Name of Institute: **INDUS INSTITUTE OF TECHNOLOGY & ENGINEERING**
Name of Faculty: **Prof. Zankar Yadav**

Course code: ME0112
Course name: **Workshop Practice**
Pre-requisites: Basic Engineering Principles
Credit points: 02
Offered Semester: 1st

Course Coordinator (weeks 14 - 16)
Full Name: **Prof. Zankar Yadav**
Department with sitting location: Ground Floor, Mechanical Workshop, IITE
Telephone: 8511225519
Email: zankarvyadav.me@indusuni.ac.in
Consultation times: 09.00 AM – 11.00 AM (Working Saturdays),
04:15 PM _ 05:00 PM (Monday to Friday)

Students will be contacted throughout the Session via Mail with important information relating to this Course.

Course Objectives

By participating in and understanding all facets of this Course a student will:

1. Recognize the importance of Workshop in today's technology and its impacts on market competition.
2. Understand basic of various methodologies to manufacture components/structure.
3. Understand different tools and equipments used in mechanical workshop.
4. Analyze the engineering and economical aspects of workshop practices.

Course Outcomes (CO)

After learning the course, the students should be able to:
1. Prepare basic joints used in carpentry.
2. Prepare edges for better joint for fitting.
3. Prepare better joint for welding.
4. Prepare various shapes and objects by using Carpentry, Fitting, and Welding.

Course Outline

1 Introduction to Mechanical Workshop
Introduction, Safety rules in Mechanical workshop, Safety slogans, Tools and Equipment used for safety in Mechanical workshop.

2 Workshop Layout
Introduction, Types of layouts, Rules and regulations for Workshop layouts and Preparation of actual layout.
3 Fitting Shop
Introduction, Classification and characteristics of Engineering Materials, Tools and Equipment for Fitting shop, Different operations, preparation of job in Fitting shop.

4 Carpentry Shop
Introduction, Wooden Materials, Tools and Equipment for Carpentry shop, Different operations, preparation of job in Carpentry shop.

Method of delivery
Face to face lectures, self study material, PPT, Web Resources

Study time
4 hours/Week

CO-PO Mapping (PO: Program Outcomes)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	1	3	-	-	-	-	-	1	1
CO2	3	2	3	1	3	-	-	-	-	-	-	-
CO3	3	2	2	2	3	-	-	-	-	-	-	-

Blooms Taxonomyand Knowledge retention(For reference)
(Blooms taxonomy has been given for reference)

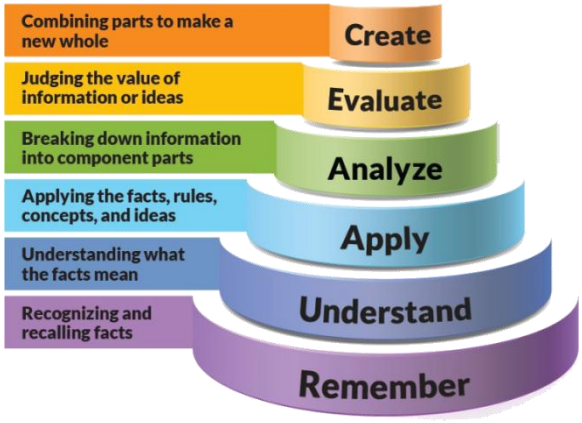


Figure 1: Blooms Taxonomy

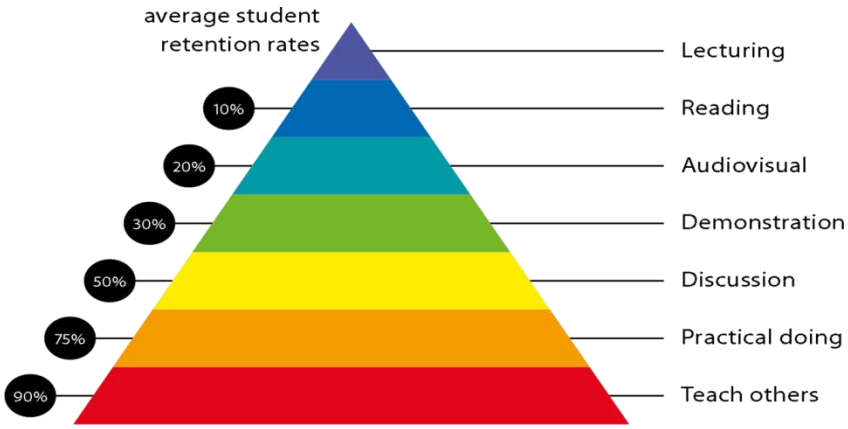


Figure 2: Knowledge retention

Graduate Qualities and Capabilities covered
(Qualities graduates harness crediting this Course)

General Graduate Qualities	Specific Department of Mechanical Engineering Graduate Capabilities
Informed Have a sound knowledge of an area of study or profession and understand its current issues, locally and internationally. Know how to apply this knowledge. Understand how an area of study has developed and how it relates to other areas.	**1 Professional knowledge, grounding & awareness**
Independent learners Engage with new ideas and ways of thinking and critically analyze issues. Seek to extend knowledge through ongoing research, enquiry and reflection. Find and evaluate information, using a variety of sources and technologies. Acknowledge the work and ideas of others.	**2 Information literacy, gathering & processing**
Problem solvers Take on challenges and opportunities. Apply creative, logical and critical thinking skills to respond effectively. Make and implement decisions. Be flexible, thorough, innovative and aim for high standards.	**4 Problem solving skills**
Effective communicators Articulate ideas and convey them effectively using a range of media. Work collaboratively and engage with people in different settings. Recognize how culture can shape communication.	**5 Written communication** **6 Oral communication** **7 Teamwork**
Responsible Understand how decisions can affect others and make ethically informed choices. Appreciate and respect diversity. Act with integrity as part of local, national, global and professional communities.	**10 Sustainability, societal & environmental impact**

Practical work:

1. To study about safety rules in Mechanical Workshop.
2. To study about Workshop layout and preparation of actual layout of Mechanical Workshop.
3. To study about Fitting shop and preparation of job.
4. To study about Carpentry shop and preparation of job.
5. To study about Tin Smithy shop and preparation of job.

