Government of Pakistan

National Vocational and Technical Training Commission

Prime Minister's Hunarmand Pakistan Program

"Skills for All"

Course Contents / Lesson Plan
Course Title: (Advanced AutoCAD with REVIT)
Duration: 3 Months

Revised Edition

Trainer Name	
Course Title	(Advanced AutoCAD with REVIT)
Objective of Course	In construction industry, the manual drafting been replaced by the computer aided drafting. Cumbersome and laborious manual drawing work which requires costly printing / drawing instruments has now become quite easy and interesting computer aided drawings / drafting. In view of new era, there is an urgent need for development of such course. This curriculum is developed with a view to produce the workforce to meet the present and future demand of construction sector / industry by covering computer aided drafting / drawing pertaining to the construction field keeping in view the requirements of market demand by more focusing on practical and necessarily required theoretical knowledge along with new subjects of functional English & work ethics which would enable the pass outs to be absorbed in construction industry. This curriculum covers the major topics of fundamental of civil technology, engineering drawing, computer applications, auto CAD along with Functional English & Work Ethics.
Entry-level of trainees	Intermediate / Matric Science
Learning Outcomes of the course	After successful completion of the course, the trainee would have acquired the following skills: - • Draw various types of drawing • Draw any 2D view of the object • Draw 3D view of the object • Be able to render all type of drawings • Be able to draw detail drawing. • Be able to prepare various application drawings for Civil & Architectural application.

	• Be able to prepare various worksheets
Course Execution Plan	The total duration of the course: **3 months (12 Weeks)** Class hours: **4 hours per day** Theory: **20%** Practical: **80%** Weekly hours: **20 hours per week** Total contact hours: **240 hours**
Companies offering jobs in the respective trade	1. Up work 2. Freelancing 3. Government Institutes 4. Software Houses 5. Construction Firms All Private Institutes who are managing Construction Civil
Job Opportunities	Trainees can be employed in government / semi-government / private (MNC's) organizations. Experienced resources may advance through promotions with the same employer or by moving to more advanced positions with other employers. They can become: 1 Draftsman 2 Assistant Architect 3 Associate Architect 4 Architect (Civil and Mechanical) There are good prospects of travelling within Pakistan and abroad. The employment outlook in this occupation will be influenced by a wide variety of factors including: 5 Employment turnover (work opportunities generated by people leaving existing positions) 6 Occupational growth (work opportunities resulting from the creation of new positions that never existed before) 7 Size of the industry Flexibility of the applicant (concerning location and schedule of work).
No of Students	25
Learning Place	Classroom / Lab
Instructional Resources	Architectural Drawing And Light Construction Edward J. Muller Prentice-Hall INC.

	Englewood Cliffs N.J
	Auto CAD 2006 David Frey BPS PublicationsB-14 Connaught
	place,
	New Delhi-110001

Scheduled Weeks	Module Title		Days	Learning Units	Home Assignment
Week 1	**Introduction to AutoCAD**		**Day 1**	• Motivational Lecture • Course Introduction • Success stories • Job market • Course Applications	• **Task 1** • **Task 2** • **Task 3** • **Task 4** • **Task 5**
			Day 2	• Institute/work ethics • Introduction to CAD • Application of CAD OHS rules	*Details may be seen at Annexure-I*

			Day 3	• Interface of Auto CAD • Application of Auto CAD inEngineering • Installation of Auto CAD	
			Day 4	• Creating file , drawing units and drawing setting • Description of Menus & Toolbars • Save AutoCAD drawing files indifferent file formats (DWG, PDF, JPG).	
			Day 5	• Types of Coordinate System • Dimensions & Text • 2d and 3d Commands	

Week 2	Prepare Final Set of 2DDrawings			Day 1	• Practice to Install Auto CAD, create,copy, rename, save & delete files • Practice to apply Drafting setting, i.e. Dimension style, Text style & height,units, Drawing Limits • Practice to prepare A4,A3,A2,A1 size typical drawing Layout Templates	
				Day 2	• Practice to apply Coordinate system toDraw different Geometrical Shapes (Quadrilaterals, triangle, RegularPolygons, Circle, ellipse)By using of Draw Tool bar & Command Aliases • Practice to apply Coordinate system toDraw mechanical parts By using of Draw Tool bar & Command Aliases	• **Task 6** • **Task 7** • **Task 8** *Details may be seen at Annexure-I*

