pre-operational visual checks</p> <p>2. Carry out start-up, park and shut-down procedures</p> <p>3. Operate equipment</p>	<ul style="list-style-type: none"> Define job specifications Explain start-up and shut down procedures Explain minimize spillage during digging Describe importance of housekeeping <p>Activity:</p>	<p>Total: 33hrs</p> <p>Theory:9hrs</p> <p>Practical:24hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners White board marker Duster <p>Non</p>	<ul style="list-style-type: none"> Class Room/ workshop



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>within recommended speed, engine capability and limitations</p> <p>4. Adjust equipment pushing speed and direction</p> <p>5. Carry out ripping activities</p> <p>6. Conduct housekeeping activities</p>	<ul style="list-style-type: none"> Practice to adjust equipment pushing speed and direction according to other vehicles performance, material characteristics and ground conditions Practice to carry out ripping activities 		<p>Consumable</p> <ul style="list-style-type: none"> White board Multimedia Internet Computer System Tool kit Dozer Safety signs PPEs 	
LU4: Operate mining dumper operations	<p>The trainee will be able to:</p> <p>1. Plan and prepare all necessary safety and emergency issues</p> <p>2. Conduct machine pre-operational checks</p> <p>3. Adjust engine power to</p>	<ul style="list-style-type: none"> Define pre-operational checks Knowledge of manage engine power Define gear selection Explain operation of dump truck Define road standards 	<p>Total: 30hrs</p> <p>Theory:6hrs</p> <p>Practical:24hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpener Whiteboard marker Duster <p>Non Consumable</p>	<ul style="list-style-type: none"> Class Room/ workshop



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>ensure efficiency of truck movements and to minimise damage to the engine and gears</p> <p>4. Synchronize engine power with gear selection ensuring smooth transition and operation within torque range</p> <p>5. Operate dumper</p> <p>6. Monitor road/traffic conditions constantly</p> <p>7. Position vehicle at load and discharge points with a minimum of manoeuvre</p> <p>8. Control dumper movements including</p>	<ul style="list-style-type: none"> • Explain procedure of assess weight and distribution of load for vehicle • Knowledge of spread material standards • Define environmental management plan <p>Activity:</p> <ul style="list-style-type: none"> • Practice to operate dump truck to work instructions 		<ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • Tool kit • Dump truck • Safety signs • PPEs 	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>the raising and lowering of the tray smoothly</p> <p>9. Assess weight and distribution of load for type of material and size of vehicle</p> <p>10. Discharge load on slope and/or over face at fill site</p> <p>11. Dump/spread material evenly</p> <p>12. Clear, lower and secure tray before resuming travel</p> <p>13. Clear work area and dispose of or recycle materials</p>				



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Module 6- Perform Underground Mining Techniques

Objective of the module: The aim of this module is to get knowledge, skills and understanding to perform underground mining techniques