Lecture/tutorial times

Attendance Requirements

The University norms states that it is the responsibility of students to attend all lectures, tutorials, seminars and practical work as stipulated in the course outline. Minimum attendance requirement as per university norms is compulsory for being eligible for semester examinations.

Details of referencing system to be used in written work

PPTs, Lecture Notes/E-book, Web-Resources.

Text books

1. Elements of Mechanical Engineering - Hajra Choudhury & others, Media Promoters 2010 .
2. The Elements of Workshop Technology - Volume I & II, S.K. Hajra choudhury, A.K. Hajra Choudhury, Nirjhar Roy, 11th edition 2001 others, Media Promoters and Publishers, Mumbai.

ASSESSMENT GUIDELINES

Your final course mark will be calculated from the following:

CIE Practical 60 Marks Bifurcation	
10 Marks	Attendance & Lab Participation
10 Marks	File work/ Journal write up – calculation etc. in lab. itself
10 Marks	Fitting job
10 Marks	Carpentry job
10 Marks	Tin smithy job
10 Marks	Question Answer

SUPPLEMENTARY ASSESSMENT

Students who receive an overall mark less than 40% in internalcomponent or less than 40% in the end semester will be considered for supplementary assessment in the respective components (i.e internal component or end semester) of semester concerned. Students must make themselves available during the supplementary examination period to take up the respective components (internal component or end semester) and need to obtain the required minimum 40% marks to clear the concerned components.

Practical Work Report/Laboratory Report:

A report on the practical work is due the subsequent week after completion of the class by each group.

Late Work

Late assignments will not be accepted without supporting documentation. Late submission of the reports will result in a deduction of -% of the maximum mark per calendar day

Format

All assignments must be presented in a neat, legible format with all information sources correctly referenced. **Assignment material handed in throughout the session that is not neat and legible will not be marked and will be returned to the student.**

Retention of Written Work

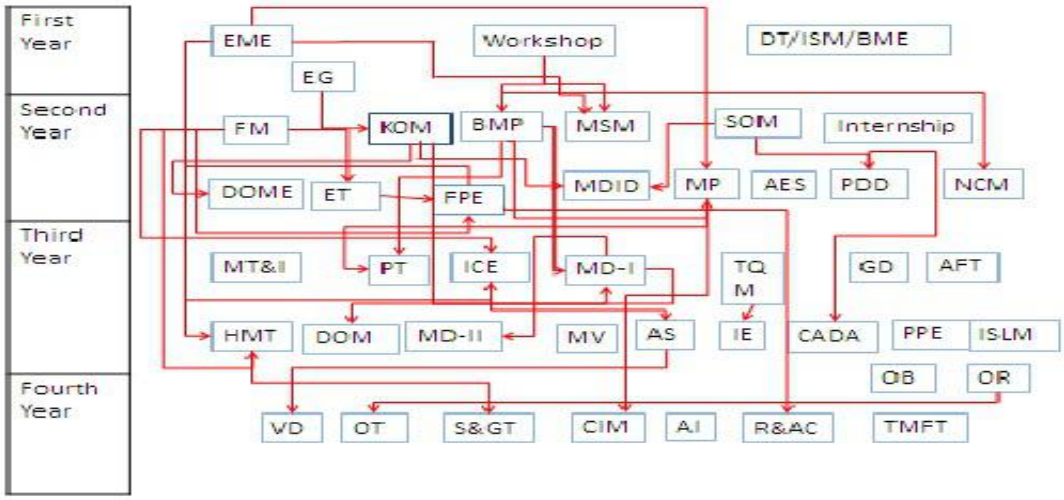
Written assessment work will be retained by the Course coordinator/lecturer for two weeks after marking to be collected by the students.

University and Faculty Policies

Students should make themselves aware of the University and/or Faculty Policies regarding plagiarism, special consideration, supplementary examinations and other educational issues and student matters.

Plagiarism - Plagiarism is not acceptable and may result in the imposition of severe penalties. Plagiarism is the use of another person's work, or idea, as if it is his or her own - if you have any doubts at all on what constitutes plagiarism, please consult your Course coordinator or lecturer. Plagiarism will be penalized severely.

Do not copy the work of other students.
Do not share your work with other students (except where required for a group activity or assessment)



Name of Institute: Indus Institute of Sciences, Humanities and Liberal Studies
Name of Faculty: Department of Languages (English)

Course code: EN0211
Course name: Business Communication and Presentation Skills
Pre-requisites: NA
Credit points: 03
Offered Semester: 02

Course Coordinator (weeks 12)

Full Name: Dr Mamta Pillai, Assistant Professor & Head, Department of Languages
Department with siting location: Computer Lab, Ground Floor, Main Building
Telephone: 9924241816

Email: mamtapillai.gd@indusuni.ac.in

Course Lecturer (weeks 12)

Full name: Ms. Pranjal Bhatt/ Ms. Foram Patel/Ms. Nidhi Singh
Department with siting location: Equinox Lab, Grd Floor (MB)
Telephone: 9429296329/9537384053/8160976525
Email:
pranjalbhatt.gd@indusuni.ac.in/forampatel.ishls@indusuni.ac.in/nidhisingh.ishls@indusuni.ac.in
Consultation times: 4 to 5PM from Monday to Friday

Students will be contacted throughout the Session via Mail with important information relating to this Course.