			Day 3	• Practice to use Standard & Modify Tool Bar to Modify Objects and Command Aliases • Practice to use Dimension Tool Bar & Command Aliases	
			Day 4	• Use appropriate command and tools to develop 2D Drawing • Develop 2D Drawing with given project specifications and measurements	
			Day 5	• Create title block layout as required Plot drawing on scale according to required size and orientation	

Week 3	Fundamentals of Engineering Drawing		Day 1	• Draw types of Lines •	
			Day 2	• Draw types of Angles	• **Task 9** • **Task 10** • **Task 11** *Details may be seen at Annexure-I*
			Day 3	• Draw types of Geometrical Shapes • (Quadrilateral, Circle, Triangle,Polygon, Geometrical Solids)	

	Orthographi c Projection		**Day 4**	• Basic Principles of Orthographic projection	
			Day 5	• Detailing of views (3d Drawings)	

| Week 4 | Develop 3D Objects | | Day 1 | • Setup & save 3D Drawing Interface forrequired specifications
• Setup 3D User Interface settings forrequired specifications | • **Task 12**
• **Task 13**
• **Task 14**

Details may be seen at Annexure-I |
| | | | Day 2 | • Create 3D Objects with given measurements
• 3D Modeling in AutoCAD, 3D solids ,Surfaces o Meshes o Wireframe Objects , Differentiate between Surface Modeling and Solid Modeling,3D Face and Edges | |

	Manipulate 3D Objects 3DEditing Tools		Day 3	• Modify 3D Objects in line with the requirements	
			Day 4	• Make customized 3D Models according to the requirements of the given job	
			Day 5	• Convert 3D Face Objects into Single Mesh Objects	

Week 5	Render 3D Model		Day 1	• Apply material to required 3D Model as per given specifications • Apply lights to get the requisite scene of required 3D model	
			Day 2	• Assign cameras to execute different views of required 3D Model • Render and print the 3D model according to required size and orientation	• **Task 5** • **Task 16** _Details may be seen at Annexure-I_
	2D & 3D Building Drawing (Plan, Elevation & Section)		Day 3	• Introduction of Types of Text, Blocks, Symbols & Design Library	

			Day 4	• Practice to insert Text, symbols, fixtures from Design Library in the Drawing	
			Day 5	Practice to draw plan of a single story	
Week 6	3D Solids, views & Rendering		Day 1	• Introduction to Rendering its features (shadows, lights)	• **Task 17** • **Task 18** • **Task 19** • **Task 20** • **Task 21** • **Task 22** • **Task 23** • **Task 24** • **Task 25** *Details may be - seen at Annexure-I*
			Day 2	• introduction to camera	

				Day 3	Practice to draw 3D rendered view of the following; Office chair, Office table,Rostrum, Round Table, Book Rack, sofa& Bed etc.	
	Submission Drawing			Day 4	• Introduction & components of Submission Drawing	
				Day 5	• Prepare Submission Drawing of a Residential Building	

Week 7	Presentation Drawing		Day 1	• Introduction & components of Submission Drawing	
			Day 2	• Prepare presentation Drawing of a Residential Building	• **Task 7** *Details may be seen at Annexure-I*
	Submission Drawing		Day 3	• Introduction & components of Submission Drawing • Prepare Submission Drawing of a Residential Building	
			Day 4		

			Day 5		
Week 8	**Mid Term Assignment**		**Day 1**	Mid Term Assignment	• **Task 26** • **Task 27** • **Task 28** *Details may be seen at Annexure-I*
			Day 2	Mid Term Assignment	

	REVIT **Setup Interface**		Day 3	• Setup Interface • Create custom user interface as per requirement of specific technology	
			Day 4	• Create and apply Families for given specifications and requirements	

			Day 5	• Use appropriate commands and tools to perform required job	
Week 9	**Create Building Layout**		**Day 1**	• Create/import drawings to make layout according to the givenrequirements	• **Task 29** • **Task 30** _Details may be seen at Annexure-I_
			Day 2	• Use appropriate commands and tools to create building layouts	