Duration: 140 Hours

Theory: 26Hours

Practice: 114 Hours

Credit Hours: 14

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Perform Room and Pillar Method	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Conduct rock face preparation for underground mining 2. Use room and pillar mining method in coal, salt and large ore deposits 3. Identify horizontal plane 4. Create horizontal 	<ul style="list-style-type: none"> • Define underground mining • Explain room and pillar mining method • Define horizontal plane • Define environmental safety factors <p>Activity:</p> <ul style="list-style-type: none"> • Practice to create horizontal arrays of rooms and pillar • Practice to cut a slot as deep as possible along the bottom of a section of ore • Practice to create a pile of ore 	<p>Total- 73hrs</p> <p>Theory- 13hrs</p> <p>Practical- 60hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet 	<ul style="list-style-type: none"> • Class room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>arrays of rooms and pillar</p> <p>5. Cut a slot as deep as possible along the bottom of a section of ore</p> <p>6. Create a pile of ore that is loaded and hauled out of the mine</p> <p>7. Retreat the mining</p> <p>8. Maintain all post operation activities</p>	<p>that is loaded and hauled out of the mine</p>		<ul style="list-style-type: none"> • Computer system • Drill • Explosive material • Long wall shearer • Conveyor belt • Continues miner • Hydraulic support 	
<p>LU2: Perform Long Wall Method</p>	<p>The trainee will be able to:</p> <p>1. Recognize the</p>	<ul style="list-style-type: none"> • Explain coal mining • Define hydraulic support 	<p>Total- 67hrs</p> <p>Theory- 13hrs</p>	<p><u>Consumable</u></p> <ul style="list-style-type: none"> • Notebooks • Pencils 	<ul style="list-style-type: none"> • Class room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>limits of long wall mining</p> <ol style="list-style-type: none"> 2. Fix hydraulic supports 3. Identify the distance for mining 4. Maintain all post operation activities 	<ul style="list-style-type: none"> • Define environmental safety factors <p>Activity:</p> <ul style="list-style-type: none"> • Practice to set hydraulic supports that are located parallel to the mining face • Practice to maintain all post operation activities as per environmental safety factors 	<p>Practical- 54hrs</p>	<ul style="list-style-type: none"> • Erasers • Sharpeners • White board marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • Drill • Explosive material • Long wall shearer • Conveyor belt • Continues miner • Hydraulic support 	



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Module7- Perform Surface Mining Techniques

Objective of the module: The aim of this module to get knowledge, skills and understanding to perform surface mining techniques

Duration: 140 Hours

Theory: 26 Hours

Practice: 114Hours

Credit Hours: 14

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform Open Pit Mining	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> 1. Conduct rock face preparation for open pit mining 2. Carry out drill holes for core sampling of ore 3. Generate the Isopach map of ore body 4. Remove top soil and create benches to assess the ore body 5. Carry out drilling and blasting process for 	<ul style="list-style-type: none"> • Explain open pit mining • Knowledge of core sampling • Define Isopach map of ore body • Understanding of removal of top soil • Knowledge of load and transport required material <p>Activity:</p> <ul style="list-style-type: none"> • Practice to generate the Isopach map of ore body 	<p>Total: 42hrs Theory: 06hrs Practical: 36hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White Board marker • Duster • USB <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • Printer • Drilling machine • Explosive material • Excavator 	Class room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>extraction of ore</p> <p>6. Load and transport the required material</p>	<ul style="list-style-type: none"> Practice to conduct rock face preparation for open pit mining using required machinery Practice to carry out drilling and blasting process for extraction of ore 		<ul style="list-style-type: none"> Dozer Dumpers Jackhammer Pan Rocker box Sluice box Trommel (Optional) 	
LU2. Perform Strip Mining	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> Remove a long strip of overlying soil and overburden rock Carry out drill holes Collect the core samples of ore deposit Generate the Isopach map of ore body 	<ul style="list-style-type: none"> How to carry out drill holes Define Isopach map of ore body Define blasting process Knowledge of load and transport required material <p>Activity:</p> <ul style="list-style-type: none"> Practice to remove a long strip of overlying soil and rock (the overburden) 	<p>Total: 42hrs Theory: 06hrs Practical: 36hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpener White Board marker Duster USB <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Internet Computer system Printer Drilling machine 	Class room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<ol style="list-style-type: none"> 5. Remove top soil 6. Carry out drilling and blasting process 7. Load and transport the required material 	<ul style="list-style-type: none"> • Practice to generate the Isopach map of ore body 		<ul style="list-style-type: none"> • Explosive material • Excavator • Dozer • Dumpers • Jackhammer • Pan • Rocker box • Sluice box • Trommel (Optional) 	
LU3. Perform Placer Mining	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> 1. Collect the sample as per required procedure 2. Apply the following methods for up gradation of ore <ol style="list-style-type: none"> a. Panning b. Rocker box c. Sluice box d. Dry washing 3. Trommel (Optional) 	<ul style="list-style-type: none"> • Describe procedures for sample collection • Explain procedure of sluice box • Define Trommel <p>Activity:</p> <ul style="list-style-type: none"> • Demonstrate following methods for up gradation of ore <ul style="list-style-type: none"> ✓ Panning ✓ Rocker box 	<p>Total: 48hrs Theory: 06hrs Practical: 42hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White Board marker • Duster • USB <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • Printer • Drilling machine 	Class room/site



