




UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CS-113 Applied Mathematics-I

Course Code:	CS-113
Course Name:	Applied Mathematics-I
Credit Hours:	03
Contact Hours:	03
Prerequisite(s):	Nil

Objectives:

- To learn basic computational aspects of mathematics: basic algebra, trigonometry, exponential functions, logarithms, calculus, and linear algebra.
- To solve computational problems effectively and accurately.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Identify basic mathematical functions and their properties.	Cognitive	2	1
2	Apply the concepts of differentiation and integration for solving engineering technology problems.	Cognitive	3	2

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2) ✓	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Weeks	Topics	Assessment	Credit Hours
1.	Complex numbers, Argand diagram, De Moivre's theorem, hyperbolic and inverse hyperbolic functions, and results.		02
2.	Algebra of vectors and matrices, systems of linear equations.	Assignment 1	02
3.	Introduction of derivatives and basic related formulas		02
4.	Derivative as slope, as rate of change (graphical representation).		02
5.	Extreme values and Application related problems	Quiz 1	02
6.	Tangents and normal, curvature and radius of curvature.		02
7.	Differentiation as approximation.		02
8.	Revision		02
9.	MID TERM EXAM		
10.	Partial derivatives and their application to extreme values and approximation		02
11.	Introduction to Integration. Basic formulas and related problems	Assignment 2	02
12.	Integration by substitution and by parts, integration, and Application		02
13.	definite integration as area under curve (graphical representation		02
14.	Reduction formulae. Double integration and its applications. Polar and Cartesian coordinates and results		02
15.	polar curves, radius of curvature, cycloid, hypocycloid, epicycloids and involutes of a circle.	Quiz 2	02
16.	hypocycloid, epicycloids, and involutes of a circle.		02
17.	Complex numbers, Argand diagram, De Moivre's theorem, hyperbolic and inverse hyperbolic functions, and results. Algebra of vectors and matrices, systems of linear equations.		02
18.	FINAL TERM EXAM		



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	Due Week	Grading Weightage
Assignment 1	2	12.5 %
Quiz-1	5	
Mid Term Exam	9	25 %
Assignment 2	11	12.5 %
Quiz-2	15	
Final Term Exam	18	50 %
Total		100 %

Reference Book(s):


- Cheney, E.W., Cheney, E.W. and Cheney, W., 2001. Analysis for applied mathematics (Vol. 1). New York: Springer.
- Logan, J.D., 2013. Applied mathematics. John Wiley & Sons.
- Pipes, L.A. and Harvill, L.R., 2014. Applied mathematics for engineers and physicists. Courier Corporation.



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CH-112: Islamic Studies / Professional Ethics

Course Code:	CH-112
Course Name:	ISLAMIC STUDIES / PROFESSIONAL ETHICS
Credit Hours:	02
Contact Hours:	02
Pre-Requisite:	Nil

Objectives:

- To provide Basic information about Islamic Studies.
- To enhance understanding of the students regarding Islamic Civilization.
- To enhance the skill of the students for understanding of issues related to faith and religious life.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Discuss social and religious aspects of Islamic ethics in everyday life.	Cognitive	2	8
2	Apply the acquired knowledge of ethical skills in work environment.	Cognitive	3	6

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome		
1	Engineering Technology Knowledge (SA1)	7	Environment and Sustainability (SA7)		
2	Problem Analysis (SA2)	8	Ethics (SA8)	✓	
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)		
4	Investigation (SA4)	10	Communication (SA10)		
5	Modern Tool Usage (SA5)	11	Project Management (SA11)		
6	The Engineering Technologist and Society (SA6)	✓	12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1.	Introduction to Quranic Studies: Basic Concepts of Quran, History of Quran, and Uloom-ul -Quran		2
2.	Study of Selected Text of Holy Quran: Verses of Surah Al-Baqra Related to Faith(Verse No-284-286), and Verses of Surah Al-Hujrat Related to Adab Al-Nabi (Verse No-1-18)		2
3.	Study of Selected Text of Holy Quran: Verses of Surah Al-Mumanoon Related to Characteristics of faithful (Verse No-1-11), Verses of Surah al-Furqan Related to Social Ethics (Verse No.63-77), and Verses of Surah Al-Inam Related to Ihkam(Verse No-152-154)		2
4.	Study of Selected Text of Holly Quran: Verses of Surah Al-Ihzab Related to Adab al-Nabi (Verse No.6,21,40,56,57,58), Verses of Surah Al-Hashar (18,19,20) Related to thinking, Day of Judgment, and Verses of Surah Al-Saf Related to Tafakar,Tadabar (Verse No1,14)		2
5.	Seerat of Holy Prophet (S.A.W) I: Life of Muhammad Bin Abdullah (Before Prophet Hood), Life of Holy Prophet (S.A.W) in Makkah, and Important Lessons Derived from the life of Holy Prophet in Makkah	Assignment-1	2
6.	Seerat of Holy Prophet (S.A.W) II: Life of Holy Prophet (S.A.W) in Madina, Important Events of Life Holy Prophet in Madina, and Important Lessons Derived from the life of Holy Prophet in Madina.		2
7.	Introduction to Sunnah: Basic Concepts of Hadith, History of Hadith, Kinds of Hadith, Uloom –ul-Hadith, Sunnah & Hadith, and Legal Position of Sunnah	Quiz-1	2
8.	Introduction To Islamic Law & Jurisprudence: Basic Concepts of Islamic Law & Jurisprudence, History & Importance of Islamic Law & Jurisprudence, Sources of Islamic Law & Jurisprudence, Nature of Differences in Islamic Law, and Islam and Sectarianism		2
9.	Mid Term Exam		
10.	Islamic Culture & Civilization: Basic Concepts of Islamic Culture & Civilization, Historical Development of Islamic		2



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	Culture & Civilization, Characteristics of Islamic Culture & Civilization, Islamic Culture & Civilization and Contemporary Issues		
11.	Islam & Science: Basic Concepts of Islam & Science, Contributions of Muslims in the Development of Science, and Quranic & Science		2
12.	Islamic Economic System: Basic Concepts of Islamic Economic System, Means of Distribution of wealth in Islamic Economics, Islamic Concept of Riba, and Islamic Ways of Trade & Commerce		2
13.	Political System of Islam: Basic Concepts of Islamic Political System, Islamic Concept of Sovereignty, and Basic Institutions of Govt. in Islam	Assignment-2	2
14.	Islamic History: Period of Khlaft-E-Rashida, Period of Ummayyads, and Period of Abbasids		2
15.	Social System of Islam: Basic Concepts of Social System of Islam, Elements of Family, and Ethical Values of Islam		2
16.	Introduction to Ethics: Definitions/Importance/Kinds, Factors/Sources of Islamic Ethics, and Islamic Ethical System	Quiz-2	2
17.	Ethics in Business, Engineering Ethics, Moral Courage, Relevant Case Studies.		2
18.	Final Term Exam		
Total			32

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	1	12.5 %
<i>Quiz-1</i>	1	
Mid Term Exam	1,2	25 %
<i>Assignment-2</i>	2	12.5 %
<i>Quiz-2</i>	2	
Final Term Exam	1,2	50 %
Total		100 %



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Reference Book(s)


- Hameed ullah Muhammad, “Emergence of Islam” , IRI, Islamabad
- Hameed ullah Muhammad, “Muslim Conduct of State”
- Hameed ullah Muhammad, „Introduction to Islam
- Mulana Muhammad Yousaf Islahi,”
- Hussain Hamid Hassan, “An Introduction to the Study of Islamic Law” leaf Publication Islamabad, Pakistan.
- Ahmad Hasan, “Principles of Islamic Jurisprudence” Islamic Research Institute, International Islamic University, Islamabad (1993)
- Mir Waliullah, “Muslim Jrisprudence and the Quranic Law of Crimes”Islamic Book Service (1982)
- H.S. Bhatia, “Studies in Islamic Law, Religion and Society” Deep & Deep Publications New Delhi (1989)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CS-123: Introduction to Computer Fundamentals

Course Code:	CS-123
Course Name:	INTRODUCTION TO COMPUTER FUNDAMENTALS
Credit Hours:	01
Contact Hours:	01
Prerequisite(s):	Nil

Objectives:

- To assemble or disassemble computers and plug-in devices.
- To enable students to design an optimal computer system environment as per need of customer.
- To learn pros and cons of computer business and applications.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Define different computer components and their applications.	Cognitive	1	1
2	Use computer programming and their applications related to civil engineering technology domain.	Cognitive	3	5

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5) ✓	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1.	Basic terminology: computer, user, hardware, software, chip, program, Input: data, instructions (programs, commands, user responses), Output: text, graphics, video, audio.		01
2.	Types of computers: personal, notebook, handheld, PDA, internet appliance, server, mainframe, supercomputer, Programming languages, Machine, assembly, High-level.	Assignment 1	01
3.	Key terms: VLSI, microprocessor, microcomputer, Computer Software: Terms: file, menu, font, voice recognition, FAQ, online help, wizard, software suite, single-user license, site license, application window, dialog box, clip art, cross-platform application, Application software, Word processing, Spreadsheet: cell, function, recalculation, charting.		01
4.	Database: record, field, query, Other: accounting software, Computer Aided Design (CAD), desktop publishing, paint/image, multimedia, web authoring, System software, Operating System (OS), Booting (startup), Cold vs. warm, BIOS, Steps in booting,		01
5.	Utility programs: file viewer, file compression, backup, screen saver, disk scanner, disk defragmenter, Computer hardware, System unit Terms: motherboard, chip, memory, storage, expansion slot (plug and play), port (serial vs parallel), bus (expansion bus), power supply, Central Processing Unit (CPU).	Quiz 1	01
6.	Machine cycle (fetch, decode, execute, store), Memory, Volatile vs. nonvolatile, RAM vs ROM, Cache, Hard disk.		01
7.	Tracks, sectors, platters, RAID (mirroring and striping), Internet hard drive, Compact disks (and drives), PC Cards, Miniature mobile storage (Compact Flash, Memory Stick, Microdrive, Smart Media).		01
8.	Review		01
9.	Mid term exam		
10.	Input Devices: Keyboard, Pointing Devices.		01
11.	Others: trackball, touchpad, pointing stick, light pen, touch screen, stylus, Handwriting recognition software, Sound.	Assignment 2	01



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

12.	Image: Digital camera, Scanners (flatbed, optical readers), Optical readers, Optical character recognition (OCR).		01
13.	Bar code scanner, Optical Mark Recognition (OMR), Video: Web cam, PC Video camera, Output Devices.		01
14.	Display device, CRT monitor, Liquid Crystal Display (LCD) – passive versus active matrix, Gas plasma monitor.		01
15.	Printer and its types: Impact printers, Dot matrix printer, Line printer, Plotter.	Quiz 2	01
16.	Non-impact printers, Ink-jet, Laser, data projector, fax machine (fax modem), Internet, E-commerce, Ethics and social issues, Privacy and security.		01
17.	Review		01
18.	Final term exam		

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
Assignment 1	1	12.5 %
Quiz-1	1	
Mid Term Exam	1,2	25 %
Assignment 2	2	12.5 %
Quiz-2	2	
Final Term Exam	1,2	50 %
Total		100 %

Reference Books:


- Peter Norton, “Introduction to Computers”, Latest Edition
- Misty E. Vermaat, “Discovering Computers”, Shelly Cashman Series, Latest edition.
- Goel, A., 2010. Computer fundamentals. Pearson Education India.



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CS-123L: Introduction to Computer Fundamentals Lab

Course Code:	CS-123L
Course Name:	INTRODUCTION TO COMPUTER FUNDAMENTALS LAB
Credit Hours:	02
Contact Hours:	06
Pre-Requisite:	Nil

Course Learning Outcomes (CLOs) and Mapping:

After successful completion of this course, the students will be able to:

S/N	CLOs	Domain	Taxonomy Level	PLO
1.	Describe computer hardware components proficiently.	Psychomotor	1	PLO-1
2.	Shows MS office skills with speed and accuracy.	Psychomotor	2	PLO-5

Program Learning Outcomes (PLOs) Mapping:

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)	✓	7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)		8	Ethics (SA8)	
3	Design/Development of Solutions (SA3)		9	Individual and Teamwork (SA9)	
4	Investigation (SA4)		10	Communication (SA10)	
5	Modern Tool Usage (SA5)	✓	11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Experiments:

1. Basic machines organization including motherboard, memory, I/O cards, networking devices.
2. Use of flow charts.
3. Computer peripheral devices.
4. Operating Systems.
5. Microsoft Windows.
6. Microsoft Office i.e. MS Word, MS PowerPoint, MS Excel.
7. Office Tools & Overview of different browsers with emphasis on power point.
8. Microsoft Visio

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-113: Civil Engineering Drawing

Course Code:	CT-113
Course Name:	Civil Engineering Drawing
Credit Hours:	01
Contact Hours:	01
Prerequisite(s):	Nil

Objectives:

- To introduce students, the techniques of constructing various types of polygons, curves, and scales.
- To visualize and represent the 3D objects in 2D planes with proper dimensioning, scaling etc.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Explain fundamental concepts of engineering drawing for simple objects/structures.	Cognitive	2	1
2	Illustrate different architectural and structural drawings and their related components	Cognitive	3	1

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Weeks	Topics	Assessment	Contact Hours
1.	<p style="text-align: center;">Introduction</p> Definition, requirements of Engineering drawing, use of different drawing tools/ instruments, different types of basic line in engineering and its uses, how to make letterings, sheet planning.		02
2.	<p style="text-align: center;">Dimensioning</p> Dimensioning of object, how to make size dimension and location dimension of different geometric elements, elements of dimensioning, dimensioning systems i.e. unidirectional and aligned dimension. dimensioning method		02
3.	<p style="text-align: center;">Dimensioning method</p> Linear dimension i.e. chain dimension and datum dimension, non-linear dimension i.e. coordinate method and angular method, different dimensioning guidelines.	Assignment 1	02
4.	<p style="text-align: center;">Descriptive geometry</p> Geometric constructions, basic elements of geometry, plane curves, Cycloids, Hypocycloids; involutes, curves of interpenetration of solids, Developments of surfaces:		02
5.	Do		02
6.	<p style="text-align: center;">Building Drawings</p> Introduction to architecture drawings and structure drawings,		02
7.	<p style="text-align: center;">Symbols and Abbreviations</p> Building materials, Electrical and plumbing symbols and abbreviations:		02
8.	Different methods of Ellipses, Circumscribed circle on a triangle, inscribed circle, involutes.	Quiz 1	02
9.	Mid Exam		
10.	<p style="text-align: center;">Introduction</p> Principle of orthographic projection related to simple solids, theory of projections, plane of projections, projection method, Axonometric view, multi views.		02
11.	Do		02
12.	<p style="text-align: center;">Drawing Scales</p> Representative fraction, types of scales, plain scales, diagonal scales, vernier scales, comparative scales, and scale of chords	Assignment 2	02
13.	Machine Drawings		02