	Create Building Layout		**Day 3**	• Modify drawings and objects to meet given criteria	
			Day 4	• Create 3D Prototype Model of the drawing according given measurements	
	Students Project		**Day 5**	Student Project	

Week 10	Create Construction Document		Day 1	• Create specifications/details for various parts according to given requirements	• **Task 31** *Details may be seen at Annexure-I*
			Day 2	• Create specifications/details for various parts according to given requirements	
			Day 3	• Apply specified detail to objects according to given requirements	

			Day 4	Apply specified detail to objects according to given requirements	
			Day 5	Annotate the drawings using set parameters as per given details	
Week 11	**Employable Project/Assignment (6 weeks(i.e 11-13) in addition of regular classes.**		Day 1	• Guidelines to the Trainees for selection of students employable project like final year project (FYP) • Assign Independent project to each Trainee • A project based on trainee's aptitude and acquired skills. • Designed by keeping in view the emerging trends in the local market as well as across the globe. • The project idea may be based on Entrepreneur. • Leading to the successful employment. • The duration of the	• **Task 32** _Details may be seen at Annexure-I_

				project will be 3 weeks	
			Day 2	- Ideas may be generated via different sites such as: - https://1000projects.org/ - https://nevonprojects.com/ - https://www.freestudentprojects.com/ - https://technofizi.net/best-computer-science-and-engineering-cse-project-topics-ideas-for-students/ - Final viva/assessment will be conducted on project assignments. - At the end of session the project will be presented in skills competition	

| | | | Day 3 | • The skill competition will be conducted on zonal, regional and National level.
 • The project will be presented in front of Industrialists for commercialization
 • The best business idea will be placed in NAVTTC business incubation center forcommercialization.

 OR

 On job training for 2 weeks:

 • Aims to provide 2 weeks industrial training to the Trainees as part of overall training program
 • Ideal for the manufacturing trades
 • As an alternate to the projects thatinvolve expensive equipment
 • Focuses on increasing Trainee'smotivation, productivity, efficiency and quick learning approach. | |
| | **Render Model** | | | | |

			Day 4	• Add scene of 3D Model according to specifications • Add lights for illumination to get the • requisite scene of 3D model 20	
			Day 5	• Assign cameras to execute different views of 3D Model • Render the 3D model according to required image size or resolution & orientation	
Week 12	**Final Project Report 2**		Day 1	Any one project completed within maximum area with the help of Auto-CAD3D Create all drawings i.e a) Submission drawing b) Working drawing c) Presentation drawing	• **Task 33** _Details may be seen at Annexure-I_
	Final Project Report 3		Day 2	Any one project completed within maximum area with the help of REVIT Create all drawings i.e d) Submission drawing e) Working drawing	
	Guide lines for				

	Employment /entrepreneu rshipFinal Project Evaluation			Presentation drawing	
			Day 3	- Job Market Searching - Self-employment - Freelancing sites - Introduction - Fundamentals of Business Development - Entrepreneurship - Startup Funding - Business Incubation and Acceleration - Business Value Statement - Business Model Canvas	
			Day 4	- Sales and Marketing Strategies - How to Reach Customers and EngageCxOs - Stakeholders Power Grid - RACI Model, SWOT Analysis, PEST Analysis - SMART Objectives - OKRs - Cost Management (OPEX, CAPEX, ROCEetc.)	

			Day 5	Final Assessment	

MODULES

Motivational Lectures
Computer Graphics and Video Editing

What is freelancing and how you can make money online - BBCURDU

https://www.youtube.com/watch?v=9jCJN3Ff0kA

What Is the Role of Good Manners in the Workplace? By Qasim Ali Shah | In Urdu

https://www.youtube.com/watch?v=Qi6Xn7yKIlQ

Hisham Sarwar Motivational Story | Pakistani Freelancer

https://www.youtube.com/watch?v=CHm_BH7xAXk

21 Yr Old Pakistani Fiverr Millionaire | 25-35 Lakhs a Month Income | Interview

https://www.youtube.com/watch?v=9WrmYYhr7S0

Success Story of a 23 Year - Old SEO Expert | How This Business Works | Urdu Hindi Punjabi

https://www.youtube.com/watch?v=tIQ0CWgszI0

Failure to Millionaire - How to Make Money Online | Fiverr Superhero Aaliyaan Success Story

https://www.youtube.com/watch?v=d1hocXWSpus

Annexure-II

SUGGESTIVE FORMAT AND SEQUENCE ORDER OF MOTIVATIONAL LECTURE.