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		<ul style="list-style-type: none">✓ Sluice box✓ Dry washing		<ul style="list-style-type: none">• Explosive material• Excavator• Dozer• Dumpers• Jackhammer• Pan• Rocker box• Sluice box• Trommel (Optional)	



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Module 8- Install Ground Support

Objective: This competency standard covers the skills and knowledge required to install ground support

Duration: 150Hours

Theory: 24Hours

Practice: 126 Hours

Credit Hours: 15

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for installation	Trainee will be able to: <ol style="list-style-type: none"> 1. Select & wear PPEs 2. Select ground support equipment 3. Remove all surface soils and vegetation 4. Scale down loose material 5. Position drill holes according to ground support plan 	<ul style="list-style-type: none"> • Define bedrock • Define capacity equipment <p>Activity:</p> <ul style="list-style-type: none"> • Practice to position drill at designated angle and according to capacity of equipment • Practice to position and mark drill holes according to ground support design and ground support plan to 	Total:58hrs Theory:10hrs Practical:48hrs	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White Board marker • Duster • USB <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • Printer 	Class room/site



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		maximize lamination of rock layers		<ul style="list-style-type: none"> • PPEs • Water suppressing device • Ancillary equipment (generators, pumps, lights, compressors, cleaning equipment, power tools, hand tools) • Cutting implement • Drill rigs • Lifting and handling equipment (winch, crane, block and tackles) 	
LU2. Assemble and Install Ground Support	Trainee will be able to: <ol style="list-style-type: none"> 1. Assemble anchors to full depth 2. Drill holes to specified 	<ul style="list-style-type: none"> • Describe procedure of installation of anchors and bolt to pattern and tensioning degree • Knowledge of water 	Total: 92hrs Theory: 14hrs Practical: 78hrs	<u>Consumable</u> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White Board marker 	Class room/site



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	<p>diameter and depth</p> <p>3. Install and tension anchors and bolt to pattern and tensioning degree</p> <p>4. Install water suppression devices minimizing water infiltration to ground supports</p> <p>5. Check ground support periodically and adjusts stressing</p> <p>6. Perform housekeeping activities</p>	<p>suppression devices</p> <ul style="list-style-type: none"> • Define creepage • Understanding of housekeeping activities <p>Activity:</p> <ul style="list-style-type: none"> • Assemble anchors to full depth according to ground support plan • Install tension anchors and bolt to appropriate pattern and tensioning degree 		<ul style="list-style-type: none"> • Duster • USB <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • Printer • PPEs • Water suppressing device • Ancillary equipment (generators, pumps, lights, compressors, cleaning equipment, power tools, hand tools) • Cutting implement • Drill rigs • Lifting and handling equipment (winch, crane, block and tackles) 	
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Module 9- Operate Underground Mining Machines

Objective: The aim of this module is to get knowledge, skills and understanding to operate underground mining machines.

Duration: 200 Hours

Theory: 29Hours

Practice: 171 Hours

Credit Hours: 20

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Operate Mining Drill	Trainee will be able to: <ol style="list-style-type: none"> 1. Select & wear PPEs 2. Select equipments 3. Carry out start-up, park and shut-down procedures 4. Adjust bowl, apron and ejector 5. Adjust pushing speed and direction 6. Operates equipment 7. Scrape and load material 8. Perform housekeeping activities 	<ul style="list-style-type: none"> • Define job specifications • What are start-up and shut down procedures • Explain mining drill procedure • Describe housekeeping activities <p>Activity:</p> <ul style="list-style-type: none"> • Practice to adjust pushing speed and direction according to other equipment capabilities, material characteristics and ground conditions • Practice to conduct housekeeping activities 	<p>Theory- 6hrs</p> <p>Practical- 33hrs</p> <p>Total- 39hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • PPEs • Internet • Computer system • Drilling machine 	Class Room / Site