Course Objectives

By participating in and understanding all facets of this Course a student will:

1. To gain the knowledge of the various subjects with the distinctive, integrative skills and abilities such that students attain various skills to formulate, solve and analyze engineering problems and become quality graduate engineers.
2. To develop abilities of life-long learning, effective communication skills, individual & team work for having competence in multidisciplinary approach to relate engineering issues to broader social and human context.
3. To develop the understanding of ethics, professionalism, safety and sustainability that makes them leaders & contributors to the society.
4. To develop basic writing skills.
5. To utilize the technical skills necessary for reading and writing.
6. To be able to communication skills in both technical and professional contexts

Course Outcomes (CO):

CO 1: To enable student understanding of appropriate communication styles according to the social, business, professional and educational situations. [BT-2]

CO 2: To express, verbally and in written, analysis of topics related to engineering and other allied fields. [BT-2]

CO 3: To analyze a given situation and illustrate the situation through depiction in the written format using English Language Skills. [BT-3]

CO 4: To support ideas through logical development of arguments in the written form through the use of essays and letter writing. [BT-5]

CO 5: To prepare documents related to professional employability. [BT-6]

CO 6: To design visually appealing and theoretical sound presentations as a medium of corporate communication. [BT-6]

Course Outline

(Key in topics to be dealt)

1. Business Communication skills
2. Presentation Skills
3. Basic paragraph Development and maintaining coherence
4. Reading Skills

Method of delivery

1. Communicative Language Teaching (Learner Centric)
2. Face to face lectures
3. Task Based Language Learning
4. The Lexical Approach

Study time

03 Hours

CO-PO Mapping (PO: Program Outcomes)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	1	1	1	2	1	-	1	2	3	-	2
CO2	-	2	1	1	1	1	-	1	3	3	1	2
CO3	-	3	1	1	2	1	-	2	3	3	1	2

1-Lightly Mapped 2- Moderately Mapped 3- Highly Mapped

Blooms Taxonomy and Knowledge retention (For reference)

(Blooms taxonomy has been given for reference)

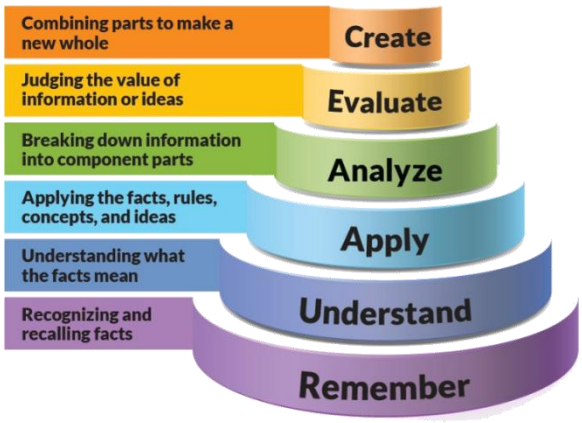


Figure 1: Blooms Taxonomy

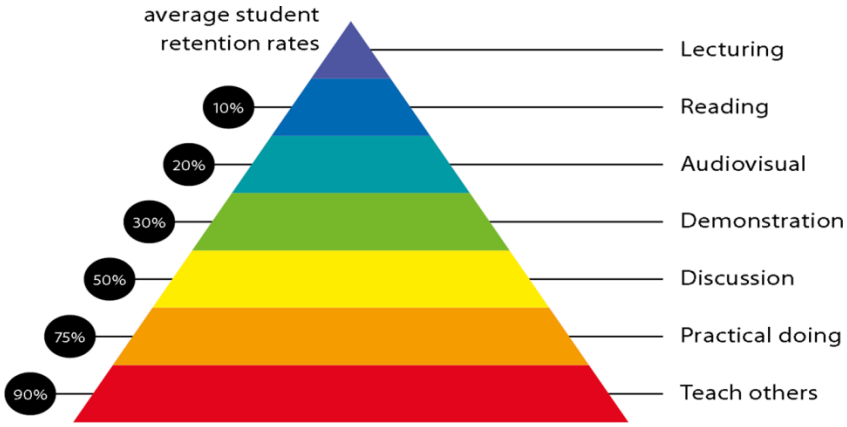


Figure 2: Knowledge retention

Graduate Qualities and Capabilities covered

(Qualities graduates harness crediting this Course)

General Graduate Qualities	Specific Department of _____Graduate Capabilities
Informed Have a sound knowledge of an area of study or profession and understand its current issues, locally and internationally. Know how to apply this knowledge. Understand how an area of study has developed and how it relates to other areas.	**1 Professional knowledge, grounding & awareness**
Independent learners Engage with new ideas and ways of thinking and critically analyze issues. Seek to extend knowledge through ongoing research, enquiry and reflection. Find and evaluate information, using a variety of sources and technologies.	**2 Information literacy, gathering & processing**

Acknowledge the work and ideas of others.	
Problem solvers Take on challenges and opportunities. Apply creative, logical and critical thinking skills to respond effectively. Make and implement decisions. Be flexible, thorough, innovative and aim for high standards.	**4 Problem solving skills**
Effective communicators Articulate ideas and convey them effectively using a range of media. Work collaboratively and engage with people in different settings. Recognize how culture can shape communication.	**5 Written communication** **6 Oral communication** **7 Teamwork**
Responsible Understand how decisions can affect others and make ethically informed choices. Appreciate and respect diversity. Act with integrity as part of local, national, global and professional communities.	**10 Sustainability, societal & environmental impact**

Practical work: NIL

(Mention what practical work this Course involves)

Lecture/tutorial times

(Give lecture times in the format below)

(1Hour theory and 2Hours practical per week) As per the Master Time-Table of FY B. Tech Year -2021

Attendance Requirements

The University norms states that it is the responsibility of students to attend all lectures, tutorials, seminars and practical work as stipulated in the Course outline. Minimum attendance requirement as per university norms is compulsory for being eligible for mid and end semester examinations.