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	Representation of riveted joints, screwed fastenings, keys and cotters		
14.	Orthographic Projections 1st angle and 3 rd angle projections and its difference, projection of point, planes, solids and straight lines.		02
15.	Cross hatching, section lining rules, types of sections.	Quiz 2	02
16.	Isometric Drawings Some important terms, isometric scales, orthographic to isometric view.		02
17.	Building drawings Drawing plan and foundation of buildings and elevations, section etc		02
18.	Final term exam		

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	Due Week	Grading Weightage
Assignment 1	3	12.5 %
Quiz-1	8	
Mid Term Exam	9	25 %
Assignment 2	12	12.5 %
Quiz-2	15	
Final Term Exam	18	50 %
Total		100 %

Recommended Book(s):

- Engineering drawing by N.D Bhatt (53rd Edition 2014)
- Drawing for Engineering by Paul smith.
- Basic of Engineering drawing by Zahid Ahmad Siddique 2nd Edition



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-113L: Civil Engineering Drawing Lab

Course Code: CT-113L
Course Name: Civil Engineering Drawing Lab
Credit Hours: 02
Contact Hours: 06
Pre-Requisite: Nil

Course Learning Outcomes (CLOs) and Mapping:

After successful completion of this course, the students will be able to:

S/N	CLOs	Domain	Taxonomy Level	PLO
3.	Perceive the accurate use of drawing instruments for drawing simple sketches of objects/structures.	Psychomotor	1	PLO-1
4.	Practice basic civil engineering drawing for drafting simple objects/structures.	Psychomotor	3	PLO-1

Program Learning Outcomes (PLOs) Mapping:

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1)	✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)		8	Ethics (SA8)
3	Design/Development of Solutions (SA3)		9	Individual and Teamwork (SA9)
4	Investigation (SA4)		10	Communication (SA10)
5	Modern Tool Usage (SA5)		11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)



List of Experiments:

1. Draw Regular Polygons by Universal Method (with given dimensions).
2. Draw a 3-Centered Arch (with given dimensions).
3. Draw a 4-Centered Arch (with given dimensions).
4. Draw Ellipse by Focal Point Method and Parallelogram Method (with given dimensions of major and minor axes).
5. Draw Ellipse by Concentric Circle Method and Four Center Method.
6. Draw Parabolas by Offset Method and Basic Method.
7. Draw Parabolas by Parabolic Arc Method and Tangent Method.
8. Draw Isometric Views of given objects.
9. Draw Oblique Views of given objects.
10. Draw Isometric View of the given stairs steps.
11. Draw Oblique View of the given stairs steps.
12. Draw Oblique View of a Beam resting on two Columns.
13. Draw Development Drawing of a Cube and Cylinder.
14. Draw Development Drawing of a Cone.
15. Draw Development Drawing of a Hexagonal Prism.
16. Draw different forms of Rivet Heads.
17. Draw Orthographic Views of Hexagonal Bolt.
18. Draw Orthographic Views of Hexagonal Nut.
19. Draw a Plan and section of isolated and combine footing showing reinforcement also draw the Schedule of Footing.
20. Draw a four storied Building Column's elevation and cut section at each floor reducing reinforcement and cross-section of column.
21. Draw Schedule of Beam also draw Typical Elevation of Beam , showing Bottom bar, Extra bottom bar, Hanger bar, Top bar, Extra Top bar, and rings.
22. Draw single span Beam Elevation and its Section showing reinforcement using bent up bar.
23. Draw a three span RCC Beam elevation and its section showing reinforcement also develop Schedule of Beam.
24. Draw a Plan (13 X 17) and its X-section of single span RCC Slab, showing reinforcement. Short way #3@6" c/c , long way #3@9" c/c. Slab thickness 6"
25. Draw Plan and X-section of oneway slab of three spans showing reinforcement.
26. Draw Plan and X-section of Septic Tank.
27. Draw a Plan of 120 sq. yard residential bungalow.

Note: Draw any 16 Drawings from the above Practical list



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-212: Introduction to Architecture and Town Planning

Course Code:	CT-212
Course Name:	Introduction to Architecture and Town Planning
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

- To achieve the most possible advantages of natural conditions surrounding the town
- To give architectural buildings, temples, churches, mosques, buildings of cultural and historical significance.
- To provide convenience in efficient way to various economic, social, and recreational amenities to the public.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Explain the basic concepts of Architecture and Town planning.	Cognitive	2	1
2	Use various aspects of architecture and town planning in terms of sustainability	Cognitive	3	7

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7) ✓
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



**UNIVERSITY OF TECHNOLOGY
NOWSHERA**
(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hrs
1.	Introduction Definition: Architecture, General Introduction to history of architecture. Emergence and development of Islamic Architecture. Geographical, climatic, religious, social, historical aspects of architecture.		02
2.	Architecture Designs Prehistoric architecture, historical timeline of northeast, Egyptian, gothic, modern design, truth, purpose and beauty. Strength, vitality, grace, breadth, and scale. Proportion, color and balance Acoustics.	Assignment 1	02
3.	Principle and Elements of design applied to architecture Visual design elements. visual design principles, balance, rhythm, Emphasis, Proportion and scale, movement, contrast, unity		02
4.	Do		02
5.	Architecture standards Forms and Molds. Introduction to architectural standards, public toilets, circulation areas, parking, public assembly. Local architecture, arches, cavity walls, local energy efficient materials.		02
6.	Do		02
7.	Thermal insulation of buildings. Ceiling height, external wall thickness etc.	Quiz 1	02
8.	Design process in architecture Eventration, Analysis, programed, zoning, vision, talent, concept, variants, results and conclusions.		02
9.	Mid term exam		
10.	Town Planning: General Definitions, trends in urban growth, objectives of town planning, modern planning in Pakistan and abroad		02
11.	Preliminary Studies. Study of natural resources, economic resources, legal and administrative problems, civic survey preparation of relevant maps		02
12.	Land Use Patterns. Location of parks and recreation facilities, zoning and its aspects, public and semipublic building, civic centers, commercial centers, local shopping centers, public schools, industrial area and residential areas.	Assignment 2	02
13.	Do		02



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

14.	City Extension and Master Planning. Suburban development, neighborhood units, satellite towns and garden cities. Introduction to master planning.		02
15.	Do		02
16.	Street Pattern. Layout of streets, road crossings and lighting. Community planning.	Quiz 2	02
17.	Urban Planning. Inner city urban designs, Up-gradation of square/scattered settlements.		02
18.	Final term exam		

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	Due Week	Grading Weightage
Assignment 1	3	12.5 %
Quiz-1	7	
Mid Term Exam	9	25 %
Assignment 2	12	12.5 %
Quiz-2	16	
Final Term Exam	18	50 %
Total		100 %

Recommended Book:


- Visual dictionary of Architecture (2nd Edition) by Francis D.K. Ching
- Understanding architecture: an introduction to architecture and architectural history by Conway



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CM-112: Occupational Health and Safety Management

Course Code:	CM-112
Course Name:	OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

- To maintain the physical, mental and social well-being of workers.
- To prevent the unfavorable effects on health caused by working conditions.
- To become familiar with the occupational environment of physical and mental needs of workers.
- To consider the issues relating to industrial safety, occupational medicine, industrial hygiene, training & education, psychology and so on.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Identify various hazards of construction industry.	Cognitive	1	1
2	Demonstrate basic principles of occupational health and safety at construction site.	Cognitive	3	1

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1)	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Credit Hours
1.	Construction Safety: Safety and Health in the local and International Construction Industries, OSHA in the USA,		02
2.	Overview of Cost of Accidents, Roles of Construction Personnel in Safety, Overview of Accident Causation Theories, Ethics and Safety, Insurance and Safety, Compliance to Safety Standards.	Assignment 1	02
3.	Safety Application on the Job: Construction Safety & Health Program, Plans and Policies, Components of the Plan, Roles, Safety Rules and Regulations, Example of Safe Work Procedures, Jobsite Inspections,		02
4.	Accident Prevention, Medical and First Aid Facilities and Services, Protection of the General Public, Fire Protection, Substance Abuse, Personal Protective Equipment,		02
5.	Site Safety and Hazard Analysis, Safety Communications, Accident Reporting and Investigation, Recording Injuries and Illnesses, Training, Emergency Response.	Quiz 1	02
6.	Strategic Safety Improvement: Promoting Safety by Example, Employee Participation in Promoting Safety, Safety Training, Safety Committees, Employee and Management Participation, Incentives, Teamwork Approach to Promoting Safety,		02
7.	Do		02
8.	Establishing a Safety-First Corporate Culture, Total Safety and its Components, a Brief Discussion of Zero Accident Strategies, Continuous Safety Improvement.		02
9.	Final term exam		
10.	Safety Management Techniques: Accident prevention, health and safety policy, safe systems of work, first aid provisions,		02
11.	Do	Assignment 2	02
12.	Health and safety training, spill response protocols, accident investigation,		02
13.	Do		02
14.	Recording and analysis, communicating safety measures,		02



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

15.	Do	Quiz 2	02
16.	Techniques of inspection, Health and safety regulations at workplace.		02
17.	Do		02
18.	Final term exam		

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	Due Week	Grading Weightage
Assignment 1	2	12.5 %
Quiz-1	5	
Mid Term Exam	9	25 %
Assignment 2	11	12.5 %
Quiz-2	15	
Final Term Exam	18	50 %
Total		100 %

Recommended Book(s):


- Mark Friend, Fundamentals of Occupational Safety and Health.
- A Guide to the Control of Substances Hazardous to Health in Design and Construction. CIRIA Report 125. Thomas Telford Publications (Latest Edition)
- Occupational health and safety management: a practical approach by Reese
- Occupational health and safety in construction project management by Lingard.



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CH-212: Pakistan Studies

Course Code:	CH-212
Course Name:	PAKISTAN STUDIES
Credit Hours:	02
Contact Hours:	02
Pre-Requisite:	Nil

Objectives:

- Develop vision of historical perspective, government, politics, contemporary Pakistan, ideological background of Pakistan.
- Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Describe the genesis of Pakistan movement and its creation.	Cognitive	2	6
2	Outline the economic, societal and ethical issues of contemporary Pakistan.	Cognitive	4	6

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)	7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)	8	Ethics (SA8)	
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)	
4	Investigation (SA4)	10	Communication (SA10)	
5	Modern Tool Usage (SA5)	11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)	✓	12	Lifelong Learning (SA12)



**UNIVERSITY OF TECHNOLOGY
NOWSHERA**
(SHUHADA-E-APS, UOT)
DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1.	Historical Perspective: a. Ideological rationale with special reference to Sir Syed Ahmed Khan, Allama Muhammad Iqbal and Quaid-i-Azam Muhammad Ali Jinnah. b. Factors leading to Muslim separatism		2
2.	Do		2
3.	People and Land: i. Indus Civilization ii. Muslim advent iii. Location and geo-physical features.		2
4.	Do		2
5.	Government and Politics in Pakistan Political and constitutional phases: a. 1947-58 b. 1958-71 c. 1971-77	Assignment-1	2
6.	Do		2
7.	Do	Quiz-1	2
8.	Review		2
9.	Mid Term Exam		
10.	Government and Politics in Pakistan Political and constitutional phases: d. 1977-88 e. 1988-99 f. 1999 onward		2
11.	Do		2
12.	Contemporary Pakistan: a. Economic institutions and issues		2
13.	Contemporary Pakistan: b. Society and social structure	Assignment-2	2
14.	Contemporary Pakistan: c. Ethnicity		2
15.	Contemporary Pakistan: d. Foreign policy of Pakistan and challenges		2
16.	Contemporary Pakistan: e. Futuristic outlook of Pakistan	Quiz-2	2
17.	Review		2
18.	Final Term Exam		
Total			32

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Homework assignments	
----------------------	--

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	1	12.5 %
<i>Quiz-1</i>	1	
Mid Term Exam	1,2	25 %
<i>Assignment-2</i>	2	12.5 %
<i>Quiz-2</i>	2	
Final Term Exam	1,2	50 %
Total		100 %

Reference Book(s)


- Burki, Shahid Javed. State & Society in Pakistan, The Macmillan Press Ltd 1980.
- Akbar, S. Zaidi. Issue in Pakistan's Economy. Karachi: Oxford University Press, 2000.
- S.M. Burke and Lawrence Ziring. Pakistan's Foreign policy: An Historical analysis. Karachi: Oxford University Press, 1993.
- Mehmood, Safdar. Pakistan Political Roots & Development. Lahore, 1994.
- Wilcox, Wayne. The Emergence of Bangladesh., Washington: American Enterprise, Institute of Public Policy Research, 1972.



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-134: Concrete Technology

Course Code:	CT-134
Course Name:	Concrete Technology
Credit Hours:	02
Contact Hours:	02
Pre-Requisite:	Nil

Objectives:

- To develop an understanding of the behavior of ingredients of plain cement concrete.
- To understand various methods of proportioning of constituent of concrete for a required concrete quality.
- To understand the operations required in production, transportation, placing, curing, and testing of concrete.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Explain the ingredients of plain cement concrete and their properties for its intended use.	Cognitive	2	1
2	Apply the basic knowledge of concrete materials in mix design of concrete.	Cognitive	3	3

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3) ✓	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1.	Introduction to OBE System, PLOs and CLOs. Historical Evolution of Concrete.		2
2.	Cement Constituent of cement, Types of cement, Hydration, Heat of hydration, Setting of cement.		2
3.	Aggregates Classifications of aggregate according to size, shape and weight, Gradation of aggregate, Sieve analysis, Fineness Modulus of aggregate.		2
4.	Numerical Examples Bulk density, Relative density, Absorption and moisture content, Bulking of sand and Soundness of aggregate.		2
5.	Concrete Production Mixing, Handling and Placement of Concrete.	Assignment-1	2
6.	Types of Concrete. Normal concrete, High strength concrete, Self-compacting concrete, Roller compacting concrete, Air entrained concrete, Lightweight concrete.		2
7.	Properties of Concrete Fresh Concrete, Workability, Setting time, Bleeding and Segregation, False Setting.	Quiz-1	2
8.	Harden Concrete, Strength development, Dry shrinkage, Creep, Maturity of Concrete, numerical examples of maturity.		2
9.	Mid Term Exam		
10.	Admixtures Chemical Admixture, Plasticizers, Plasticizing action, Factor affecting plasticizers, Super plasticizer, Retarders, Accelerators, Air-Entrained Admixture.		2
11.	Admixtures Mineral Admixture, Silica fume, Fly ash, Blast furnace slag, Rice husk ash, Volcanic ash.		2
12.	Durability of Concrete Physical Durability; Permeability, Autogenous Shrinkage, Temperature stresses, Freezing and thawing, Deicing effect.		2



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

13.	Durability of Concrete Chemical Durability; Alkali aggregate reactivity, Sulphate attack, Delay ettringite formation, Chloride ingress, Corrosion of reinforcement	Assignment-2	2
14.	Mix Design The requisite properties, Design criteria.		2
15.	Mix Design Numerical examples.		2
16.	Cracks in Concrete and Repairing Techniques, Types of cracks, Crack depth measurement, Repairing of cracks.	Quiz-2	2
17.	Special Topics Autoclaved cellular concrete, Mass concrete, Shotcrete, Polymer Portland cement concrete, Ferro cement		2
18.	Final Term Exam		
Total			32

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	1	12.5 %
<i>Quiz-1</i>	1	
Mid Term Exam	1,2	25 %
<i>Assignment-2</i>	2	12.5 %
<i>Quiz-2</i>	2	
Final Term Exam	1,2	50 %
Total		100 %

Reference Book(s)

- Properties of Concrete by A. M. Neville; Wiley John & Sons. (Latest Edition).
- Concrete Design by Zahid Ahmad Siddiqi, Help Civil Engineering Publishers, Lahore, 2009.
- Design of Concrete Structures by H. Nilson, McGraw-Hill. (Latest Edition).
- “Reinforced Concrete Design & Behavior” by C. K. Wang & Salmon.