Mentor

Mentors are provided an observation checklist form to evaluate and share their observational feedback on how students within each team engage and collaborate in a learning environment. The checklist is provided at two different points: Once towards the end of the course. The checklists are an opportunity for mentors to share their unique perspective on group dynamics based on various team activities, gameplay sessions, pitch preparation, and other sessions, giving insights on the nature of communication and teamwork taking place and how both learning outcomes and the student experience can be improved in the future.

Session- 1 (Communication):

Please find below an overview of the activities taking place Session plan that will support your delivery and an overview of this session's activity.

Session- 1 OVERVIEW
Aims and Objectives:
- To introduce the communication skills and how it will work   - Get to know mentor and team - build rapport and develop a strong sense of a team   - Provide an introduction to communication skills   - Team to collaborate on an activity sheet developing their communication, teamwork, and problem-solving   - Gain an understanding of participants' own communication skills rating at the start of the program

Activity:	Participant Time	Teacher Time	Mentor Time
Intro Attend and contribute to the scheduled.			
Understand good communication skills and how it works.			
Understand what good communication skills mean			
Understand what skills are important for good communication skills			
Key learning outcomes:	**Resources:**		**Enterprise skills developed:**
Understand the communication skills and how it works.	- Podium - Projector - Computer - Flip Chart - Marker		- Communication - Self Confidence - Teamwork

• Understand what communication skills mean • Understand what skills are important for communication skills	

Schedule	Mentor Should do
Welcome: **5 min**	Short welcome and ask the **Mentor** to introduce him/herself. Provide a brief welcome to the qualification for the class. Note for Instructor: Throughout this session, please monitor the session to ensure nothing inappropriate is being happened.
Icebreaker: **10 min**	Start your session by delivering an icebreaker, this will enable you and your team to start to build rapport and create a team presentation for the tasks ahead. The icebreaker below should work well at introductions and encouraging communication, but feel free to use others if you think they are more appropriate. It is important to encourage young people to get to know each other and build strong team links during the first hour; this will help to increase their motivation and communication throughout the sessions.
Introduction & Onboarding: **20mins**	Provide a brief introduction of the qualification to the class and play the "Onboarding Video or Presentation". In your introduction cover the following: 1. Explanation of the program and structure. (Kamyab jawan Program) 2. How you will use your communication skills in your professional life. 3. Key contacts and key information – e.g. role of teacher, mentor, and SEED. Policies and procedures (user agreements and "contact us" section). Everyone to go to the Group Rules tab at the top of their screen, read out the rules, and ask everyone to verbally agree. Ensure that the consequences are clear for using the platform outside of hours. (9am-8pm) 4. What is up next for the next 2 weeks ahead so young people know what to expect (see pages 5-7 for an overview of the challenge). Allow young people to ask any questions about the session topic.
Team Activity Planning: **30 minutes**	MENTOR: Explain to the whole team that you will now be planning how to collaborate for the first and second collaborative Team Activities that will take place outside of the session. There will not be another session until the next session so this step is required because communicating and making decisions outside of a session requires a different strategy that must be agreed upon so that everyone knows what they are doing for this activity and how. • "IDENTIFY ENTREPRENEURS" TEAM ACTIVITY • "BRAINSTORMING SOCIAL PROBLEMS" TEAM ACTIVITY"

	As a team, collaborate on a creative brainstorm on social problems in your community. Vote on the areas you feel most passionate about as a team, then write down what change you would like to see happen. Make sure the teams have the opportunity to talk about how they want to work as a team through the activities e.g. when they want to complete the activities, how to communicate, the role of the project manager, etc. Make sure you allocate each young person a specific week that they are the project manager for the weekly activities and make a note of this. Type up notes for their strategy if this is helpful - it can be included underneath the Team Contract.
Session Close: **5 minutes**	**MENTOR:** Close the session with the opportunity for anyone to ask any remaining questions. **Instructor:** Facilitate the wrap-up of the session. A quick reminder of what is coming up next and when the next session will be.