Details of referencing system to be used in written work

NIL

Text books

NIL

Additional Materials

- Fred Luthans, Organizational Behaviour, McGraw Hill
- Lesikar and petit, Report writing for Business
- M. Ashraf Rizvi, Effective Technical Communication, McGraw Hill
- Wallace and masters, Personal Development for Life and Work, Thomson Learning
- Hartman Lemay, Presentation Success, Thomson Learning
- Malcolm Goodale, Professional Presentations
- Farhathullah, T. M. Communication skills for Technical Students
- Michael Muckian, John Woods, The Business letters Handbook
- Herta A. Murphy, Effective Business Communication
- Lehman, Dufrene, Sinha BCOM, Cengage Learning

ASSESSMENT GUIDELINES

Your final course mark will be calculated from the following:

Internal Evaluation Criteria:	
Mid Semester Exam(MSE)	40 marks
Attendance	05 (80%)
Simulation Tasks	15 Marks
External Evaluation Criteria:	
End Semester Exam(ESE)	40 marks

SUPPLEMENTARY ASSESSMENT

Students who receive an overall mark less than 40% in mid semester or end semester will be considered for supplementary assessment in the respective components (i.e mid semester or end semester) of semester concerned. Students must make themselves available during the supplementary examination period to take up the respective components (mid semester or end semester) and need to obtain the required minimum 40% marks to clear the concerned components.

Practical Work Report/Laboratory Report:

A report on the practical work is due the subsequent week after completion of the class by each group.

Late Work

Late assignments will not be accepted without supporting documentation. Late submission of the reports will result in a deduction of -% of the maximum mark per calendar day

Format

All assignments must be presented in a neat, legible format with all information sources correctly referenced. Assignment material handed in throughout the session that is not neat and legible will not be marked and will be returned to the student.

Retention of Written Work

Written assessment work will be retained by the Course coordinator/lecturer for two weeks after marking to be collected by the students.

University and Faculty Policies

Students should make themselves aware of the University and/or Faculty Policies regarding plagiarism, special consideration, supplementary examinations and other educational issues and student matters.

Plagiarism - Plagiarism is not acceptable and may result in the imposition of severe penalties. Plagiarism is the use of another person's work, or idea, as if it is his or her own - if you have any doubts at all on what constitutes plagiarism, please consult your Course coordinator or lecturer. Plagiarism will be penalized severely.

Do not copy the work of other students.
Do not share your work with other students (except where required for a group activity or assessment)

.

Course schedule (subject to change)

(Mention quiz, assignment submission, breaks etc as well in the table under the Teaching Learning Activity Column)

	Week #	Topic & contents	CO Addressed	Teaching Learning Activity (TLA)
	Weeks 1	Introduction & Communicative Activity	1	Discussion
	Weeks 2	Presentation Skills	3	Lecture
	Week 3	*Business Communication*		*Lecture*
	Week 4	Organizational Behavior	2	Discussion
	Week 5	Developing Paragraph	2	Writing Pair Task
	Week 6	*Understanding Topic sentence, Unity and Coherence*	*1*	*Handouts*
	Week 7	Writing Letters	1	Writing Exercises
	Week 8	Writing Emails	1	Writing Exercises
	Week 9	Contrastive and Comparative Essays	*1*	Writing Exercises
	Week 10	Presentation Seminar	2	Group Activity
	Week 11	Presentation Seminar	2	Group Activity
	Week 12	Declamation	2	Public Speaking

Subject: Business Communication & Presentation Skills								
Program: B.Tech. All Branches				Subject Code: EN0211			Semester: II	
Teaching Scheme				Examination Evaluation Scheme				
Lecture	Tutorial	Practical	Credits	University Theory Examination	University Practical Examination	Continuous Internal Evaluation (CIE)- Theory	Continuous Internal Evaluation (CIE)- Practical	Total
1	2	0	3	40	0	60	0	100

Course Objectives:

- To orient students about the varied uses of business communication.
- Under the importance of personality and its reflection in communication.
- Train students to develop business correspondence in writing and presentation skills.

COURSE CONTENT

Unit 1: Business Communication

- Business Communication- Importance
- Information Age and Communication/Social Media
- Organizational Communication for Engineers
- Common Barriers in Professional Communication/Role Play
- Organizational Etiquettes

Unit 2: Presentation Skills

- Planning, Preparing and Practice
- Audience Interaction
- Importance of AV Aids
- Best Presentation Videos
- Group Presentations/Pair Presentations/Teacher Review
- Group Presentations/Pair Presentations/ Peer Review

Unit 3: Writing Skills

- Mind-mapping and Planning
- Paragraph Development with 7 c's
- Picture Elicitation

- Contrastive and Comparative Essays
- Completing a Story and Describing Situations

Unit 4: Writing Skills II

- Composing Drafts
- Letters / Good, Bad & Neutral Messages
- Emails/ Sample Analysis
- Creating a Blog

Reference Books:

- Fred Luthans, Organizational Behaviour, McGraw Hill
- Lesikar and petit, Report writing for Business
- M. Ashraf Rizvi, Effective Technical Communication, McGraw Hill
- Wallace and masters, Personal Development for Life and Work, Thomson Learning
- Hartman Lemay, Presentation Success, Thomson Learning
- Malcolm Goodale, Professional Presentations
- Farhathullah, T. M. Communication skills for Technical Students
- Michael Muckian, John Woods, The Business letters Handbook
- Herta A. Murphy, Effective Business Communication
- Lehman, Dufrene, Sinha BCOM, Cengage Learning