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-134L: Concrete Technology Lab

Course Code: CT-134L
Course Name: CONCRETE TECHNOLOGY LAB
Credit Hours: 02
Contact Hours: 06
Pre-Requisite: Nil

Course Learning Outcomes (CLOs) and Mapping:

After successful completion of this course, the students will be able to:

S/N	CLOs	Domain	Taxonomy Level	PLO
1.	Identify fresh and hardened properties of concrete through different laboratory tests.	Psychomotor	1	PLO-4
2.	Measure concrete ingredients for proportioning desired mixtures	Psychomotor	4	PLO-1
3.	Adopt the required protocols in laboratory environment.	Affective	3	PLO-8

Program Learning Outcomes (PLOs) Mapping:

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)	✓	7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)		8	Ethics (SA8)	✓
3	Design/Development of Solutions (SA3)		9	Individual and Teamwork (SA9)	
4	Investigation (SA4)	✓	10	Communication (SA10)	
5	Modern Tool Usage (SA5)		11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Experiments:

1. Organic impurities and water absorption of aggregates.
2. Determination of specific gravity and bulk densities of aggregates, aggregate gradations.
3. Casting specimens for varying w/c ratio and bulk densities, slump test and casting 6" cubes and cylinders.
4. Effect of w/c ratio on strength of concrete (compressive strength test on cubes and cylinders as (3) above.
5. Preparing test specimens from hand mixed, machine mixed and hand compacted concrete.
6. Compression tests on specimens as (5) above and making comparisons.
7. Determination of initial and final setting time for Portland cement.
8. Comparison of cube and cylinder strength.
9. Casting of beam specimens and testing specimens of 4", 6", 8" cubes and 6" cylinder.
10. Slump test on coarse & fine aggregates from different sources.
11. Modulus of rupture test on beam specimens.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CH-123 Communication Skills

Course Code: CH-123
Course Name: Communication Skills
Credit Hours: 03
Contact Hours: 03
Pre-Requisite: Nil

Objectives:

- To recognize the importance of communicating effectively in technical report writing and presentations.
- To use English Grammar skills in writing comprehension and structurally accurate paragraphs.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Recognize the importance of communicating effectively in technical writing and presentation.	Cognitive	2	10
2	Use English Grammar skills in writing comprehensive and structurally accurate paragraphs.	Cognitive	3	10

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)	7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)	8	Ethics (SA8)	
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)	
4	Investigation (SA4)	10	Communication (SA10)	✓
5	Modern Tool Usage (SA5)	11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1.	Introduction to OBE System, PLOs and CLOs. Historical Evolution of Communication skills		2
2.	Writing, the evolution of writing and writing skills		2
3.	Writing at work and its various characteristics		2
4.	Writing for your readers, understanding the needs and requirements of readers.		2
5.	Problems in writing problems and process of writing	Assignment-1	2
6.	Technical communication, technical communication in work place environment		2
7.	Writing ethically and achieving a readable style	Quiz-1	2
8.	Adapting various technical writing situations		2
9.	Mid Term Exam		
10.	Documents design and documents illustrations		2
11.	Various tools online and offline tools to design documents and document illustrations		2
12.	Project management and key steps involved in it		2
13.	Creation of correct documents	Assignment-2	2
14.	Professional writing		2
15.	Creation of professional documents		2
16.	Professional presentations	Quiz-2	2
17.	The use of PowerPoint, slides for presentations		2
18.	Final Term Exam		
Total			

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	5	12.5 %
<i>Quiz-1</i>	7	
Mid Term Exam	9	25 %
<i>Assignment-2</i>	13	12.5 %
<i>Quiz-2</i>	16	
Final Term Exam	18	50 %
Total		100 %

Reference Book(s):

- Tongue, J.R., Epps, H.R. and Forese, L.L., 2005. Communication skills. Instructional course lectures, 54, pp.3-9.
- Ellison, D., 2015. Communication skills. Nursing Clinics, 50(1), pp.45-57.
- Hargie, O. ed., 1997. The handbook of communication skills. Psychology Press.
- Riemer, M.J., 2007. Communication skills for the 21st century engineer. Global J. of Engng. Educ, 11(1), pp.89-100.



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY



University of Technology, Nowshera (UoT)

Department of Civil Engineering Technology

CT-144: Applied Mechanics

Course Code:	CT-144
Course Name:	Applied Mechanics
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

- To develop the capacity to predict the effects of force and motion.
- To learn scalar and vectors use in their true sense.
- To learn basic concepts of energy, work, and power.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Discuss the basic knowledge of mechanics related to system of forces	Cognitive	2	1
2	Use fundamental concepts of kinematics to solve problems of equilibrium	Cognitive	3	2

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2) ✓	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1.	Introduction to statics Mechanics: Basic concepts; Scalar and vector; Vector addition, subtraction, and product		02
2.	Introduction to statics (continue) concept and unit of measurements of mass, force, time, space	Assignment 1	02
3.	Force system Introduction; Two-dimensional force system; Rectangular components; Law of triangle, parallelogram		02
4.	Force system (continue) Moment, couple, resultants; solution of problems.		02
5.	Equilibrium Equilibrium in two dimensions; Equilibrium conditions; free body diagram; solution of problems.	Quiz 1	02
6.	Friction Introduction; Types of friction; Laws of solid friction; Co-efficient of friction		02
7.	Friction (continue) Solution of problems		02
8.	Review		02
9.	Mid term exam		
10.	Kinematics of rectilinear and curvilinear motion Introduction; Displacement; Types of motion; Speed, velocity, acceleration		02
11.	Kinematics of rectilinear and curvilinear motion (continue) Equation of motion under uniform acceleration; Normal and tangent acceleration	Assignment 2	02
12.	Kinematics of rectilinear and curvilinear motion (continue) Solution of problems		02
13.	Kinematics of rectilinear and curvilinear motion (continue) Solution of problems		02
14.	Work and energy Work, Energy, Power, Impulse; Momentum		02



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

15.	Work and energy (continue) Simple harmonic motion and free vibration.	Quiz 2	02
16.	Work and energy (continue) Solution of problems		02
17.	Review		02
18.	Final term exam		

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	Due Week	Grading Weightage
Assignment 1	2	12.5 %
Quiz-1	5	
Mid Term Exam	9	25 %
Assignment 2	11	12.5 %
Quiz-2	15	
Final Term Exam	18	50 %
Total		100 %

Reference Books:

- Engineering Mechanics by Hibler, RC (Latest Edition)
- Engineering Mechanics And Dynamics by R.C.Hibbeler & Ashok Gupta, 11th Edition, Prentice Hall.
- An Introduction to MECHANICS by David Kleppner, Robert Kolenknow Publisher: Tata MaGraw – Hill Education.



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-144L: Applied Mechanics Lab

Course Code: CT-144L
Course Name: APPLIED MECHANICS LAB
Credit Hours: 02
Contact Hours: 06
Pre-Requisite: Nil

Course Learning Outcomes (CLOs) and Mapping:

After successful completion of this course, the students will be able to:

S/N	CLOs	Domain	Taxonomy Level	PLO
1.	Conduct experiments related to force systems and Equilibrium	Psychomotor	4	PLO-1
2.	Adopt required protocols in laboratory environment.	Affective	4	PLO-8

Program Learning Outcomes (PLOs) Mapping:

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)	✓	7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)		8	Ethics (SA8)	✓
3	Design/Development of Solutions (SA3)		9	Individual and Teamwork (SA9)	
4	Investigation (SA4)		10	Communication (SA10)	
5	Modern Tool Usage (SA5)		11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Experiments:

1. To determine the resultant of forces
2. To study Hook's Law
3. To study the law of moment and equilibrium conditions
4. To determine the reaction of a simply supported beam through load cell
5. To determine the tension in the simple cable through load cell
6. To determine the reaction of a simply supported truss through load cell
7. To study acceleration on an inclined plane using Photogate
8. To study Newton's second law of motion
9. Study of buckling on struts under various end conditions using Strut Apparatus
10. To experimentally determine the vertical and horizontal deflections of various Curved Bars
11. To determine the deflection in beams using Beam deflection Apparatus
12. To evaluate forces within a toggle mechanism using Toggle Joint Apparatus
13. Study of Fly wheel Apparatus
14. To determine Friction on an inclined plane

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-154 Materials & Methods of Construction

Course Code:	CT-154
Course Name:	MATERIALS & METHODS OF CONSTRUCTION
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

- To develop an understanding of the properties, uses and behavior of the building materials, standards for material quality, various tests on materials.
- To develop a basic understanding of construction techniques and methods of building construction with particular reference to R.C. work, brick work, flooring, damp-proofing, roofing and stairs.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Identify basic civil engineering materials and their properties.	Cognitive	2	1
2	Execute the basic understanding of construction techniques and methods of building construction on sites.	Cognitive	3	1

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Credit Hours
1.	<p style="text-align: center;">Bricks, Blocks and Tiles:</p> Manufacture of bricks/blocks and its classifications, standard tests of bricks/blocks and characteristics of good bricks/blocks, process of manufacture of tiles. Ceramic materials.		02
2.	Write details on harmful ingredients use in manufacturing of bricks	Assignment 1	02
3.	<p style="text-align: center;">Stones:</p> Characteristics of good quality stones, dressing of building stones, properties and uses of common construction stones used in Pakistan. Location of stone queries in Pakistan.		02
4.	<p style="text-align: center;">Aggregate:</p> Properties of aggregates, Los Angeles Abrasion Test, crushing strength, gradation, weathering effects, T.D.S.		02
5.	Explain characteristics of good bricks	Quiz 1	02
6.	<p style="text-align: center;">Water, Lime, Cement :</p> Qualities of water used for concrete mixes. Test and uses of lime. Methods of manufacture and storage of cement in different conditions. Classification and grading of sand and its bulking, cement sand mortars used for building construction.		02
7.	Do		02
8.	<p style="text-align: center;">Timber:</p> properties and performance of Pakistani timber used in construction. Seasoning and preservation of wood. Use of plywood, hard board and chipboard in construction.		02
9.	Final term exam		
10.	<p style="text-align: center;">Paints and Varnishes:</p> Types of paints, Composition, preparation and application of paints, plaster, varnishes and distempers in building works.		02
11.	Do	Assignment 2	02
12.	<p style="text-align: center;">Metals:</p> Manufacture, characteristics and uses of Ferrous and Non--Ferrous metals and their alloys. Composition and uses of mild steel, cast iron, brass and aluminum in buildings.		02



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

13.	Glass and Plastics: Composition, varieties, properties and uses of glass, plastics, laminates and adhesives in constructions. Properties and uses of asphalt, bitumen, rubber, asbestos and its products, plastic pipes, reinforced plastics.		02
14.	Methods of Construction: Bonds in brick masonry and their formation in building construction, corbel, cornice, string course, parapets and slip joints. Masonry block. Stone masonry, Uses of stone in civil engineering. Use of Gabion walls.		02
15.	What is the difference between English bond and Flemish bond.	Quiz 2	02
16.	Scaffolding work Load bearing and non load bearing wall : and its importance in construction work. R. B. beams, columns, lintels and slab construction in buildings. ASTM Standards and testing of bricks. Foundation for walls and piers. Load bearing walls in brick and masonry construction, composite walls cavity construction, concrete framed structures panel walls, and external finishes.		02
17.	Reinforced concrete, materials in roof and floor construction, and floor finishes. Internal walls and partitions, surface finishes to internal walls and ceiling, doors and windows, staircases, damp proofing of walls and ceiling. Fire resistant construction. Tunnel and Cofferdams construction. Formwork for slabs, beams, columns & walls, etc. and its design. Formwork for shells. Standards, inspection & quality control of materials.		02
18.	Final term exam		

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Assessment Plan:

Assessment Method	Due Week	Grading Weightage
Assignment 1	2	12.5 %
Quiz-1	5	
Mid Term Exam	9	25 %
Assignment 2	11	12.5 %
Quiz-2	15	
Final Term Exam	18	50 %
Total		100 %

Reference Book(s):

- Materials of. Construction by R. C. Smith and C. K. Andres, ISBN: . 0070585040, McGraw Hill. January 1987 (Latest Edition).
- Fundamental of Building Construction: Material and Methods, by Edward B. Allen, (Latest Edition).
- Building Construction Vol. I to Vol. IV by Mckay (Latest Edition).
- Building Construction by Mitchall (Latest Edition).
- Building Construction by Huntington (Latest Edition).