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				<ul style="list-style-type: none"> Jackhammer 	
LU2. Operate Underground Loader	Trainee will be able to: <ol style="list-style-type: none"> Select & wear PPEs Select equipments Carry out start-up, park and shut-down procedures Adjust bowl, apron and ejector Adjust pushing speed and direction Operates equipment Scrape and load material Perform housekeeping activities 	<ul style="list-style-type: none"> Define job specifications What are start-up and shut down procedures Explain underground loader operation Describe housekeeping activities <p>Activity:</p> <ul style="list-style-type: none"> Practice to start underground loader at given speed, engine capabilities and limitations 	Theory- 6hrs Practical- 33hrs Total- 39hrs	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Erasers Sharpeners White board marker Duster PPEs <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Internet Computer system Excavator Dozer Dumpers Jackhammer 	Class Room/ Site
LU3. Operate Crane Lift	Trainee will be able to: <ol style="list-style-type: none"> Select & wear PPEs 	<ul style="list-style-type: none"> Define job specifications What are start-up and shut 	Theory- 6hrs	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks 	<ul style="list-style-type: none"> Class Room / Site



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	<ol style="list-style-type: none"> 2. Select equipments 3. Carry out start-up, park and shut-down procedures 4. Adjust bowl, apron and ejector 5. Adjust pushing speed and direction 6. Operates equipment 7. Scrape and load material 8. Perform housekeeping activities 	<p>down procedures</p> <ul style="list-style-type: none"> • Explain crane lift operation • Describe housekeeping activities <p>Activity:</p> <ul style="list-style-type: none"> • Practice to operate crane lift • Practice to load material 	<p>Practical- 33hrs</p> <p>Total- 39hrs</p>	<ul style="list-style-type: none"> • Erasers • Sharpeners • White board marker Non Consumable • White board • Multimedia • Internet • Computer system • PPEs • Jackhammer • Crane Lift 	
<p>LU4. Operate Shotcrete Machine</p>	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> 1. Select & wear PPEs 2. Select equipments 3. Carry out start-up, park and shut-down procedures 4. Adjust bowl, apron and ejector 5. Adjust pushing speed and direction 6. Operates equipment 7. Scrape and load material 8. Perform housekeeping activities 	<ul style="list-style-type: none"> • Define job specifications • What are start-up and shut down procedures • Explain Shotcrete machine operation • Describe housekeeping activities <p>Activity:</p> <ul style="list-style-type: none"> • Practice to operate Shotcrete machine 	<p>Theory- 6hrs</p> <p>Practical- 36hrs</p> <p>Total- 42hrs</p>	<ul style="list-style-type: none"> Consumable • Notebooks • Erasers • Sharpeners • White board marker Non Consumable • White board • Multimedia • Internet • Computer system 	<ul style="list-style-type: none"> • Class Room / Site



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				<ul style="list-style-type: none"> • PPEs • Jackhammer • Shotcrete machine 	
LU5. Operate Machines in Long Wall Mining	Trainee will be able to: <ol style="list-style-type: none"> 1. Select & wear PPEs 2. Select equipments 3. Carry out start-up, park and shut-down procedures 4. Adjust bowl, apron and ejector 5. Adjust pushing speed and direction 6. Operates equipment 7. Scrape and load material 8. Perform housekeeping activities 	<ul style="list-style-type: none"> • Define job specifications • What are start-up and shut down procedures • Explain Long Wall mining operation • Describe housekeeping activities <p>Activity:</p> <ul style="list-style-type: none"> • Practice to operate Machines in Long Wall mining 	<p>Theory- 5hrs</p> <p>Practical- 36hrs</p> <p>Total- 41hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • PPEs • Jackhammer 	<ul style="list-style-type: none"> • Class Room / Site



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Module 10- Carryout Dredging Operations

Objective: The aim of this module is to get knowledge, skills and understanding to carryout dredging operations