Web resources/ MOOCs:

- Business Conversation Rule 1 :https://www.youtube.com/watch?v=wB8mr4iViy0
- Business English Conversations Rule 2: https://www.youtube.com/watch?v=wB8mr4iViy0
- Business English Conversations 3: https://www.youtube.com/watch?v=wB8mr4iViy0
- Business English Conversations Rule 4: https://www.youtube.com/watch?v=wB8mr4iViy0
- Business English Conversations Rule 5: https://www.youtube.com/watch?v=wB8mr4iViy0
- English Presentation Video: https://www.youtube.com/watch?v=wB8mr4iViy0
- Powerful Presentation Skills: Body Language: https://www.youtube.com/watch?v=wB8mr4iViy0
- Make Body Language Your Superpower: https://www.youtube.com/watch?v=wB8mr4iViy0
- Make a Presentation Like Steve Jobs: https://www.youtube.com/watch?v=wB8mr4iViy0

Name of Institute: Indus Institute of Sciences, Humanities and Liberal Studies (IISHLS)
Name of Faculty: Dr. Manisha Vithalpura

Course code: PH0011
Course name: Engineering Physics
Pre-requisites: 12th Std Physics (Calculus, Vector analysis, Introduction of Electromagnetism, Quantum concept)
Credit points: 04
Offered Semester: I

Course Coordinator (weeks 01 - 17)
Full Name: Dr. Manisha Vithalpura
Department with sitting location: Physics Department, Physics lab
Telephone: 3314 (sitting location), 7874636405 (Mobile)
Email: manishavithalpura.gd@indusuni.ac.in
Consultation times: 1:30 pm to 4:00 pm (Tuesday)

Course Lecturer (weeks 01 - 17) (CE-1)
Full Name: Dr. Tanushree Basak
Department with sitting location: Physics Department, Physics lab
Telephone: 3314 (sitting location), 9374979897 (Mobile)
Email: tanushreebasak.gd@indusuni.ac.in
Consultation times: 1:30 pm to 4:00 pm (Tuesday)

Course Lecturer (weeks 01 - 17) (CE-2)
Full Name: Dr. Manisha Vithalpura
Department with sitting location: Physics Department, Physics lab
Telephone: 3314 (sitting location), 7874636405 (Mobile)
Email: manishavithalpura.gd@indusuni.ac.in
Consultation times: 1:30 pm to 4:00 pm (Tuesday)

Course Lecturer (weeks 01 - 17) (CE-3)
Full Name: Dr. Tanushree Basak
Department with sitting location: Physics Department, Physics lab
Telephone: 3314 (sitting location), 9374979897 (Mobile)
Email: tanushreebasak.gd@indusuni.ac.in
Consultation times: 1:30 pm to 4:00 pm (Tuesday)

Students will be contacted throughout the Session via Mail with important information relating to this Course.

Course Objectives
By participating in and understanding all facets of this Course a student will:

1) To describe the basic laws of Physics, mathematical foundations and Engineering theory and to apply the knowledge in modeling and

designing a real-world problem **(fundamental engineering analysis skills).**

2) To analyze a problem, identify and formulate using the concept of physics and to solve engineering problem **(engineering problem solving skills).**

3) To analyze and interpret experimental data using concepts of Physics **(information retrieval skills).**

4) To analyze and use current techniques, skills and tools necessary for Physics and engineering practice **(practical engineering analysis skills).**

Course Outcomes (CO)

1. To understand the basic concept of physics in the engineering field
2. To analyze a problem, identify and formulate using the concept of physics and to solve engineering problem
3. To understand the properties of dielectric and magnetic material and their applications in electric and magnetic devices
4. To understand the basic principle of superconductivity and ultrasound with specific applications in engineering
5. To analyze the concept of quantum mechanics and semiconductor physics and its applications in engineering field
6. To understand the optical phenomena of light like Interference and Diffraction and its application in optical devices

Course Outline

UNIT-I : Introduction to Electromagnetic

Module:1 Electrostatics & Dielectrics
Coulomb's law for distribution of charges, Gauss's law and applications, Electric field intensity, Electric flux, Electric dipole moment, Electric field due to dipole, Introduction to dielectrics, Polarizability, Types of polarization – electronic, ionic, orientational, Polarization of dielectrics, Gauss's law in presence of dielectric, Dielectric constant, Electric susceptibility and Permittivity, Internal (Local) field in dielectric, Clausius Mossotti equation (with derivation)

Module:2 Magnetism
Magnetic field, Steady current, Ampere's law, Biot-Savart law and its applications, Faradays law of Induction, Lenz's Law; Effect of magnetic field on current carrying conductor, Lorentz force.
Basic important terms and units in Magnetism, Concept and origin of magnetic moment, magnetic susceptibility, Total angular momentum, Diamagnetism, Paramagnetism, Ferromangnetism, Ferrimagnetism, Antiferromagnetism, Domain theory of Ferromagnetism, Curie temperature and hysteresis loss

UNIT-II : Superconductivity and Sound

Module 1: Superconductivity

Superconductivity: Zero resistance, Critical temperature, Meissner effect, Critical field, General properties of superconductors, Type-I and Type-II superconductors, BCS theory of Superconductor, High temperature superconductors, Applications of Superconductors: SQUID, Maglev etc.

Module 2: Sound

Introduction to sound waves, Characteristics and Properties of Sound, Absorption co-efficient, Reverberation time, Sabine's formula (without derivation), Factors affecting architectural acoustics,
Introduction of Ultrasonic waves, Generation of ultrasonic waves, Detection of ultrasonic waves, Applications of Ultrasonic waves: NDT, SONAR & others.