**UNIVERSITY OF TECHNOLOGY
NOWSHERA**

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-154L: Materials & Methods of Construction Lab

Course Code:	CT-154L
Course Name:	Materials & Methods of Construction Lab
Credit Hours:	02
Contact Hours:	06
Pre-Requisite:	Nil

Course Learning Outcomes (CLOs) and Mapping:

After successful completion of this course, the students will be able to:

S/N	CLOs	Domain	Taxonomy Level	PLO
1.	Choose construction methods with precision for various construction activities.	Psychomotor	1	PLO-1
2.	Conduct different laboratory tests to assess construction material properties.	Psychomotor	4	PLO-4

Program Learning Outcomes (PLOs) Mapping:

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)
4	Investigation (SA4) ✓	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Experiments:

1. Standard consistency test of cement.
2. Standard sizes of brick and blocks.
3. Determination of water absorption of bricks and stone.
4. Determination of efflorescence of brick.
5. Determination of compressive strength of brick/block.
6. Determination of moisture content of wood.
7. Determination of specific gravity of wood.
8. Fineness of Cement.
9. Fineness modulus of various sands.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CS-133: Applied Mathematics II

Course Code:	CS-133
Course Name:	Applied Mathematics II
Credit Hours:	03
Contact Hours:	03
Prerequisite(s):	Nil

Objectives:

- To solve problems of Calculus, Laplace Transformation and Fourier Series, and
- To develop mathematical skills and logical perceptions.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Describe different mathematical equations.	Cognitive	2	1
2	Use the knowledge of differential equations for solving different numerical problems.	Cognitive	3	1

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1)	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Weeks	Course Outlines	Assessment	Contact Hours
1	Differential equation; basic concepts and ideas; geometrical interpretation of first and second order differential equations and related problems and results.		3
2	Separable equations, equations reducible to separable form and related problems and results	Assignment – 1	3
3	Exact differential equations, and related problems, results and theorems.		3
4	Integrated factors (Rules). and related problems and results		3
5	Linear first order differential equations and related problems and results	Quiz -1	3
6	Bernoulli's differential equation. and related problems and results		3
7	Families of curves, orthogonal trajectories and related problems and results		3
8	Applications of differential equations of first order to relevant engineering systems and related problems and results Inductance		3
9	MID TERM EXAM		
10	Homogeneous linear differential equations of second order. and related problems and results		3
11	Homogeneous equations with constant coefficients, the general solutions, initial and boundary value problems		3
12	Doperator, complementary functions and particular integrals. Real, complex and repeated roots of	Assignment – 2	3
13	Cauchy equation, nonhomogeneous linear equations. and related problems and results		3
14	Applications of higher order linear differential equations and related problems and results	Quiz -2	3
15	Ordinary and regular points and corresponding series solutions.		3
16	Introduction to Laplace transformation and related		3



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

17	Revision		
18	FINAL TERM EXAM		

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	Due Week	Grading Weightage
Assignment 1	2	12.5 %
Quiz-1	5	
Mid Term Exam	9	25 %
Assignment 2	12	12.5 %
Quiz-2	14	
Final Term Exam	18	50 %
Total		100 %

Reference Book(s):


- Advanced Engineering Mathematics 5th Edition By C.R. Wylie McGraw-Hill Education ..
- Advanced Engineering Mathematics, 8th Edition by H. Erwin Kreyszig John Wiley & Sons.
- Ordinary Differential Equations: An Elementary Textbook for Students of Mathematics, Engineering and the Sciences (Dover Books on Mathematics) by M. Tenenbaum, H. Pollard



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT- 124 Surveying

Course Code:	CT-124
Course Name:	Surveying
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

1. To develop an understanding of surveying & leveling theory and practice.
2. To develop an ability to translate survey information for design and construction purposes.
3. To develop a skill in the use of modern survey instruments.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Describe the basic concepts of land surveying and leveling	Cognitive	2	1
2	Apply the advanced concepts of engineering surveying using modern tools for preparing and analyzing surveying maps	Cognitive	3	5

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5) ✓	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Weeks	Credit Hours	Topics	Assessment
1.	02	Introduction Introduction to advanced surveying and its application	
2.	02	Introduction (continue) Introduction to triangulation, trilateration, field procedures and application, EDM, strength of figure, computation and plotting	Assignment 1
3.	02	Theory of errors and Weights Quality of observations, weighted observations	
4.	02	Theory of errors and Weights (continue) Distribution and adjustment of errors, Most probable value	
5.	02	Curves Various types of curves with application: simple circular curve, compound curves, transition curves, vertical curve, and reverse curves	Quiz 1
6.	02	Curves (continue) Design and layout of curves	
7.	02	Tunnel surveying Use of gyroscope	
8.	02	Review of the course	
9.		Mid-term exam	
10.	02	Hydrographic surveying Horizontal and vertical contours, submarine surface contours	
11.		Hydrographic surveying (continue) Discharge measurement, reservoir capacity calculation	Assignment 2
12.	02	Field astronomy Solar and stellar observations for position and azimuth determination	
13.	02	Remote sensing/satellite imagery and its applications Introduction & applications of remote sensing in Surveying	
14.	02	Remote sensing/satellite imagery and its applications (continue) Types of remote sensing, sensors and platforms used for remote sensing	
15.	02	Use of stereoscopy and GPS Stereoscopy and GPS	Quiz 2
16.	02	GIS	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

		Introduction & applications of GIS in surveying, digitizing and topographic mapping using GIS software	
17.	02	Review of the course	
18.		Final term exam	

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
Assignment 1	1	12.5 %
Quiz-1	1	
Mid Term Exam	1,2	25 %
Assignment 2	2	12.5 %
Quiz-2	2	
Final Term Exam	1,2	50 %
Total		100 %

Recommended Book(s):

- Surveying Theory and Practice by R. E. Davis, J. Anderson, F.S. Foote, McGraw-Hill (Latest Edition).
- Surveying by Jack C. McCormac (Latest Edition).
- Schaum's Outline Series of Introductory Surveying by R. H. Wirshing, Roy Wirshing, Jaews R. Wirshing (Latest Edition).

Reference Book(s):

- Surveying with Construction Applications by Barry F. Kavanagh, Prentice Hall (Latest Edition).
- Plane and Geodesic Survey Vol. I and II by David Clarck, Trans-Atlantic Publications (Latest Edition).



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT- 124L: Surveying Lab

Course Code: CT-124L
Course Name: Surveying
Credit Hours: 02
Contact Hours: 06
Prerequisite(s): Nill

Course Learning Outcomes (CLOs) and their Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Operate different types of surveying & leveling instruments for planning and field applications.	Psychomotor	P4	PLO-5
2	Organize the Survey work in the field.	Affective	A4	PLO-9

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)		7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)		8	Ethics (SA8)	
3	Design/Development of Solutions (SA3)		9	Individual and Teamwork (SA9)	✓
4	Investigation (SA4)		10	Communication (SA10)	
5	Modern Tool Usage (SA5)	✓	11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Practical:

1. Study and use of conventional instruments & EDM surveying instruments.
2. Baseline measurement.
3. Theodolite traversing.
4. Profile and precise leveling.
5. Curve layout (simple circular curve, reverse curve, composite curve, vertical curve)
6. Computation and plotting.
7. Field astronomy.
8. Total station/gyro station,
9. GPS based survey, integration of GPS data in GIS software, creation of contour sheet using GIS.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of Internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-222 Quantity Surveying and Contract Documents

Course Code:	CT-222
Course Name:	Quantity Surveying and Contract Documents
Credit Hours:	01
Contact Hours:	01
Prerequisite(s):	Nil

Objectives

1. To develop an ability to measure construction works.
2. To develop a systematic approach to cost estimation of a construction job.
3. To develop an understanding of preparing contract documents and managing/executing of civil engineering works.

Course Learning Outcomes (CLOs) and their Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Explain the terminologies related to quantity estimation in Civil Engineering works.	Cognitive	2	1
2	Solve different civil engineering drawings for quantities and Prepare Bill of Quantities.	Cognitive	3	2

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2) ✓	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Weeks	Credit Hours	Topics	Assessment
1.	02	Quantities: Working out earthwork quantities for various civil engineering constructions.	
2.	02	Calculating quantities for road embankments in plain and hilly areas and for irrigation channels.	Assignment 1
3.	02	Quantities for roads, buildings, reservoirs, water supply, drainage projects, steel works and bridge construction. Estimates using computer spreadsheets	
4.	02	Rate Analysis: Scheduled and non-scheduled rates. Analysis of rates, abstract of costs.	
5.		Significance of rate analysis and its application to market rates of material and labor. Rate analysis for various items of civil engineering works.	Quiz 1
6.	02	Cost Estimates: Systematic and logical approach to the estimating and costing of civil engineering works,	
7.	02	Do	
8.	02	Rough cost & detailed estimates, bill of quantities and part bills for construction, costs and profit margins to be considered in the cost estimates.	
9.		Mid-term exam	
10.	02	Estimates for roads, buildings, reservoirs, water supply, drainage projects, steel works and bridge construction. Estimates using computer spreadsheets.	
11.		Do	Assignment 2
12.	02	Contract Documents: Introduction to work contracts and tendering. Types of contracts. Requirements of a specific contract,	
13.	02	Drawings necessary for a contract and those required during the execution of work. Tender documents, construction specifications,.	
14.	02	Bill of quantities and other setting out data required for a contract. Time scheduling of different construction activities for the execution of the projects.	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

15.	02	General conditions of contract and special conditions of contract. International conditions of contract (FIDIC), Safety and control aspects required in the execution of the contract.	Quiz 2
16.	02	Use of Computer Spreadsheets in making bill of quantities (BOQ). Labor output, incentives and laws.	
17.	02	Do	
18.		Final term exam	

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
Assignment 1	1	12.5 %
Quiz-1	1	
Mid Term Exam	1,2	25 %
Assignment 2	2	12.5 %
Quiz-2	2	
Final Term Exam	1,2	50 %
Total		100 %

Reference Book(s):


- 1) Estimating Construction Costs by R. L. Peurifoy. McGraw-Hill. (Latest Edition).
- 2) Contract Specifications by Daniel and W. Mead (Latest Edition).
- 3) Construction Scheduling, Cost Optimization and Management by H. Adeli and A. Karim. (Latest Edition).
- 4) MES/Pak PWD Schedule of Rates (Latest Edition).
- 5) WAPDA Drafting Standards (Latest Edition).



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-222L: Quantity Surveying and Contract Documents Lab

Course Code:	CT-222L
Course Name:	Quantity Surveying and Contract Documents Lab
Credit Hours:	01
Contact Hours:	03
Prerequisite(s):	Nil
Co-Requisite(s):	Nil

Course Learning Outcomes (CLOs) and their Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Estimate construction materials using quantity surveying techniques.	Psychomotor	4	PLO-1
2	Describe contract document preparation for various construction works	Psychomotor	1	PLO-1

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



**UNIVERSITY OF TECHNOLOGY
NOWSHERA**
(SHUHADA-E-APS, UOT)
DEPARTMENT OF CIVIL TECHNOLOGY

List of Practical:

1. Workout 1:2:4 concrete for foundations, columns below plinth and plinth beams.
2. Workout 1:2:4 concrete for columns above plinth roof beams, roof slabs and projections.
3. Workout the quantities of single span and multi span beam reinforcement from given drawing.
4. Workout the quantities slab reinforcement from given drawing
5. Workout the quantities of overhead water tank concrete and its reinforcement.
6. Workout the quantities of RCC retaining wall concrete and its reinforcement.
7. Prepare material estimate for a single room complete in all respect.
8. Prepare complete estimate of a steel truss.
9. Prepare a detailed estimate of an RCC water overhead reservoir of 20,000 gallon capacity.
10. Prepare detailed estimate of a manhole.
11. Prepare detailed estimate of a septic tank and soakage pit.
12. Prepare bill of quantity and abstract of cost for a manhole and septic tank.
13. Estimate the quantities of all necessary items of work required for 1500ft long bituminous road.
14. Estimate the cost of construction of a concrete road 24'-6" wide and one mile long for given section. The concrete will have a proportion of 1:3:6 and 0.5 % reinforcement is to be used.
15. Calculate the volume of earth work from contour map.
16. Calculate the volume of earth work for irrigation channel (i) fully in cutting (ii) partially in cutting and filling.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of Internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-234: Soil Mechanics

Course Code:	CT-234
Course Name:	Soil Mechanics
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

- To develop a basic understanding of the composition, classification, structure, and properties of soils.
- To obtain knowledge of the application of soil as a construction material
- To acquire laboratory skills for the determination of soil properties.

Course Learning Outcomes (CLOs) and their Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Identify soils with reference to their characteristics.	Cognitive	2	1
2	Discuss the physical properties of soil.	Cognitive	2	1

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Weeks	Credit Hours	Topics	Assessment
1.	02	<p style="text-align: center;">Introduction</p> Definition, Role of Soil Mechanics in design and construction of Civil Engineering projects, Soil formation, Weathering of rocks and its types	
2.	02	<p style="text-align: center;">Principal soil deposits</p> Different types of Transported Soils, General identification of soil mass, Soil structure and texture. Soil constituents, Organic Soil	Assignment 1
3.	02	<p style="text-align: center;">Gradation of Soil</p> Mechanical Analysis, Hydrometer Analysis, Numerical Problems	
4.	02	<p style="text-align: center;">Clays</p> Clay Minerals, Clay Mineral Types, Structure of Clay Minerals	
5.		<p style="text-align: center;">Index Properties of Soil</p> Principle Properties Of Soil (Natural Moisture Content, Density, Specific Gravity, Void Ratio, Porosity, Degree Of Saturation). Volumetric And Volume Weight Relationships & Numerical Problems	Quiz 1
6.	02	<p style="text-align: center;">Atterberg's Limits</p> Liquid Limit and its determination, Plastic Limits and its Determination, Shrinkage Limit and its determination, Numerical Problems	
7.	02	Do	
8.	02	<p style="text-align: center;">Soil Classification</p> Purpose of soil classification, Engineering soil classification systems (ASTM or USCS, AASHTO etc.) Numerical Problems	
9.		Mid-term exam	
10.	02	<p style="text-align: center;">Compaction</p> Moisture density relationship, laboratory and field compaction methods, Compaction control during construction, factors affecting compaction	
11.		Do	Assignment 2
12.	02	<p style="text-align: center;">Permeability</p> Definition, scope, Darcy's law, laboratory and field methods of determining permeability	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

13.	02	Do	
14.	02	Stresses in Soil Geostatic stresses, total and effective stresses, stress from surface loads. Lateral stress, Stress influence charts/diagrams and their uses.	
15.	02	Do	Quiz 2
16.	02	Shear Strength of Soil Uses of shear Strength, Shear Strength Parameters, Theories on Shear Strength of Soil, Determination of shear strength parameters, Factors effecting shear strength of soils, Numerical Problems	
17.	02	Do	
18.		Final term exam	

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
Assignment 1	1	12.5 %
Quiz-1	1	
Mid Term Exam	1,2	25 %
Assignment 2	2	12.5 %
Quiz-2	2	
Final Term Exam	1,2	50 %
Total		100 %

Recommended Book(s):

- 1) Craig's Soil Mechanics 7th Edition
- 2) Soil Mechanics and foundation by BC Punmia
- 3) Fundamentals of Soil Mechanics by M. S. Qureshi & Aziz Akbar, A-1 Publishers, Urdu Bazar, Lahore. (Latest Edition).

Reference Book(s):

- Soil Mechanics by A. R. Jumikis (Latest Edition).
- Fundamental of Soil Mechanics by D. W. Taylor (Latest Edition).
- Soil Mechanics by T. W. Lambe, Robert V. Whitman, John Willey & Sons. (Latest Edition).



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY


- Surveying with Construction Applications by Barry F. Kavanagh, Prentice Hall (Latest Edition).