Duration: 200Hours

Theory: 29 Hours

Practice: 171Hours

Credit Hours: 20

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Dredge materials	Trainee will be able to: <ol style="list-style-type: none"> 1. Operate dredger on central-line 2. Adjust radius of swing 3. Monitor and adjusts dredge indicators 4. Adjust position of dredge using adequate float line 5. Cut out hard materials 6. Complete all required records and documentation 	<ul style="list-style-type: none"> • Define swing limit • Define position dredge • Describe cutting techniques • Describe dredging operations <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> • Practice to operate dredge on central-line, at full swing limit and maximum ladder depth at given parameters • Practice to adjust radius of swing to maintain production tonnage and feed according to operational plant 	Theory- 5hrs Practical- 27hrs Total- 32hrs	<div style="background-color: #d9ead3; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Duster <div style="background-color: #d9ead3; padding: 2px;">Non</div> <div style="background-color: #d9ead3; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • PPEs 	Class Room / Site



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		requirements		<ul style="list-style-type: none"> • Dredging machine and equipment • Attachments • Tool kit 	
<p>LU2.</p> <p>Perform retreat</p>	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> 1. Get clearances from operational plant operators 2. Maintain dredge on center line at full swing limit 3. Adjust tonnage during the retreat 4. Adjust spuds and carriage way 5. Completes all required records and documentation 	<ul style="list-style-type: none"> • Explain retreat <p>Activity:</p> <ul style="list-style-type: none"> • Practice to adjust spuds and carriage way according to retreat requirements • Practice to maintain dredge on center line at full swing limit 	<p>Theory- 5hrs</p> <p>Practical- 30hrs</p> <p>Total- 35hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Duster • Material Log register <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • Dredging 	<p>Class Room/ Site</p>



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				machine and equipment <ul style="list-style-type: none"> • Attachments • Tool kit 	
LU3. Conduct Centre-line changes	Trainee will be able to: <ol style="list-style-type: none"> 1. Gain relevant clearances and visual checks before center-line change 2. Adjust cable line and float line 3. Align dredge with center line indicators 4. Maintain full swing and adjusts spuds and carriage way 5. Completes all required records and documentation 	<ul style="list-style-type: none"> • Differentiate between cable line and float line • Explain center-line changes <p>Activity:</p> <ul style="list-style-type: none"> • Practice to align dredge with center line indicators located on working face • Practice to complete dredging documentation 	Theory- 5hrs Practical- 30hrs Total- 35hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Material Log register Non Consumable <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • Dredging machine and equipment • Attachments 	<ul style="list-style-type: none"> • Class Room / Site



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				<ul style="list-style-type: none"> • Tool kit 	
LU4. Conduct anchor moves	Trainee will be able to: <ol style="list-style-type: none"> 1. Halt ladder swinging and maintains full feed 2. Pay out ample length of cable 3. Move anchors alternately, at a safe speed and to the required positions 4. Move anchor to minimize downtime 5. Completes all required records and documentation 	<ul style="list-style-type: none"> • Define ladder swinging • Define bank of pond <p>Activity:</p> <ul style="list-style-type: none"> • Practice to halt ladder swinging and maintains full feed according to site conditions • Practice to move anchor to minimize downtime 	Theory- 5hrs Practical- 30hrs Total- 35hrs	<ul style="list-style-type: none"> • Consumable • Notebooks • Erasers • Sharpeners • White board marker • Material Log register • Non Consumable • White board • Multimedia • Internet • Computer system • Dredging machine and equipment • Attachments • Tool kit 	<ul style="list-style-type: none"> • Class Room / Site