UNIT-III : Introduction to Quantum and Semiconductor Physics

Module 1: Quantum Mechanics

Black body radiation: Planck's law; Wave nature of Particles: De-Broglie theorem, Uncertainty principle; Schrodinger's wave equation – Time independent and time dependent equations; Born interpretation, probability current; Solution of stationary-state Schrodinger equation for one dimensional problems– particle in a box

Module 2 : Introduction to solids and Semiconductor Physics

Kronig-Penny model (to introduce origin of band gap), Energy bands in solids, E-k diagram; Types of electronic materials: metals, semiconductors, and insulators, Density of states, Occupation probability, Fermi level, Effective mass. Intrinsic and extrinsic semiconductors, Dependence of Fermi level on carrier-concentration and temperature (equilibrium carrier statistics), Carrier generation and recombination, Carrier transport: diffusion and drift, p-n junction diode.

UNIT-IV : Wave Optics& Laser

Module 1: Wave optics

Huygens' principle, superposition of waves and interference of light by wave front splitting and amplitude splitting; Young's double slit experiment, Newton's rings, Farunhofer diffraction from a single slit, the Rayleigh criterion for limit of resolution and its application to vision; Diffraction gratings and their resolving power, Michelson interferometer

Module 2: Laser

Einstein's theory of matter radiation interaction and A and B coefficients; Amplification of light by population inversion, Properties of laser beams: mono-chromaticity, coherence, directionality and brightness; Different types of lasers: gas lasers (He-Ne), solid-state lasers (Neodymium); Applications of lasers in science, engineering and medicine.

Method of delivery

(Face to face lectures, Power Point Presentation, Self assessment, Active Learning Techniques)

Study time

(3 hours per week for lectures, 2 hours per week for Practical)

Graduate Qualities and Capabilities covered

(Qualities graduates harness crediting this Course)

General Graduate Qualities	Specific Department of _____Graduate Capabilities
Informed Have a sound knowledge of an area of study or profession and understand its current issues, locally and internationally. Know how to apply this knowledge. Understand how an area of study has developed and how it relates to other areas.	**1 Professional knowledge, grounding & awareness** **Basic concept of basic physics Also application of the physics principle in engineering field**
Independent learners Engage with new ideas and ways of thinking and critically analyze issues. Seek to extend knowledge through ongoing research, enquiry and reflection. Find and evaluate information, using a variety of sources and technologies. Acknowledge the work and ideas of others.	**2 Information literacy, gathering & processing** Critical and logical thinking is developed through numerical practice. Used various sources of the material and technology to perform the experimental part.
Problem solvers Take on challenges and opportunities. Apply creative, logical and critical thinking skills to respond effectively. Make and implement decisions. Be flexible, thorough, innovative and aim for high standards.	**4 Problem solving skills** **By practicing numerical, logical and critical thinking will be developed.**
Effective communicators Articulate ideas and convey them effectively using a range of media. Work collaboratively and engage with people in different settings. Recognize how culture can shape communication.	**5 Written communication** **Conducting frequent unit test will develop their written communication skill**
	6 Oral communication **Arranging presentation on different physics topics throughout the semester**
	7 Teamwork **Group discussion in class and lab**

	is arranged
Responsible Understand how decisions can affect others and make ethically informed choices. Appreciate and respect diversity. Act with integrity as part of local, national, global and professional communities.	**10 Sustainability, societal & environmental impact**

Practical work:

Experiment no.	Title
1	**Dielectric constant: T**o determine the dielectric constant of a dielectric substance.
2	To determine the**magnetic field at the center of a coil and its variation with distance and radius of the coil.**
3	To verify the **Faraday's law of electromagnetic induction.**
4	**Hysteresis loss:**To determine the Hysteresis loss in a Ferromagnetic material.
5	**Ultrasonic Interferometer:** To determine the wavelength and velocity of ultrasonic wave through ultrasonic interferometer.
6	**Planck's Constant:**To determine the Planck's Constant using LED
7	To study the **V-I characteristics of p-n junction diode**
8	To verify the Inverse Square Law using Photocell
9	To determine the **refractive index of prism** using Spectrometer
10	**Resolving power of grating**: To determine resolving power of a diffraction grating.
11	**Newton's Ring:**To determine the wavelength of monochromatic light

12.	**<u>Determination of Wavelength of Laser:</u>** To determine the wavelength of LASER using diffraction grating.

Lecture/tutorial times

Lecture time CE-1 : Tuesday time: 11.55 am to 12.50 pm
Thursday time: 11.55 am to 12.50 pm
Friday time: 11.00 am to 11.55 am

Practicals : Tuesday: batch-1 time: 9.00 am to 10.50 am
Thursday : batch-2 time: 9.00 am to 10.50 am

Lecture time CE-2 : Wednesday time: 11.55 am to 12.50 pm
Thursday time: 1.30 pm to 2.25 pm
Friday time: 11.55 am to 12.50 pm

Practicals : Wednesday: batch-1 time: 9.00 am to 10.50 am
Friday : batch-2 time: 9.00 am to 10.50 am

Lecture time CE-3 : Monday time: 9.00 am to 10.50 am
Tuesday time: 9.00 pm to 10.50 am
Thursday time: 11.55 am to 12.50 pm

Practicals : Monday: batch-1 time: 11.00 am to 12.50 pm
Tuesday : batch-2 time: 1.30 pm to 3.20 pm

Details of referencing system to be used in written work

Unit test will be conducted in the classes and test papers will be kept with course coordinator for the future reference.