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-234L: Soil Mechanics Lab

Course Code: CT-234L
Course Name: Soil Mechanics Lab
Credit Hours: 02
Contact Hours: 06
Prerequisite(s): Nill

Course Learning Outcomes (CLOs) and their Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Perform soil classification tests accurately and interpret results effectively.	Psychomotor	5	PLO-1
2	Conduct laboratory tests to determine soil properties with precision.	Psychomotor	4	PLO-1
3	Adopt required protocols in the laboratory environment.	Affective	A3	PLO-8

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8) ✓
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)

List of Practical:

1. Determination of Moisture content of soil by ASTM Oven drying method
2. Determination of Moisture content of soil by Speedy Method
3. Grain-size analysis of soil (Sieve analysis)
4. Grain-size analysis of soil (Hydrometer analysis)
5. Determination of liquid limit of soil
6. Determination of Plastic limit and Plasticity Index of soil
7. Determination of shrinkage limit of soil
8. Classification of soil according to Unified soil classification system (USCS)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

9. Classification of soil according to AASHTO soil classification system
10. Determination of specific gravity of Clayey soil by Density Bottle/Pycnometer method
11. Determination of specific gravity of Gravely soil by SSD method
12. Standard Proctor Compaction Test
13. Modified Proctor Compaction Test
14. Determination of field density by Sand Cone Method
15. Constant Head Permeability test (Granular Soil)
16. Falling Head Permeability (Fine grained soils)

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of Internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-243: Fluid Mechanics

Course Code:	CT-243
Course Name:	Fluid Mechanics
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

1. To provide a broad concept of fluid mechanics.
2. To enable students to solve problems relating to pipe flow and open channel flow.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Understand the fundamental physical properties of fluids.	Cognitive	1	1
2	Apply the relevant theory to solve problems.	Cognitive	3	2

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2) ✓	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Weeks	Credit Hours	Topics	Assessment
1.	02	<p style="text-align: center;">Introduction</p> Fluid mechanics, hydrostatics, kinematics, hydrodynamics, hydraulics, solids and fluids, liquids and gases, units and dimensions.	
2.	02	<p style="text-align: center;">Physical properties of fluids</p> Specific weight, density, specific volume, surface tension, compressibility, viscosity, units of viscosity, measurement of viscosity, Newton's equation of viscosity.	Assignment 1
3.	02	<p style="text-align: center;">Fluid Statics</p> Pressure intensity and pressure head: pressure specific weight relationship, absolute and gauge pressure, measurement of pressure, Piezometer, Manometer, Pressure Transducers. Differential manometer and Bourden gauge.	
4.	02	<p style="text-align: center;">Fluid Statics</p> Forces on submerged planes and curved surfaces and their applications. Buoyancy and floatation, Equilibrium of floating and submerged bodies.	
5.		<p style="text-align: center;">Fluid Kinematics</p> Steady and unsteady flow, laminar and turbulent flow, uniform and non-uniform flow. Path line streamlines and stream tubes, Velocity and discharge, Equation of continuity for compressible and incompressible fluids.	Quiz 1
6.	02	Do	
7.	02	<p style="text-align: center;">Flow Measurement</p> Orifices and mouthpieces, sharp -crested weirs and notches, pitot tube and pitot-static tube, Venturimeter, Salt velocity method, colour velocity method, Radioisotope methods.	
8.	02	Do	
9.		Mid-term exam	
10.	02	<p style="text-align: center;">Steady Flow through Pipes</p> Losses in pipe lines, minor and major losses, Darcy-Weisbach equation for major loss of head in pipes,	
11.		Do	Assignment 2



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

12.	02	Pipes in series and parallel, Transmission of energy through pipes, Introduction to computer aided analysis of pipe networks.	
13.	02	Do	
14.	02	Uniform Flow in Open Channels Chezy's and Manning's equations, Bazin's and Kutter's equation.	
15.	02	Do	Quiz 2
16.	02	Most economical sections for rectangular and trapezoidal channels.	
17.	02	Do	
18.		Final term exam	

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
Assignment 1	1	12.5 %
Quiz-1	1	
Mid Term Exam	1,2	25 %
Assignment 2	2	12.5 %
Quiz-2	2	
Final Term Exam	1,2	50 %
Total		100 %

Recommended Book(s):


1. An Introduction to Engineering Fluid Mechanics by J. A. Fox, Macmillan Company (Latest Edition).
2. Mechanics of Fluids by B. S. Massey, Wan Nost Reinhold International Rand hold Company Ltd., London (Latest Edition).
3. Mechanics of Fluids by J. W. Ireland, Bulterworth & Company, London (Latest Edition).



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-243L: Fluid Mechanics Lab

Course Code: CT-243L
Course Name: Fluid Mechanics
Credit Hours: 01
Contact Hours: 03
Prerequisite(s): Nil

Course Learning Outcomes (CLOs) and their Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Perform precise measurements of fluid properties using laboratory techniques.	Psychomotor	5	PLO-1
2	Operate fluid mechanics apparatus to measure flow rates and pressures accurately.	Psychomotor	3	PLO-5
3	Adopt required protocols in the laboratory environment.	Affective	A3	PLO8

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)	✓	7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)		8	Ethics (SA8)	✓
3	Design/Development of Solutions (SA3)		9	Individual and Team Work (SA9)	
4	Investigation (SA4)		10	Communication (SA10)	
5	Modern Tool Usage (SA5)	✓	11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Practical:

1. Determination of viscosity of a given liquid using viscometer.
2. Determination of velocity through Pitot tube.
3. Determination of coefficient of discharge using venturimeter.
4. Determination of coefficient of discharge of the orifices.
5. Determination of coefficient of discharge using rectangular notch.
6. Determination of discharge using V-notch.
7. To investigate the validity of the Bernoulli's equation for steady flow of water.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of Internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-254: Mechanics of Solids

Course Code:	CT-254
Course Name:	Mechanics of Solids
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives

1. To develop an understanding of analysis of the magnitudes and distribution of internal forces in the body by the concept of free body diagram under external loads.
2. To calculate the shearing force and bending moment in simply supported beams.
3. Understanding of equilibrium conditions.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Explain basic concepts of mechanics of solids.	Cognitive	2	1
2	Analyze forces and its effects on various structural elements.	Cognitive	4	2

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2) ✓	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Credit Hours
1	Introduction to Strength of materials.		2
2	Kinds of Stresses and strains and numerical problems related to it, Hook's Law, Load extension diagrams for different materials.		2
3		Assignment-1	2
4			2
5	Axial Strain, Lateral Strain, Poisson's Ratio and numericals related to it.	Quiz-1	2
6	Theory of torsion for Hollow and circular shafts and its numericals		2
7			2
8	Introduction to Shear force and Bending Moment Diagrams.		2
9	Mid Term Exam		
10	Shear force and bending moment diagrams with various combinations of loads by writing equations and without writing equations.		2
11			2
12		Assignment-2	2
13			2
14	Rotation and deflection of beams by Moment area method with related numericals.		2
15		Quiz-2	2
16	Rotation and deflection of beams by Unit load method with related numericals.		2
17			2
18	Final Term Exam		
	Total		32

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
Assignment-1	1	12.5 %
Quiz-1	1	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Mid Term Exam	1,2	25 %
Assignment-2	2	12.5 %
Quiz-2	2	
Final Term Exam	1,2	50 %
Total		100%

Recommended Book(s):

1. Strength of Materials by Andrew Pytel Ferdinand L.Singer. Harper Collins Publishers.
2. Strength of Materials By R. K. Bansal

Reference Book(s):

1. R. C. Hibbeler, Mechanics of Materials.
2. Mechanics of Materials By James M. Gere, Barry J. Goodno.



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-254L: Mechanics of Solids Lab

Course Code: CT-254L
Course Name: Mechanics of Solids Lab
Credit Hours: 02
Contact Hours: 06
Prerequisite(s): Nill

Course Learning Outcomes (CLOs) and their Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Perform experiments to determine the mechanical properties of solid materials accurately.	Psychomotor	5	PLO-1
2	Measure stress and strain in structural steel with precision.	Psychomotor	4	PLO-1
3	Adopt required protocols in the laboratory environment.	Affective	A3	PLO-8

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)	✓	7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)		8	Ethics (SA8)	✓
3	Design/Development of Solutions (SA3)		9	Individual and Team Work (SA9)	
4	Investigation (SA4)		10	Communication (SA10)	
5	Modern Tool Usage (SA5)		11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Practical:

1. To familiarize the students about the functions of Universal Testing Machine.
2. To perform tensile test on a mild steel specimen and to determine yield strength, ultimate strength, rupture strength and percentage elongation.
3. Preparation of Concrete Cube samples for testing.
4. To perform compressive strength test on Concrete Cube after 07 days of curing
5. To perform compressive strength test on Concrete Cube after 14 days of curing.
6. To perform compressive strength test on Concrete Cube after 28 days of curing.
7. Preparation of Concrete Cylinder samples for testing
8. To perform compressive strength test on Concrete Cylinder after 07 days of curing.
9. To perform compressive strength test on Concrete Cylinder after 14 days of curing.
10. To perform compressive strength test on Concrete Cylinder after 28 days of curing.
11. To perform compressive strength test on Brick.
12. To perform compressive strength test on Curb Stone.
13. To perform compressive strength test on tough tiles.
14. To perform Shear Strength test on mild steel specimen.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of Internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-264: Transportation Engineering

Course Code:	CT-264
Course Name:	Transportation Engineering
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

1. To develop an understanding of the fundamentals of highway geometry and to apply it in the design of Highways & Railways.
2. To produce an ability to use the survey works in the development of layouts of Highways & Railways.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Describe the basics of transportation engineering.	Cognitive	1	1
2	Explain the different elements of Highway Geometric Design.	Cognitive	2	1

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



**UNIVERSITY OF TECHNOLOGY
NOWSHERA**

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Weeks	Credit Hours	Topics	Assessment
1.	02	<p>Introduction To Transportation Engineering Role of Transportation in daily life A. Economic Development and Transport B. Social Effects of Transportation, Components of Transportation, Early Modes of Transportation, Modern Modes of Transportation, Multimodal Transport, Choice of Modes, Comparison of Different Modes of Transportation</p>	
2.	02	<p>Functional Classification of Road & Road's Location Surveys Road, Functions of Roads, Classification of Roads based on function, Arterials, Collectors, Local Roads, Road design based on functional classification, Why classify roads?, Road's Location Survey, Reconnaissance survey, Preliminary location survey, Final location survey</p>	Assignment 1
3.	02	<p>Geometric Design Goals of Geometric Design, Factors affecting Geometric Design, Elements of Highway Geometric Design, Highway Cross-section Elements, Right of Way, Traveled way or carriage way or width of pavement, Shoulder, Roadway (width of formation), Median, Kerbs, Cross-slope (camber), Drainage channels and side slopes, Traffic Barriers, Bicycle and pedestrian facilities</p>	
4.	02	<p>Design speed & Sight Distance Recommended Minimum Design Speed (MPH), Sight Distance, Stopping Sight Distance (SSD), Overtaking Sight Distance (OSD), Intersection Sight Distance (ISD), Derivations, Numerical Problems</p>	
5.	02	<p>Vertical alignment of road Gradients, Grade Compensation, Vertical curves, Types of vertical Curve, Components of Vertical Curve, Calculation for length of vertical curve, 1. Site Distance Criteria 2. California Appearance standards Criteria 3. AASHTO Comfort Standards Criteria, Numerical Problems</p>	Quiz 1
6.	02	<p>Horizontal alignment of road Horizontal Curve, Classification of Circular Horizontal Curves, Elements of a simple circular horizontal curve,</p>	



**UNIVERSITY OF TECHNOLOGY
NOWSHERA**
(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

		Super-elevation, Curve widening, Method of Providing curve widening, Numerical Problems	
7.	02	Introduction to Pavement Pavement Requirements, Flexible pavements, Wheel Load Distribution in Flexible Pavement, Typical Layers of a Flexible Pavement, Seal Coat, Tack Coat, Prime Coat, Surface course, Binder course, Base course, Sub-Base course, Sub-grad, Rigid pavements, Types of Rigid Pavements, Jointed Plain Concrete Pavements (JPCP), Jointed Reinforced Concrete Pavements (JRCP), Continuous Reinforced Concrete pavements (CRCP), Prestressed Concrete Pavements (PCP), Comparison of Flexible & Rigid Pavement	
8.	02	Road's Intersections Intersection, Types of Road Intersections, A. Intersection at Grade, Simple, Flared Intersection, Channelized Intersection, Roundabout Intersection B. Grade Separated Intersection, Underpass, Overpass, Trumpet Interchange, Diamond Interchange, Cloverleaf Interchange, Partial Cloverleaf Interchange, Directional Interchange	
9.	Mid-term exam		
10.	02	Traffic Control Devices Traffic Signs, Efficiency of Traffic Signs, A. Types of Traffic Signs, Regulatory Signs, Warning Signs, Informatory Signs, B. Traffic Signals C. Pavement Markings, Solid & Dotted lines, Zebra crossing & Triangles, Object markings, Word/symbol markings D. Other devices	
11.	02	Airports Airport Engineering, Airport History, Airfield, Major Air Transport Agencies, Airports Classification According To ICAO, Types Of Airports, Components Of Airport, Terminal Building, Apron, Runways, Taxiways, Hangers, Runway Designations, Runway Length, Runway Orientation, Wind Rose Diagram, Runway Lighting, Factors Affecting Selection Of Site For Airport	Assignment 2
12.	02	Do	
13.	02	Railways: Railway Engineering, Rail Gauges, Functional Types Of Trains, Elements Of Railway Tracks, Formation, Ballast, Types Of Ballast, Sleepers, Sleeper Density, Rails, Types Of Rails, Fastenings, Rack Railways, Superovulation, Numerical Problems	
14.	02	Do	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

15.	02	Railways: Wear Of Rails, Types, Methods of Reducing Wear Of Rails, 1. Use of Special alloy steel 2. Good maintenance of track 3. Exchange of inner and outer rail on curve 4. Use of lubricating oil 5. By coning of wheel, Tilting Of Rails, Creep of Rails	Quiz 2
16.	02	Do	
17.	02	Docks & Harbor Engineering Introduction, Types of ports and harbors, Differences between Harbor and Port, Types of Ports, Types of Habors	
18.		Final term exam	

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
Assignment 1	1	12.5 %
Quiz-1	1	
Mid Term Exam	1,2	25 %
Assignment 2	2	12.5 %
Quiz-2	2	
Final Term Exam	1,2	50 %
Total		100 %

Recommended Book(s):

1. Highway Engineering by C. H. Oglesby, Russell G. Hicks. ISBN: 047102936X. John Willey & Sons. (Latest Edition).
2. A Policy on Geometric Design of Highways & Streets AASHTO Staff, ISBN: 1560510013. (Latest Edition).
3. Hand Books of Highway Engineering by Baker (Latest Edition).