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<p>LU5. Conduct side-line cable replacement</p>	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> 1. Lower auxiliary spud, raises ladder and flushes plant out before side-line cable is replaced 2. Remove existing cable from drum 3. Track new cable on drum 4. Move cable to batter using transportation method 5. Tension cable onto drum 6. Connect cable to anchor 7. Complete documentation as per given format 	<ul style="list-style-type: none"> • Define auxiliary spud • Describe procedure of side-line cable replacement <p>Activity:</p> <ul style="list-style-type: none"> • Practice to remove existing cable from drum • Practice to track new cable on drum • Practice to connect cable to anchor 	<p>Theory- 5hrs</p> <p>Practical- 30hrs</p> <p>Total- 35hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Material Log register <p>Non</p> <p>Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • Dredging machine and equipment • Attachments • Tool kit 	<ul style="list-style-type: none"> • Class Room / Site
<p>LU6. Conduct plant moves</p>	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> 1. Conduct plant movement 	<ul style="list-style-type: none"> • Explain plant moves procedure 	<p>Theory- 4hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks 	<ul style="list-style-type: none"> • Class Room / Site



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	<p>according to mine plan</p> <ol style="list-style-type: none">2. Maintain adequate float line on pond, avoiding breakage or damage to float line3. Complete documentation as per given format	<p>Activity:</p> <ul style="list-style-type: none">• Demonstrate adequate float line on pond, avoiding breakage or damage to float line	<p>Practical- 24hrs</p> <p>Total- 28hrs</p>	<ul style="list-style-type: none">• Erasers• Sharpeners• White board marker• Material Log register <p>Non</p> <p>Consumable</p> <ul style="list-style-type: none">• White board• Multimedia• Internet• Computer system• Dredging machine and equipment• Attachments• Tool kit	
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Module 11- Perform Basic Green Skills for Mining Site

Objective: The aim of this module is to get knowledge, skills and understanding to perform green skills for mining site

Duration: 30Hours

Theory: 9Hours

Practice: 21Hours

Credit Hours: 3

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Manage sustainability of materials used at crushing plant	The trainee will be able to: <ol style="list-style-type: none"> 1. Select sustainable raw materials as per requirement 2. Follow standard procedure to manage systems (waste, energy, water) 3. Perform impact quantification of used material at crushing plant 	<ul style="list-style-type: none"> • Environmental degradation • Types of raw materials at crushing plant • Types of waste • Waste reduction techniques • Concept of 6 R approach (Reduce, Reuse, Recycle, Repair, Renew, and Rethink) • Reusable materials • Recyclable materials • Methods for disposal of unusable materials • Just-in-time (JIT) approach 	<p>Total:15hrs</p> <p>Theory:05hrs</p> <p>Practical:10hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pen • Whiteboard marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • PPES 	Classroom/ working site



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		<ul style="list-style-type: none"> • Basic knowledge of green energy resources (solar, biogas, natural light, rainwater, wind energy etc.) 			
LU2: Manage crushing plant waste	The trainee will be able to: <ol style="list-style-type: none"> 1. Identify various types of waste at site 2. Sort and categorize reusable waste 3. Dispose unusable waste as per set standards 4. Place reusable material at designated storage area 5. Transport waste material to designated place 	<ul style="list-style-type: none"> • Environmental degradation • Types of raw materials at crushing plant • Types of waste • Waste reduction techniques • Concept of 6 R approach (Reduce, Reuse, Recycle, Repair, Renew, and Rethink) • Reusable materials • Recyclable materials • Methods for disposal of unusable materials • Just-in-time (JIT) approach • Basic knowledge of green energy resources (solar, biogas, natural light, rainwater, wind energy etc.) 	Total: 15hrs Theory: 04hrs Practical: 11hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pen • White board marker Non Consumable <ul style="list-style-type: none"> • White board • PPES • Multimedia • Internet • Computer system 	Classroom/ working site



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List of Tool, Machinery, Equipment and Consumables:

SR#	Items/Tools /Equipment & Consumables
1.	PPEs: Safety Helmet Safety Shoes Earmuffs Gloves Goggles Face Shields. Surgical Face Masks Safety blanket Safety harness Safety Belts Safety Apron
2.	Safety net



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3.	Shovels with handle
4.	Computer Systems
5.	Scanner
6.	Printer
7.	Chain Hoist
8.	Sieve set
9.	Digital Balance
10.	Fire Buckets.
11.	Fire Extinguishers
12.	First aid Kit
13.	Hooks / Anchors
14.	Manufacturers Operation and Maintenance Manual & Video
15.	Measuring Tape
16.	Multimeter