Text books

1. Engineering Physics by H K Malik, A K Singh, Tata Mc Graw-Hill Education Pvt. Ltd., 2nd edition, 2018, ISBN: 978-93-5260-695-5

2. Engineering Physics by D.K. Bhattacharya, Poonam Tandon,Oxford University Press, first published, 2015, ISBN-13:978-0-19-945281-1

Additional Materials

1. Engineering Physics;Fundamentals and Modern applications by P. Khare& A. Swarup, Jones & Bartlett Learning, 2009, ISBN-13: 978-0763773748

2. A textbook of Engineering Physics by S.O. Pillai and Sivakami,New Age International, Third edition, 2011, ISBN:978-81-224-3162-9

3. An introduction to Electrodynamics by David Griffiths,Pearson Education, 3th edition, 1999,ISBN:9780138053260

4. Optics by A. Ghatak, McGraw-Hill Education India Private Limited, 6th edition, 2017, ISBN-13:978-9339220907

5. Engineering Electromagnetics by W H Hayt& J A Buck, McGraw-Hill Education, 8th edition, 2017, ISBN-13:978-9339203276

6. Engineering Physics by K. Rajagopal,Prentice Hall of India Pvt. Ltd., 2007, ISBN: 9788120332867

7. A Textbook of Engineering Physics by M. N. Avadhanulu, P. G. Khirsagar, S.Chand Pub., Revised edition, 1992, ISBN: 9788121908177

8. University Physics, Sears and Zemansky, Pearson Education India, 13th edition, 2013, ISBN-13:978-8131790274

Web resources:

1. **Topics: Acoustics & Optics**: http://www.nptel.iitm.ac.in/courses/Webcourse-contents/IIT%20Guwahati/engg_physics/index_cont.htm

2. **Course: Engineering Physics**: http://www.nptelvideos.in/search?q=engineering+physics

3. **Topic: Laser:**http://science.howstuffworks.com/laser1.htm

4. **Topic: Optics:** http://www.pitt.edu/~poole/physics.html#light

5. **Topic: Magnetism: https://www.khanacademy.org/science/physics/magnetic-forces-and-magnetic-fields**

6. **Topic: Interference: https://www.khanacademy.org/science/physics/light-waves**

7. **Topic: Quantum Mechanics: https://ocw.mit.edu/courses/physics/8-04-quantum-physics-i-spring-2016/index.htm**

MOOCs:
https://www.edx.org/course/subject/physics

ASSESSMENT GUIDELINES

Your final course mark will be calculated from the following:

Continuous Internal Evaluation (Theory)		
Mid-Sem exam	40% , Unit-1/2, Objective (1,2,5)	
Assignment	**10% , Objective (1,2,5)**	
Project/Presentation	5% , Objective (1,2,6)	
Attendance	**5% (end of the semester)**	
Total	**60% (CIE theory)**	
Final exam (*closed book*)	40%	Objectives (1-6)

SUPPLEMENTARY ASSESSMENT

Students who receive an overall mark less than 40% in mid semester or end semester will be considered for supplementary assessment in the respective components (i.e mid semester or end semester) of semester concerned. Students must make themselves available during the supplementary examination period to take up the respective components (mid semester or end semester) and need to obtain the required minimum 40% marks to clear the concerned components.

Practical Work Report/Laboratory Report:

Student has to complete the experiment in their respective lab in a week, will be evaluated weekly basis. A report on practical work is to be submitted after completion of the lab by each group.

Late Work

Late assignments will not be accepted without supporting documentation. Late submission of the reports will result in a deduction of -% of the maximum mark per calendar day

Format

All assignments must be presented in a neat, legible format with all information sources correctly referenced. **Assignment material handed in throughout the session that is not neat and legible will not be marked and will be returned to the student.**

Retention of Written Work

Written assessment work will be retained by the Course coordinator/lecturer for two weeks after marking to be collected by the students.

University and Faculty Policies

Students should make themselves aware of the University and/or Faculty Policies regarding plagiarism, special consideration, supplementary examinations and other educational issues and student matters.

Plagiarism - Plagiarism is not acceptable and may result in the imposition of severe penalties. Plagiarism is the use of another person's work, or idea, as if it is his or her own - if you have any doubts at all on what constitutes plagiarism, please consult your Course coordinator or lecturer. Plagiarism will be penalized severely.

Do not copy the work of other students.
Do not share your work with other students (except where required for a group activity or assessment.

Course schedule(subject to change)

	Week #	Topic & contents	CO Addressed	Teaching Learning Activity (TLA)
	Weeks 1	**M-1**: Coulomb's law for distribution of charges, Gauss's law and applications, Electric current and Equation of continuity, Electric field intensity, Electric flux, Electric dipole moment, Divergence and curl of electrostatic field, Introduction to dielectrics, Polarizability, Types of polarization – electronic, ionic, orientational, Polarization of dielectrics, Gauss's law in presence of dielectric, Dielectric constant, Electric susceptibility and Permittivity,	1,2,5	PPt, chalk and board
	Weeks 2	Internal (Local) field in dielectric, Clausius Mossotti equation (with derivation), **M-2:** Magnetic field, Steady current, Biot-Savart law, Ampere's law, Divergence and curl of static	1,2,3	Chalk and Board