MOTIVATIONAL LECTURES LINKS.

TOPIC	SPEAKER	LINK
How to Face Problems In Life	Qasim Ali Shah	**https://www.youtube.com/watch?v=OrQte08Ml90**
Just Control Your Emotions	Qasim Ali Shah	**https://www.youtube.com/watch?v=JzFs__yJt-w**
How to Communicate Effectively	Qasim Ali Shah	**https://www.youtube.com/watch?v=PhHAQEGehKc**
Your ATTITUDE is Everything	Tony Robbins Les Brown David Goggins Jocko Willink Wayne Dyer Eckart Tolle	**https://www.youtube.com/watch?v=5fS3rj6eIFg**
Control Your EMOTIONS	Jim Rohn Les Brown TD Jakes Tony Robbins	**https://www.youtube.com/watch?v=chn86sH0O5U**
Defeat Fear, Build Confidence	Shaykh Atif Ahmed	**https://www.youtube.com/watch?v=s10dzfbozd4**
Wisdom of the Eagle	Learn Kurooji	**https://www.youtube.com/watch?v=bEU7V5rJTtw**
The Power of ATTITUDE	Titan Man	**https://www.youtube.com/watch?v=r8LJ5X2ejqU**
STOP WASTING TIME	Arnold Schwarzenegger	**https://www.youtube.com/watch?v=kzSBrJmXqdg**
Risk of Success	Denzel Washington	**https://www.youtube.com/watch?v=tbnzAVRZ9Xc**

Workplace/Institute Ethics Guide

Work ethic is a standard of conduct and values for job performance. The modern definition of what constitutes good work ethics often varies. Different businesses have different expectations. Work ethic is a belief that hard work and diligence have a moral benefit and an inherent ability, virtue, or value to strengthen character and individual abilities. It is a set of values-centered on the importance of work and manifested by determination or desire to work hard.

The following ten work ethics are defined as essential for student success:

1. **Attendance:**

   Be at work every day possible, plan your absences don't abuse leave time. Be punctual every day.

2. **Character:**

   Honesty is the single most important factor having a direct bearing on the final success of an individual, corporation, or product. Complete assigned tasks correctly and promptly. Look to improve your skills.

3. **Team Work:**

   The ability to get along with others including those you don't necessarily like. The ability to carry your weight and help others who are struggling. Recognize when to speak up with an idea and when to compromise by blend ideas together.

4. **Appearance:**

   Dress for success set your best foot forward, personal hygiene, good manner, remember that the first impression of who you are can last a lifetime

5. **Attitude:**

   Listen to suggestions and be positive, accept responsibility. If you make a mistake, admit it. Values workplace safety rules and precautions for personal and co-worker safety. Avoids unnecessary risks. Willing to learn new processes, systems, and procedures in light of changing responsibilities.

6. **Productivity:**

   Do the work correctly, quality and timelines are prized. Get along with fellows, cooperation is the key to productivity. Help out whenever asked, do extra without being asked. Take pride in your work, do things the best you know-how. Eagerly focuses energy on accomplishing tasks, also referred to as demonstrating ownership. Takes pride in work.

7. **Organizational Skills:**

Make an effort to improve, learn ways to better yourself. Time management; utilize time and resources to get the most out of both. Take an appropriate approach to social interactions at work. Maintains focus on work responsibilities.

8. **<u>Communication</u>:**

Written communication, being able to correctly write reports and memos. Verbal communications, being able to communicate one on one or to a group.

9. **<u>Cooperation</u>:**

Follow institute rules and regulations, learn and follow expectations. Get along with fellows, cooperation is the key to productivity. Able to welcome and adapt to changing work situations and the application of new or different skills.

10. **<u>Respect</u>:**

Work hard, work to the best of your ability. Carry out orders, do what's asked the first time. Show respect, accept, and acknowledge an individual's talents and knowledge. Respects diversity in the workplace, including showing due respect for different perspectives, opinions, and suggestions.