Reference Book(s):


1. Railways, Bridges and Tunnels by S. K. Sharma (Latest Edition).
2. Roads, Railways, Bridges and Tunnels by Deshpande Antia and Shanna (Latest Edition).
3. Highway Design Manual, Highway Department, Govt. of the Punjab (Latest Edition)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-264L: Transportation Engineering Lab

Course Code: CT-264L
Course Name: Transportation Engineering Lab
Credit Hours: 02
Contact Hours: 06
Prerequisite(s): Nill

Course Learning Outcomes (CLOs) and their Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Conduct laboratory tests to evaluate transportation materials.	Psychomotor	4	PLO-1
2	Choose construction materials with precision for various construction activities.	Psychomotor	1	PLO-1
3	Adopt required protocols in the lab environment.	Affective	3	PLO-8

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)	✓	7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)		8	Ethics (SA8)	✓
3	Design/Development of Solutions (SA3)		9	Individual and Team Work (SA9)	
4	Investigation (SA4)		10	Communication (SA10)	
5	Modern Tool Usage (SA5)		11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Practical:

1. To Determine the Flakiness index and Elongation Index of course aggregates
2. To determine Resistance to degradation of small-size Coarse Aggregate by Abrasion and Impact in the Los Angles Abrasion machine.
3. To Determine Specific Gravity and Absorption of Course Aggregate.
4. To determine the C.B.R Sub grade soil for soaked sample of soil.
5. To determine the C.B.R Sub grade soil for unsoaked sample of soil.
6. To Determine Softening Point of Asphalt (Bitumen) and tar by Ring and Ball apparatus.
7. To Determine flash and fire points By Cleveland Open Cup.
8. To Determine Impact Value of Aggregates.
9. Exercises to calculate the quantities of materials required for various types of pavements and various sections of highways.
10. Find field density by core cutter.
11. To Determine Specific Gravity of Semi Solid Bituminous Materials by Pycnometer.
12. To Determine Penetration grade of bituminous materials.
13. Float Test on Bituminous Material.
14. To Determine Viscosity of Asphalt by Vacuum Capillary Viscometer.
15. To Determine Ductility of Bituminous Materials
16. Exercises for provision of transition curves and re-alignments of curves.
17. Demarcation of road alignment on a given contour map.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of Internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-273: Water Supply and Wastewater Management

Course Code:	CT-273
Course Name:	Water Supply and Wastewater Management
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

1. To introduce basic concepts relating to the provisions of water supply and wastewater collection facilities.
2. To enable students to design water supply and wastewater collection systems.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Discuss water supply, waste water system and environmental issues in context of quality and treatments	Cognitive	2	1
2	Design components of waste water treatment plant with respect to different kinds of pollutions	Cognitive	6	3

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3) ✓	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1	Introduction: Water supply and wastewater collection systems and their importance with respect to human health. Water borne diseases. Types of impurities and their affects on human health standards, WHO standards. Study of water treatment plant		2
2	Estimation of Water Demand: Water consumption. Components of water consumption. Factors affecting consumption. Fire demand. Variations in demand: average daily consumption maximum daily consumption and peak hourly consumption. Commonly used values of water consumption. Local design guidelines. Design period: factors affecting design period. Commonly used design period and local criteria. Population forecasting: mathematical and graphical methods of forecasting population. Population density.		2
3	Do		2
4	Source of Water: Ground and surface source. Selection of water sources with respect to quantity and quality considerations.		2
5	Do		2
6	Collection and Distribution of Water: Intake structure: reservoir, river and canal intakes. Methods of water distribution. Components and layout of water distribution system. Storage capacity of overhead reservoirs. Use of Hazen William formula for the design of water distributions systems.		2
7	Hardy Cross method. Use of microcomputers in design. Types of pipes and their use in water distribution. Pipe joints, service connection. Valves and fire hydrants. Construction of water distribution systems. Disinfections of old and new pipes. Water waste surveys and tracing of leakages. Pipes in series and parallel, heard losses, major losses minor losses	Assignment	2
8	Do	Quiz	2
9	Mid Term Exam		



**UNIVERSITY OF TECHNOLOGY
NOWSHERA**

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

10	Estimation of Wastewater Quantities: General considerations. Classification of sewage and sewer systems.		2
11	Combined and separate sewer systems. Estimation of sanitary sewage quantities. Estimation of storm flow: the rational method, runoff coefficients, Intensity-Duration Frequency relationships. Study waste water treatment plant		2
12	Do		2
13	Design of Sewer Systems: Layout of sewers. Sewer appurtenances: manholes, drop-manholes and storm water inlets. Design criteria for sanitary and storm sewers. Self-cleansing velocity. Use of Manning's Equation for the design of sanitary and storm sewers. Construction of sewers: types of beddings, joints and laying of sewers. Sewer testing. Sewer cleaning equipment.		2
14	Do		2
15	Design criteria for sanitary and storm sewers. Self-cleansing velocity. Use of Manning's Equation for the design of sanitary and storm sewers.		2
16	Construction of sewers: types of beddings, joints and laying of sewers. Sewer testing. Sewer cleaning equipment.	Assignment	2
17	Quiz	Quiz	2
18	Final Term Exam		
	Total		32



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	Due Week	CLO's to be Covered	Grading Weightage
<i>Assignment</i>	7	1	12.5 %
<i>Quiz</i>	8	1	
Mid Term Exam	9	1,2	25 %
<i>Assignment</i>	16	2	12.5 %
<i>Quiz</i>	17	2	
Final Term Exam	18	1,2	50 %
Total			100 %

Recommended Books:

1. Water Supply and Sewerage by E. W. Steel and L. J. McGhee. McGraw Hill, New York. (Latest Edition).
2. Water and Wastewater Technology by M. J. Hammer, John Wiley & Sons. New York, (Latest Edition).
3. Wastewater Engineering: Collection and Pumping of Wastewater by Metcalf and Eddy. McGraw-Hill, New York, (Latest Edition).



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-273L: Water Supply and Waste Water Management Lab

Course Code: CT-273L
Course Name: Water Supply and Waste Water Management
Credit Hours: 01
Contact Hours: 03
Prerequisite(s): Nill

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Choose accurate freshwater quality tests and related analyses.	Psychomotor	1	PLO-2
2	Manipulate precise measurements for evaluations of wastewater characteristics.	Psychomotor	4	PLO-7
3	Adopt required protocols in the laboratory environment.	Affective	3	PLO-8

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)		7	Environment and Sustainability (SA7)	✓
2	Problem Analysis (SA2)	✓	8	Ethics (SA8)	✓
3	Design/Development of Solutions (SA3)		9	Individual and Teamwork (SA9)	
4	Investigation (SA4)		10	Communication (SA10)	
5	Modern Tool Usage (SA5)		11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Practical:

1. Forecasting population of various cities using different methods.
2. Detailed study of different types of valves.
3. Detailed study of different pipe material and joints for water supply and sewerage.
3. Design of a transmission main.
4. Design of water distribution system for a housing scheme.
5. Design of a sanitary sewer system.
6. Design of storm sewer system.
7. Preparation of drawings for different bedding of sewers.
8. Preparation of working drawings for manholes, drop manholes and storm water inlets.
9. To determine the Bio-chemical Oxygen Demand of waste water sample.
10. To determine the amount of suspended solids in drinking water and waste water samples by photometric method.
11. Determination of volatile suspended solids (MLVSS) in waste water samples by gravimetric method.
12. To determine the turbidity of continuous flow by Low Range Turbid meter.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CM-213: Environmental Management

Course Code:	CM-213
Course Name:	Environmental Management
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

1. Analyze an industrial activity and identify the environmental problems.
2. Plan and evaluate strategies to control, reduce and monitor pollution.
3. Select the most appropriate technique to purify and/or control the emission of pollutants.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	To Discuss various techniques and methods of waste water management	Cognitive	2	1
2	To Examine sources and types of Pollutions along with mitigation measures	Cognitive	4	7

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7) ✓
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1	Introduction: Introduction to solid waste, classification of solid waste. Collection methods, transfer and transportation of solid waste, type of equipment, recycling, reuse and disposal of solid waste, BOD and COD.		2
2	Collection methods, transfer and transportation of solid waste, type of equipment, recycling, reuse and disposal of solid waste, BOD and COD		2
3	Do		2
4	Source of Water: Ground and surface source. Selection of water sources with respect to quantity and quality considerations.		2
5	Do		2
6	Sewage treatment and disposal: Primary, secondary treatment		2
7	Sewage treatment and disposal: tertiary treatment	Assignment	2
8	Do	Quiz	2
9	Mid Term Exam		
10	Air pollution: Introduction to air pollution, sources of air pollution.		2
11	Air Pollution effects on environments, classification and control.		2
12	Introduction to EIA functions of Environmental Pollution Council, role of provincial EPAs, Environmental Protection Act, 1977, National Environmental Quality Standards.		2
13	Environmental Protection Act, 1977, National Environmental Quality Standards.		2
14	Introduction to noise pollution and its control		2
15	Health Effect from Noise pollutions and its mitigation measures		2
16	Environmental health and safety.	Assignment	2



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

17	Quiz	Quiz	2
18	Final Term Exam		
	Total		32

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	Due Week	CLO's to be Covered	Grading Weightage
<i>Assignment</i>	7	1	12.5 %
<i>Quiz</i>	8	1	
Mid Term Exam	9	1,2	25 %
<i>Assignment</i>	16	2	12.5 %
<i>Quiz</i>	17	2	
Final Term Exam	18	1,2	50 %
Total			100 %

Reference Books:

1. Introduction to Environmental Engineering by Peavy (McGraw-Hill)
2. Environmental Engineering by Mckenze (McGraw-Hill)
3. Environmental Profile of Pakistan by IUCN.
4. National Conservation Strategy by IUCN.
5. ILO laws regulations



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CM-213L: Environmental Management Lab

Course Code: CM-213L
Course Name: Environmental Management Lab
Credit Hours: 01
Contact Hours: 03
Prerequisite(s): Nil

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Proceed with environmental audits and assessments effectively.	Psychomotor	2	PLO-2
2	Assemble environmental sampling and analysis accurately.	Psychomotor	4	PLO-2
3	Adopt required protocols in the laboratory environment.	Affective	3	PLO-8

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)		7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)	✓	8	Ethics (SA8)	✓
3	Design/Development of Solutions (SA3)		9	Individual and Teamwork (SA9)	
4	Investigation (SA4)		10	Communication (SA10)	
5	Modern Tool Usage (SA5)		11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Practical:

1. To determine the Bio-Chemical Oxygen Demand of waste water sample.
2. To determine the amount of suspended solids in drinking water and waste water sample by photometric method.
3. To determine the amount of settle able solids in waste sample.
4. To determine the turbidity of continuous flow by Low Range Turbid meter.
5. To determine the amount of volatile suspended solids (MLVSS) in waste water sample by gravimetric method.
6. Determination of Oil and Grease by Partition – Gravimetric Method in wastewater
7. Determination of the impact of discharges on the surface water (river, canal etc)
8. Composition of solid waste (percentage)
9. Energy Value.
10. Moisture content.
11. Nox and Sox by hand meters.
12. Carbon monoxide by hand meters.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of Internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-284: Theory of Structures

Course Code:	CT-284
Course Name:	Theory of Structures
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

1. To develop an understanding of the behavior of determinate structures with reference to beams and frames.
2. To provide the concept of statically indeterminate structures illustrating their application to structures like beams, trusses, and rigid frames.

Course Learning Outcomes (CLOs) and their Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Apply the knowledge of the basic concepts of structural analysis	Cognitive	3	1
2	Analyze the determinate structures and trusses.	Cognitive	4	2

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2) ✓	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Credit Hours
1	Introduction to static stability and determinacy of structures.		2
2	Common types of trusses, analysis of trusses by method of joints.		2
3			2
4		Assignment-1	2
5	Analysis of frames		2
6	Shear force and bending moment diagrams for statically determinate beams and frames under different loading	Quiz-1	2
7			2
8			2
9	Mid Term Exam		
10	Concept of influence lines, influence line diagrams for statically determinate beams and its application		2
11			2
12	Finding Maximum shear force and bending moment for different conditions of moving loads.		2
13		Assignment-2	2
14	Problems of beams by Moment distribution method.		2
15			2
16	Finding Rotation and deflection of beams by different methods.	Quiz-2	2
17			2
18	Final Term Exam		
Total			32



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
Assignment-1	1	12.5 %
Quiz-1	1	
Mid Term Exam	1,2	25 %
Assignment-2	2	12.5 %
Quiz-2	2	
Final Term Exam	1,2	50 %
Total		100%

Reference Book(s):


1. Structural Analysis by R.C.Hibbler. Prentice Hall. 6th Edition.
2. Theory of Structures by J. C. McCormac. Harper & Colins Publishers
3. Statically Indeterminate Structures by C. K. Wang, McGraw-Hill (Latest Edition).