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17.	Slings
18.	Jackhammer
19.	Cameras
20.	Stationary Items
21.	Excavator
22.	Dozer
23.	Dumpers
24.	Crane Lift
25.	Water suppressing device
26.	Ancillary equipment (generators, pumps, lights, compressors, cleaning equipment, power tools, hand tools)
27.	Cutting implement
28.	Drill rigs
29.	Lifting and handling equipment (winch, crane, block and tackles)
30.	Explosive material



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31.	Trommel (Optional)
32.	Air filter restriction indicator
33.	Mechanical tool kit
34.	Drilling equipment and machine
35.	Sluice box
36.	Rocker box
37.	pH meter
38.	Visual and audio warning devices and lights
39.	Calculator
40.	Inventory register
41.	Screw driver set
42.	Plier
43.	Slip joint plier
44.	Socket set



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45.	Hand hacksaw
46.	Chisel
47.	Tong
48.	Claw hammer
49.	Ball peen Hammer
50.	Straight peen Hammer
51.	Grip pliers
52.	Nose pliers
53.	L-key sets
54.	Pipe wrench
55.	Set of Spanners (Open end, Ring)
56.	Set of Adjustable Wrench
57.	Micrometer
58.	Long wall shearer



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59.	Conveyor belt
60.	Continues miner
61.	Hydraulic support
62.	Tri Square
63.	Steel Rules
64.	Dredging machine and equipment /Attachments
65.	Tool kit
66.	Pan



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Members of the Curriculum Development Committee

S#	Name	Designation
1.	Saima Asghar	DACUM Facilitator, Lahore
2.	Engr. M. Muneeb Ur Rehman Khan	Measurement Engineer, ACC pvt Ltd
3.	Dr. Muhammad Naeem Khan	AP, Govt Science College Wahdat Road, Lahore
4.	Dr. Farhat Yasmeen	Professor, UET Lahore
5.	Dr. Irfan Hafeez	Senior Scientific Officer, PCSIR Lahore
6.	Dr. Shahid Tufail Sheikh	Member Science(Retired), Ex-Head of MPRC Lahore
7.	Dr. Asma Sheikh	Scientific Officer, PCSIR Lahore
8.	Mohammad Shahbaz	Assistant Director, Mining Development Cell, Lahore
9.	Syed Zafar Ayab Hussain Shah	Project Coordinator, ZKB Construction ,Peshawar
10.	Muhammad Irfan Zubair	Deputy Director GSP, Lahore
11.	Engr.Syed Zeeshan Arif	Data Engineer/ Mud logger Petro Service Hyderabad



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12.	Shahbaz Muhammad	Assistant geophysicist GSP, Lahore
13.	Muhammad Usman Alvi	Scientific Officer, PCSIR LABS, Lahore
14.	Engr. Taimoor Iftikhar	Site Supervisor, Hadi Construction Co Nowshera KPK
15.	Muhammad Shahzad	Director, NAVTTC, Islamabad



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Members of the Curriculum Validation Committee

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2.	Engr. M. Muneeb Ur Rehman Khan	Measurement Engineer, ACC pvt Ltd
3.	Dr. Muhammad Naeem Khan	AP, Govt Science College Wahdat Road, Lahore
4.	Dr. Farhat Yasmeen	Professor, UET Lahore
5.	Dr. Irfan Hafeez	Senior Scientific Officer, PCSIR Lahore
6.	Dr. Shahid Tufail Sheikh	Member Science(Retired), Ex-Head of MPRC Lahore
7.	Dr. Asma Sheikh	Scientific Officer, PCSIR Lahore
8.	Mohammad Shahbaz	Assistant Director, Mining Development Cell, Lahore
9.	Syed Zafar Ayab Hussain Shah	Project Coordinator, ZKB Construction ,Peshawar
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14.	Muhammad Shahzad	Director, NAVTTC, Islamabad