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-284L: Theory of Structures Lab

Course Code:	CT-284L
Course Name:	Theory of Structures Lab
Credit Hours:	02
Contact Hours:	06
Prerequisite(s):	Nil

Course Learning Outcomes (CLOs) and their Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Identify systematic analysis procedures for static and moving loads.	Psychomotor	1	PLO-1
2	Participate willingly and contribute towards the achievement of the given tasks.	Affective	2	PLO-8

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8) ✓
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)

List of Practicals:

Practicals will be based on design class.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of Internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UoT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CH-223: Technical Report Writing

Course Code:	CH-223
Course Name:	Technical Report Writing
Credit Hours:	03
Contact Hours:	03
Pre-Requisite:	Nil

Objectives:

- To explain different types of technical reports.
- To demonstrate technical report writing skills and effectively use them for personal, academic and research purposes.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Explain different types of technical report wrings	Cognitive	2	10
2	Apply the basic knowledge of technical report writing for academic and in professional life.	Cognitive	3	11

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)	7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)	8	Ethics (SA8)	
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)	
4	Investigation (SA4)	10	Communication (SA10)	✓
5	Modern Tool Usage (SA5)	11	Project Management (SA11)	✓
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)	



**UNIVERSITY OF TECHNOLOGY
NOWSHERA**
(SHUHADA-E-APS, UOT)
DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1.	Introduction to OBE System, PLOs, and CLOs. Historical evolution		3
2.	Technical report writing introduction, its importance,		3
3.	Essay writing techniques and various strategies		3
4.	Essay writing skills, essentials for an essay writing		3
5.	Types of essays in detail with examples.	Assignment-1	3
6.	Research writing skills, basics, steps, and improvements		3
7.	Research writing basics, errors, common mistakes, misconceptions	Quiz-1	3
8.	How to write a research paper		
9.	Mid Term Exam		
10.	Technical Report Writing, Progress report writing		3
11.	Technical documents creation, professional writing skills		3
12.	Document review, documents creation online and offline tools		3
13.	Technical communication basics, editing, visual adds, the elements of formal reports.	Assignment-2	3
14.	Technical writing skills, feasibility report, recommendation report and its planning		3
15.	Designing documents, create correct documents		3
16.	Create and present professional writing and presentations, The use of PowerPoint.	Quiz-2	3
17.	Research proposal, effective writing, research paper steps and tools for it.		3
18.	Final Term Exam		
Total			48

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of Internet	Final comprehensive examination
Homework assignments	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	1	12.5 %
<i>Quiz-1</i>	1	
Mid Term Exam	1,2	25 %
<i>Assignment-2</i>	2	12.5 %
<i>Quiz-2</i>	2	
Final Term Exam	1,2	50 %
Total		100 %

Reference books:


1. "Technical Report Writing Today" by Daniel Riordan, 10th Edition
2. "Technical Writing and Professional Communication", Leslie Olsen and Thomas Huckin, 2nd Edition



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-313: Hydrology

Course Code: CT-313
Course Name: Hydrology
Credit Hours: 02
Contact Hours: 02
Pre-Requisite: Nil

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Explain different components of a hydrological cycle.	Cognitive	2	1
2	Apply principles of hydrograph and routing to estimate floods and water level respectively.	Cognitive	3	4

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)
4	Investigation (SA4) ✓	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1.	Introduction: Hydrology, hydrological cycle and the hydrological equation, practical uses of hydrology, importance of hydrology.		2
2.	Meteorology: The atmosphere and its composition, relative humidity, dew point and their measurement devices, Saturation deficit, Solar radiations as a source of heat, adiabatic changes and the laps rate, air temperature, seasonal and diurnal variation of air temperature, The general circulation of wind system, the monsoon and western disturbances, Measurement of air temperature, relative humidity, radiation, sunshine and atmospheric pressure.		2
3.	Do		2
4.	Precipitation: Type of precipitation, factors necessary for the formation of precipitation, measurement of precipitation, interpretation of precipitation data.		2
5.	Do	Assignment-1	2
6.	Evaporation and Transpiration: Factors affecting evaporation, measurement of evaporation, evapo-transpiration.		2
7.	Do	Quiz-1	2
8.	Stream flow: Water stage and its measurement, selection of site for stage record, selection of control and metering section, methods of measurement of stream flow, interpretation of stream flow data.		2
9.	Mid Term Exam		
10.	Runoff: Factors affecting runoff, estimating the volume of storm runoff.		2
11.	Do		2
12.	Hydrograph: Characteristics of hydrograph, components of hydrograph, hydrograph separation, estimating the volume of direct runoff, introduction to unit hydrograph concept, S-curve.		2
13.	Do	Assignment-2	2



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

14.	Floods and their estimates: Introduction to floods, causes of floods, methods for the estimation of floods, flood estimation from past flood marks, Rational formula, empirical formulae, using unit hydrograph method and flood frequency analysis.		2
15.	Do		2
16.	Ground Water Flow: Introduction, sources and discharge of ground water. Water table and artesian aquifer. The Thiem and Theis formula and its application to aquifer tests.	Quiz-2	2
17.	Do		2
18.	Final Term Exam		
Total			32

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	1	12.5 %
<i>Quiz-1</i>	2	
Mid Term Exam	1, 2	25 %
<i>Assignment-2</i>	1	12.5 %
<i>Quiz-2</i>	2	
Final Term Exam	1, 2	50 %
Total		100 %

Reference Book(s)


- Hydrology for Engineers by Linsley, Kohler and Paulhus. McGraw- Hill, New York, 1982 (Latest Edition).
- Handbook of Applied Hydrology by Chow, McGraw Hill, New York (Latest Edition).
- Introduction to Hydrology by Viessman, Lewis and Knapp. Harper and Row, New York (Latest Edition).



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-313L: Hydrology Lab

Course Code:	CT-313L
Course Name:	Hydrology Lab
Credit Hours:	01
Contact Hours:	03
Pre-Requisite:	Nil

Course Learning Outcomes (CLOs) and Mapping:

After successful completion of this course, the students will be able to:

S/N	CLOs	Domain	Taxonomy Level	PLO
3.	Demonstrate experiments related to various hydrological parameters.	Psychomotor	4	PLO-1
4.	Adopt required protocols in laboratory environment.	Affective	3	PLO-8

Program Learning Outcomes (PLOs) Mapping:

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)	✓	7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)		8	Ethics (SA8)	✓
3	Design/Development of Solutions (SA3)		9	Individual and Teamwork (SA9)	
4	Investigation (SA4)		10	Communication (SA10)	
5	Modern Tool Usage (SA5)		11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Experiments:

1. Determination of velocity and discharge using current meter.
2. Determination of velocity and discharge using floats.
3. Study of the barometer.
4. Study of the rainfall gauge.
5. Measurement of wind velocity.
6. Measurement of humidity.
7. Measurement of atmospheric temperature.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-323: Reinforced Concrete Structures

Course Code:	CT-323
Course Name:	Reinforced Concrete Structures
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

- To develop an understanding of the behavior of reinforced concrete members.
- To develop an ability of design and preparing working drawings of concrete structures.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Describe the basics and behavior of reinforced concrete.	Cognitive	2	1
2	Design various structural reinforced concrete elements and formulate structural drawings of design details.	Cognitive	6	3

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3) ✓	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



**UNIVERSITY OF TECHNOLOGY
NOWSHERA**
(SHUHADA-E-APS, UOT)
DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1	Introduction to reinforced concrete, basic concepts of reinforced concrete, basic concepts of working stress method and ultimate strength method.		2
2	Introduction to design codes, different types of loadings and design requirements for various structural members.		2
3	Analysis and design of prismatic singly reinforced and doubly reinforced beams for flexural strength.		2
4	Analysis and design of T-beams for flexural strength.		2
5	Analysis and design of beams for shear, detailing of beams reinforcement.	Quiz-1	2
6	Types of slabs. Analysis and design of one-way slab.	Assignment-1	2
7	Analysis of two-way slabs with general discussion of other slab systems.		2
8	Drafting of slabs.		2
9	Mid Term Exam		
10	Types of columns, Analysis of section in pre compression.		2
11	Analysis and design of short columns under pure compression and with eccentric loading.	Quiz-2	2
12	Types of footing. Analysis and design of isolated and wall footing.		2
13	Design of staircase of different types spanning both horizontally and vertically.		2
14	Joints. Introduction to beam column joints	Assignment-2	2
15	Detailing of structural members. Details of bar Bending and preparation of schedules.		2
16	Preparation of working drawings of structural elements.		2
17	Analysis and design of multi-story building using ETABS software.		2
18	Final Term Exam		
	Total		32

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	1	12.5 %
<i>Quiz-1</i>	2	
Mid Term Exam	1, 2	25 %
<i>Assignment-2</i>	2	12.5 %
<i>Quiz-2</i>	2	
Final Term Exam	2	50 %
Total		100 %

Reference Book(s)

1. Design of Concrete Structures by H. Nilson, McGraw- Hill.
2. Reinforced Concrete – Design & Behavior by C. K. Wang & Salmon.
3. Reinforced Concrete by J-Faber and F. Meed; Chapman & Hall.
4. Reinforced Concrete design by Keneth Leet (Latest edition).



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY



University of Technology, Nowshera (UoT)

Department of Civil Engineering Technology

CT-323L: Reinforced Concrete Structures Lab

Course Code:	CT-323L
Course Name:	Reinforced Concrete Structures Lab
Credit Hours:	01
Contact Hours:	03
Prerequisite(s):	Nil

Objectives:

- To develop an understanding of the behavior of reinforced concrete members.
- To develop an ability of design and preparing working drawings of concrete structures.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Identify systematic design procedures for various structural members/system.	Psychomotor	1	PLO-1
2	Organizes the design details for reinforced concrete members and draft it as per as per ACI Codes.	Psychomotor	5	PLO-3

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3) ✓	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Practical:

1. Practicing problem of slabs, beams, columns
2. Introduction to structural drawings
3. Preparation of preliminary structural scheme for the structural design of a building from given architectural drawings.
4. Analysis and design of a building using any structural design software.
5. Drafting of structural design details

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-333: Construction & Hydraulic Machinery

Course Code:	CT-333
Course Name:	Construction & Hydraulic Machinery
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Identify different construction machinery used in the construction industry.	Cognitive	1	1
2	Discuss the application of various machinery used in the field of construction.	Cognitive	2	5

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5) ✓	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Weeks	Topics	Assessment	Credit Hours
1.	Brief Discussion on Use, Productivity and Economics of Equipment for Heavy Construction Operations		02
2.	including; Tractors, Dozers, Scrapers, Motor Graders, Power Shovels, Off-Road Haulers, Front-End Loaders, Backhoes, Draglines, Trenchers, Rock Drilling Equipment, Crushers, Conveyors.	Assignment 1	02
3.	Do		02
4.	Impulse Turbine: Introduction, types of Impulse turbines,		02
5.	Pelton Wheel and Turgo Turbine; their main components and functions, work done by the Pelton wheel, specific speed.	Quiz 1	
6.	DO		02
7.	Reaction Turbine: Introduction, types, Francis reaction turbine and Kaplan turbine,		02
8.	Main components and their functions. Cavitation and Pitting. Governing of turbines. Similarity laws and factors for turbo machines.		02
9.	Mid term		
10.	Pumps: Introduction and types of pumps.		02
11.	Do	Assignment 2	02
12.	Centrifugal pump: Classification, main components and their functions.		02
13.	Do		02
14.	Work done by the Centrifugal Pump. Maximum suction lift of the pump, Specific Speed, Shut-off head and Normal discharge of the pump.		02
15.	Reciprocating pump: Introduction, types, single and double acting pinups,	Quiz 2	02
16.	Indicator diagram, acceleration head, maximum suction head and use of air vessels.		02
17.	Do		02



**UNIVERSITY OF TECHNOLOGY
NOWSHERA**

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

18.	Final term exam	
------------	------------------------	--

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	1	12.5 %
<i>Quiz-1</i>	1	
Mid Term Exam	1	25 %
<i>Assignment-2</i>	2	12.5 %
<i>Quiz-2</i>	2	
Final Term Exam	1,2	50 %
Total		100 %

Reference Book(s):

1. Modern Construction & Ground Engineering Equipment & Methods, by Harris, F., 1994. Also, Instructor's Notes and Handouts.
1. Construction Planning, Equipment, and Methods, by Peurifoy, R., and Schexnayder, C., 2002.



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-333L: Construction & Hydraulic Machinery Lab

Course Code: CT-333L
Course Name: Construction & Hydraulic Machinery Lab
Credit Hours: 01
Contact Hours: 03
Prerequisite(s): Nil

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Show maintenance work and proceed troubleshooting tasks on hydraulic machinery.	Psychomotor	2	PLO-3
2	Measure the efficiency and productivity of construction machinery operations, considering different factors.	Psychomotor	4	PLO-4

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1)	✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)		8	Ethics (SA8)
3	Design/Development of Solutions (SA3)		9	Individual and Team Work (SA9)
4	Investigation (SA4)		10	Communication (SA10)
5	Modern Tool Usage (SA5)	✓	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Practicals:

1. A general study of construction machinery.
2. Study of Pelton wheel turbine.
3. Study of Turgo Turbine.
4. Study of Francis reaction turbine.
5. Study of Kaplan turbine.
6. Calculation of power generation of Francis reaction turbine.
7. General study of reciprocating pump.
8. Study of Centrifugal Pumps.
9. Calculation of normal discharge of Pumps.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-363: Engineering Geology

Course Code:	CT-363
Course Name:	Engineering Geology
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

- To develop an understanding of the basic knowledge of geology and geological processes
- To understand the role of geology in the Civil Engineering Structures

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Define the basic knowledge of geology and geological process.	Cognitive	1	1
2	Discuss the role of geology in the Civil Engineering Structures and other geological phenomenon such as Landslides, Glaciers, Volcanoes etc.	Cognitive	2	1

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1)	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1	Introduction to Geology & Importance of Geology in civil engineering projects.		2
2	Types of rocks i.e Sedimentary, igneous, and metamorphic rocks.		2
3	Volcanic activity		2
4	Internal structure of the Earth. Engineering and physical properties of rocks. Identification of common rock forming minerals.		2
5	Role of geology in selection of sites for dams, reservoirs, tunnels and other important civil engineering projects, such as highways, airfield, and bridges.		2
6	Mining subsidence due to alteration of fluid levels.		2
7	Methods of avoiding mine collapses.	Assignment-1	2
8	Introduction to blasting, Geological survey for tunneling, lining of tunnels	Quiz-1	2
9	Mid Term Exam		
10	Brief introduction to local geology.		2
11	Introduction to structural Geology and plate tectonics, Land-sliding and its causes		2
12	Introduction to Hydrogeology: wells, springs.		2
13	Introduction to Hydrogeology: streams and ground water conditions.		2
14	Causes of glaciers and their types		2
15	Introduction to Earthquake Engineering , Earthquake magnitude & intensity, importance of ground conditions,		2
16	Nature of seismic forces , Factors affecting the severity of seismic forces, Retrofitting its objectives, approaches & Techniques	Assignment-2	2
17	Review of the course	Quiz-2	2



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

18	Final Term Exam		
	Total		32

Teaching and Learning Activities (TLAS):

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	1	12.5 %
<i>Quiz-1</i>	1	
Mid Term Exam	1, 2	25 %
<i>Assignment-2</i>	2	12.5 %
<i>Quiz-2</i>	2	
Final Term Exam	1,2	50 %
Total		100 %

Reference Book(s):


1. A Geology for Engineers, Blyth, F G H 7th Arnold International student edition.
2. Principles of Engineering Geology and Geotechnics, Krynine, DP 1st Edition McGraw-Hill International edition.
3. Geology and Tectonics of Pakistan by Kazmi and Jan (Latest Edition)
4. Faults and engineering geology by Louderback, G.D.



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-363L: Engineering Geology Lab

Course Code:	CT-363L
Course Name:	Engineering Geology Lab
Credit Hours:	01
Contact Hours:	03
Prerequisite(s):	Nil

Objectives:

- To develop an understanding of the basic knowledge of geology and geological processes
- To understand the role of geology in the Civil Engineering Structures

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Practice physical identification techniques to accurately identify minerals based on their properties.	Psychomotor	3	PLO-1
2	Utilize data sheets to document mineral identification results effectively.	Psychomotor	2	PLO-1

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Practical:

1. To study physical properties of minerals.
2. To identify minerals on the basis of physical properties.
3. Prepare data sheet for mineral identification.
4. To study rock types and their classification.
5. To differentiate between different types of rocks.
6. To identify and classify igneous, plutonic and volcanic rocks.
7. Prepare data sheet for identification of igneous rocks.
8. To Study sedimentary rocks.
9. To differentiate between different types of sedimentary rocks.
10. Prepare data sheet for identification of sedimentary rocks.
11. To study Metamorphic rocks.
12. To identify and classify metamorphic rocks.
13. Prepare data sheet for identification of metamorphic rocks.
14. Study and interpretation of a geological map
15. To draw a geological cross section from a geological map.
16. Course learning outcomes will be achieved through a combination of the following teaching strategies.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CM-312: Project Management

Course Code:	CM-312
Course Name:	Project Management
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Design a solution for a real-world problem using modern tools.	Cognitive	1	1
2	Discuss outcome of project work in methodical way to derive valid conclusion.	Cognitive	3	11

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11) ✓
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Weeks	Topics	Assessment	Contact Hours
	Introduction		
1.	Introduction to management: History of management, management functions.		02
2.	Organizational structure, types of organizations.	Assignment 1	02
3.	Organizational hierarchy, properties of narrow and wide organizations.		02
4.	Production Processes: Types of production, scale of production, selection of technology, input requirements.		02
5.	Capacity utilization, productivity basic concepts, classification,	Quiz 1	02
6.	Class Presentations		02
7.	Quantitative measurement, productivity improvement.		02
8.	Class Presentations		02
9.	Mid-term exam		
10.	Project Management: Properties of projects, project life cycle.		02
11.	Project network analysis, resource requirements.	Assignment 2	02
12.	Monitoring and control, computer tools.		02
13.	Inventory Management: Inventory replenishment, economic lot size, re-order point, safety stock level, JIT, computer tools.		02
14.			02
15.	Human Resource Management: Management styles	Quiz 2	02
16.	Performance appraisal, motivation, and incentives.		02
17.	Psychological types, recruitment and training, job evaluation.		02
18.	Final term exam		

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	1	12.5 %
<i>Quiz-1</i>	2	
Mid Term Exam	1, 2	25 %
<i>Assignment-2</i>	1	12.5 %
<i>Quiz-2</i>	2	
Final Term Exam	1, 2	50 %
Total		100 %

Reference Book(s):


1. Babcock d. L. Managing engineering and Technology, Prentice Hall, UK.
2. Zuberi M. H. Industrial management, Rabbani Printing Press, Lahore.
3. Bateman T. S. and Snell S. A. Management: building competitive advantage. Times Mirror Higher Education Group, USA.
4. Spinner M. Elements of project management. Prentice Hall, UK.



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-373: Irrigation & Hydraulic Structures

Course Code:	CT-353
Course Name:	Irrigation & Hydraulic Structures
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Design Irrigation Channels by using different approaches.	Cognitive	5	3
2	Explain different hydraulic structures.	Cognitive	2	1

Program Learning Outcomes (PLOs) Mapping:

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3) ✓	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Weeks	Topics	Assessment	Credit Hours
1.	Irrigation: Definition and types of irrigation. Merits and demerits of irrigation. Indus basin irrigation system		02
2.	. Design of irrigation channels. Regime (Empirical) Methods for design of irrigation channels		02
3.	Explain different Methods of surface irrigation with neat sketches	Assignment 1	02
4.	Do		02
5.	Semi Empirical Approaches. Rational methods for design of irrigation channels. Comparison of various methods		
6.	Explain Merits and demerits of irrigation.	Quiz 1	02
7.	DO		02
8.	Canal Irrigation: Elementary concept about canal head works. Selection of their site and layout. Weirs and barrages. Various components and functions.		02
9.	Mid term		
10.	Dams: Introduction and types of Storage Dams. Forces on Dams.		02
11.	Do	Assignment 2	
12.	Design of Gravity Dams. Reservoir Engineering. Regulation of Storage Reservoirs.		02
13.	Do		02
14.	Water Logging and Drainage: Soil salinity, water logging their environmental impact & assessment.		02
15.	Define water logging explain causes of water logging.	Quiz 2	02
16.	Introduction to Drainage and Drainage system.		02
17.	Do		02
18.	Final term exam		



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Practical

1. Design of channels in alluvial soil.
2. Study of canal fall.
3. Study of outlet.
4. Study of a barrage on pervious foundation.
5. Determination of loss of total head in converging and diverging flow.
6. Measurement of velocity with pitot tube in a closed conduit.
7. To determine the discharge in orifice under varying head.
8. Study of Hydraulic Jump.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	1	12.5 %
<i>Quiz-1</i>	1	
Mid Term Exam	1	25 %
<i>Assignment-2</i>	2	12.5 %
<i>Quiz-2</i>	2	
Final Term Exam	1,2	50 %
Total		100 %

Reference Book(s):


1. Irrigation and Hydraulic Structures (Theory, Design and Practice by Dr. Iqbal Ali, Institute of Environmental Engineering & Research, NED University of Engineering & Technology, Karachi (Latest Edition).
2. Irrigation Canals by Iqtidar H. Siddiqi (Latest Edition).
3. Fundamentals of Irrigation Engineering by V. B. Piryani (Latest Edition).



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-373L: Irrigation & Hydraulic Structures Lab

Course Code:	CT-373L
Course Name:	Irrigation & Hydraulic Structures Lab
Credit Hours:	01
Contact Hours:	03
Prerequisite(s):	Nil

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Build efficient alluvial channels using hydraulic principles.	Psychomotor	4	PLO-3
2	Measure hydraulic parameters of different channels	Psychomotor	4	PLO-4
	Perform lab tasks.	Affective	2	PLO-5

Program Learning Outcomes (PLOs) Mapping:

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)	7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)	8	Ethics (SA8)	
3	Design/Development of Solutions (SA3)	✓	9	Individual and Teamwork (SA9)
4	Investigation (SA4)	✓	10	Communication (SA10)
5	Modern Tool Usage (SA5)	✓	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Practical

1. Design of channels in alluvial soil.
2. Study of canal fall.
3. Study of outlet.
4. Study of a barrage on pervious foundation.
5. Determination of loss of total head in converging and diverging flow.
6. Measurement of velocity with pitot tube in a closed conduit.
7. To determine the discharge in orifice under varying head.
8. Study of Hydraulic Jump.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY



University of Technology, Nowshera (UoT)

Department of Civil Engineering Technology

CT-383: Steel Structures

Course Code:	CT-383
Course Name:	Steel Structures
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Objectives:

1. To develop an understanding of the behavior and design of structural steel members and connections using ASD (Allowable stress design) method.
2. To develop an understanding of the behavior and characteristics of structural steel systems.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Explain the different components of steel's structures.	Cognitive	2	1
2	Design different members of steel's structures.	Cognitive	5	3

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3) ✓	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Week	Topics	Assessment	Contact Hours
1	Steel properties, design loads and load factors		2
2	Types and shapes of structural steel members		2
3	Specifications and design codes, safety factors		2
4	Design and analysis of tension member		2
5	Design and analysis of tension member		2
6	Design of laterally supported and unsupported beams; deflection check		2
7	Design of laterally supported and unsupported beams; deflection check	Assignment-1	2
8	Review of the course	Quiz-1	2
9	Mid Term Exam		
10	Design and analysis of axially and eccentrically loaded short columns		2
11	Design and analysis of axially and eccentrically loaded long columns		2
12	Design and analysis of axially and eccentrically loaded long columns		2
13	Types of high strength bolts and rivets		2
14	Friction and bearing type connections		2
15	Continuous beam to beam and beam to column connection.		2
16	Introduction to LRFD method (load resistance factor design)	Assignment-2	2
17	Review of the course	Quiz-2	2
18	Final Term Exam		
	Total		32



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	1	12.5 %
<i>Quiz-1</i>	1	
Mid Term Exam	1	25 %
<i>Assignment-2</i>	2	12.5 %
<i>Quiz-2</i>	2	
Final Term Exam	1,2	50 %
Total		100 %

Reference Book(s):

1. LRFD Steel Design by William T. Segui; PWS Publishers. ISBN:053493353X. (Latest Edition)
2. Steel Structures by Z. A. Siddiqi, M. A. Chaudhry and M. Ashraf, Civil Engineering Series Publishers (Latest Edition).
3. RFD Steel Design Aids in SI Units by Z. A. Siddiqi, M. A. Chaudhry & M. Ashraf; Civil Engineering Series Publishers.
4. Stability design of steel frames by Chen, W.K. (Latest Edition)
5. Optimum design of steel structures by Farkas, J. and Jármai, K., 2 (Latest Edition)
6. Behaviour and design of steel structures by Trahair, N.S., Bradford, M.A., Nethercot, D.A. and Gardner, L.



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-383L: Steel Structures Lab

Course Code: CT-383L
Course Name: Steel Structures Lab
Credit Hours: 01
Contact Hours: 03
Prerequisite(s): Nil

Objectives:

3. To develop an understanding of the behavior and design of structural steel members and connections using ASD (Allowable stress design) method.
4. To develop an understanding of the behavior and characteristics of structural steel systems.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Select accurate measurements and alignments of steel structural elements.	Psychomotor	1	PLO-1
2	Organizes the design details for steel members/structures and draft it as per as per codes.	Psychomotor	5	PLO-3

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1)	✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)		8	Ethics (SA8)
3	Design/Development of Solutions (SA3)	✓	9	Individual and Team Work (SA9)
4	Investigation (SA4)		10	Communication (SA10)
5	Modern Tool Usage (SA5)		11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Practical:

1. Draw the layout of different types of Rivet connections.
2. Draw the neat sketch of staggered joints and show pitch, gauge and edge distance.
3. Draw the plan and elevation of Grillage foundation.
4. Draw the plan and elevation of slab base.
5. Draw the plan and elevation of Gusset base.
6. Draw the neat sketch of column made by channel section with necessary arrangement of lacing and battening.
7. Draw the neat sketch of column made by angle section with necessary arrangement of lacing and battening.

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.


Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-354: Foundation Engineering

Course Code:	CT-354
Course Name:	Foundation Engineering
Credit Hours:	02
Contact Hours:	02
Prerequisite(s):	Nil

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Apply the skills related to bearing capacity and settlement evaluation of soils.	Cognitive	3	1
2	Illustrate different types of foundations.	Cognitive	4	3

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome	S/N	Program Learning Outcome
1	Engineering Technology Knowledge (SA1) ✓	7	Environment and Sustainability (SA7)
2	Problem Analysis (SA2)	8	Ethics (SA8)
3	Design/Development of Solutions (SA3) ✓	9	Individual and Team Work (SA9)
4	Investigation (SA4)	10	Communication (SA10)
5	Modern Tool Usage (SA5)	11	Project Management (SA11)
6	The Engineering Technologist and Society (SA6)	12	Lifelong Learning (SA12)



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Course Contents:

Weeks	Topics	Assessment	Credit Hours
1.	Introduction to course, Definition, Purpose and types of foundations, General requirement of foundations, Selection of foundation type, Loads on foundation		02
2.	Definition and types of bearing capacities, Mode of shear failures, Methods of obtaining bearing capacity	Assignment 1	02
3.	Terzaghi's theory, Solved Examples on Terzaghi's theory, Effect of water table, Solved examples.		02
4.	Meyerhof's theories of bearing capacity, solved example,		02
5.	Footing with Concentric Loading, Footing with Eccentric Loadings, Cases of Eccentricities, Numerical Problem on Eccentricity	Quiz 1	
6.	Lateral Earth Pressure, Types of Earth Retaining Walls, Cases of Lateral Earth Pressure, Numerical Problems		02
7.	Lateral Earth Pressure Theories, Rankine's Theory, Numerical Problems		02
8.	Do		02
9.	Mid Term		
10.	Coulomb's Theory, Numerical Problems		02
11.	Consolidation & its types, Consolidation Test, Consolidation Parameters, Numerical Problems	Assignment 2	
12.	Settlement & its Types, Settlement Calculations, Numerical Problems		02
13.	Types of pile foundations, Methods of construction pile, Foundations, Methods of load capacity of piles, Types of hammers, Dynamic load formulas.		02
14.	Examples on dynamic load formulas, Static capacity of single bored/driven piles.		02
15.	Negative skin friction, Pile load test, Efficiency of pile groups of driven/bored piles in cohesion less/cohesive soil.	Quiz 2	02
16.	Group capacity of piles, settlement of piles		02
17.	Site Investigation		02
18.	Final term exam		



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Quizzes	Mid-term major examination
Classroom discussions	Instructor lead presentations
Use of internet	Final comprehensive examination
Homework assignments	

Assessment Plan:

Assessment Method	CLO's to be Covered	Grading Weightage
<i>Assignment-1</i>	1	12.5 %
<i>Quiz-1</i>	2	
Mid Term Exam	1, 2	25 %
<i>Assignment-2</i>	2	12.5 %
<i>Quiz-2</i>	2	
Final Term Exam	2	50 %
Total		100 %

Reference Book(s)

1. Principles of Geotechnical Engineering by Braja M. Das
2. Principles of Foundations Engineering by Braja M. Das
3. Soil Mechanics by RF Craig, 4th Edition
4. Foundation Analysis and Design (5th edition) by Joseph e. Bowles



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

	University of Technology, Nowshera (UoT)
	Department of Civil Engineering Technology
	CT-354L: Foundation Engineering Lab

Course Code:	CT-354L
Course Name:	Foundation Engineering Lab
Credit Hours:	02
Contact Hours:	06
Prerequisite(s):	Nil

Objectives:

- To develop an understanding of the behavior of reinforced concrete members.
- To develop an ability of design and preparing working drawings of concrete structures.

Course Learning Outcomes (CLOs) and its Mapping:

After successful completion of this course, the students will be able to:

S/N	CLO	Domain	Taxonomy Level	PLO
1	Conduct geotechnical experiments and analyzing the results effectively.	Psychomotor	4	PLO-1
2	Be aware of safe working environment by following established safety protocols during field and laboratory tests.	Affective	1	PLO-8

Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

S/N	Program Learning Outcome		S/N	Program Learning Outcome	
1	Engineering Technology Knowledge (SA1)	✓	7	Environment and Sustainability (SA7)	
2	Problem Analysis (SA2)		8	Ethics (SA8)	✓
3	Design/Development of Solutions (SA3)		9	Individual and Team Work (SA9)	
4	Investigation (SA4)		10	Communication (SA10)	
5	Modern Tool Usage (SA5)		11	Project Management (SA11)	
6	The Engineering Technologist and Society (SA6)		12	Lifelong Learning (SA12)	



UNIVERSITY OF TECHNOLOGY NOWSHERA

(SHUHADA-E-APS, UOT)

DEPARTMENT OF CIVIL TECHNOLOGY

List of Practical:

1. Standard Penetration Test
2. Plate Load Test
3. Pile Load Test
4. Unconfined Compression Test
5. Consolidation Test
6. Cone Penetration Test
7. Direct Shear Test
8. Vane Shear Test

Teaching and Learning Activities (TLAS):

Course learning outcomes will be achieved through a combination of the following teaching strategies.

Lab discussions	Lab demonstration
Lab tasks	Lab viva
Lab report	Use of internet