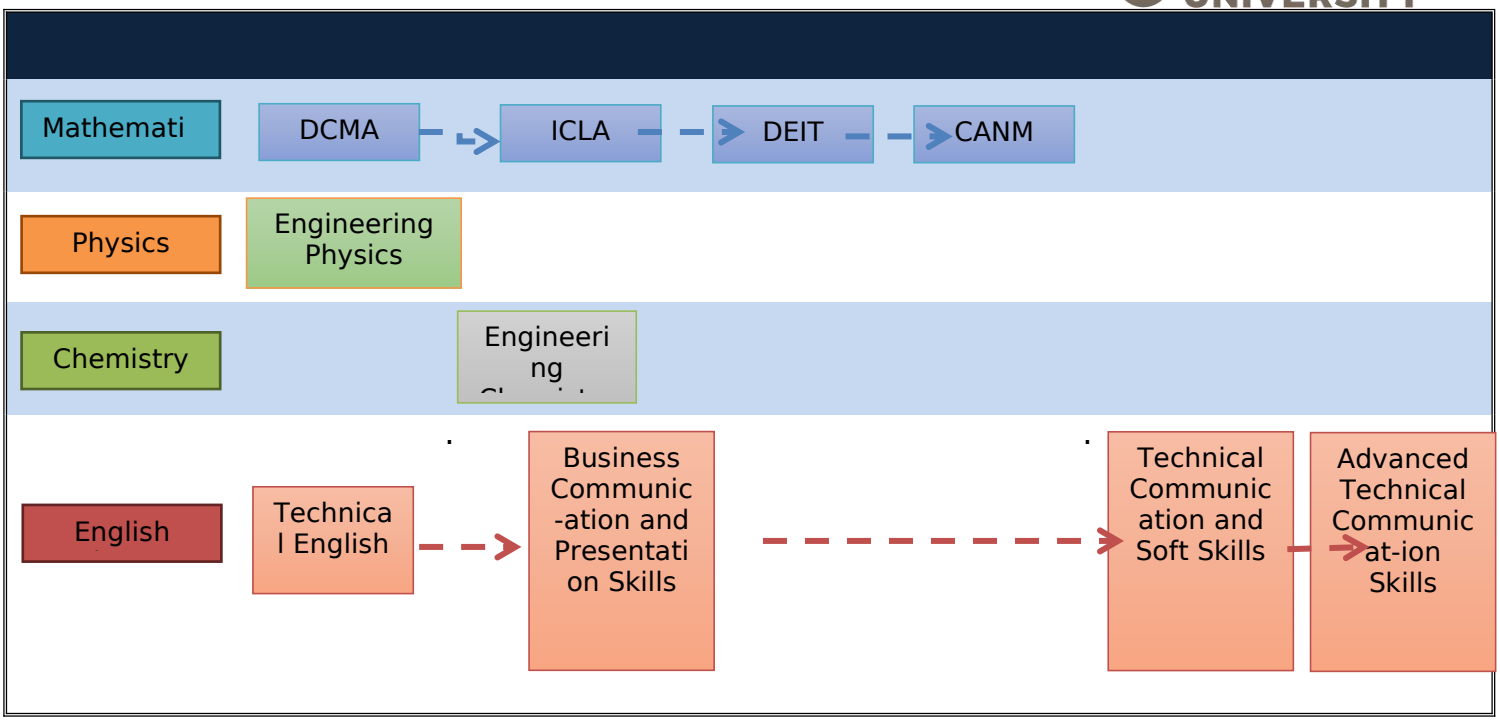
		magnetic field, vector potential and calculating it for a given magnetic field using Stokes' theorem,		
	Week 3	Effect of magnetic field on current carrying conductor, Lorentz force, Faraday's law in terms of EMF produced by changing magnetic flux; Lenz's law; **M-3:** Basic important terms and units in Magnetism, Concept and origin of magnetic moment, magnetic susceptibility, Total angular momentum	1,2,3	Chalk and Board
	Week 4	Diamagnetism, Paramagnetism, Ferromangnetism, Domain theory of Ferromagnetism, hysteresis loss, numerical,	1,2,3	Chalk and Board
	Week 5	Introduction to Superconductors and its properties, types of it	1,2,4	PPT and chalk-board
	Week 6	Numerical practice, Test	1,2,4	Chalk and board
	Week 7	Types-I , II superconductor, BCS theory and introduction to Sound wave	1,2,4	Ppt and chalk and board
	Week 8	Audible sound and its characteristics, factor affecting and ultrasound	1,2,4	Ppt and chalk-board
	Week 9	Introduction to subject, **M-1**: Introduction, Black body radiation and laws if Black body radiation, De-Broglie theorem, Uncertainty principle; Schrodinger's wave equation	1,2,5	PPt, chalk and board
	Week 10	Born interpretation, probability current; Solution of stationary-state, Schrodinger equation for one dimensional problems–particle in a box, Numerical practice	1,2,5	PPt, chalk and board
	Week 11	Types of electronic materials: metals, semiconductors, and insulators, Density of states, Occupation probability, Fermi level, Effective mass., Intrinsic	1,2,5	Chalk and board

		and extrinsic semiconductors, Dependence of Fermi level on carrier-concentration and temperature (equilibrium carrier statistics),		
	Week 12	Carrier generation and recombination, Carrier transport: diffusion and drift, p-n junction diode & Numericals, Unit test-1	1,2,5	Chalk and board
	Week 13	**M-1:** Wave front, Huygens' principle, superposition of waves and interference of light by wave front splitting and amplitude splitting, Young's double slit experiment, Newton's rings, Numerical, test II	1,2,6	PPTs and Chalk and board
	Week 14	Farunhofer diffraction from a single slit, the Rayleigh criterion for limit of resolution and its application to vision;, Diffraction gratings and their resolving power, Michelson interferometer, numerical	1,2,6	PPTs and Chalk and Board
	Week 15	**M-2:** Einstein's theory of matter radiation interaction and A and B coefficients; Amplification of light by population inversion, Properties of laser beams: mono-chromaticity, coherence, directionality and brightness; Different types of lasers: gas lasers (He-Ne), solid-state lasers (Neodymium);	1,2,6	PPTs
	Week 16	Applications of lasers in science, engineering and medicine., Numerical problems	1,2,6	PPTs
	Week 17	Revision	1-6	PPT

PROGRAM MAP for Bachelor of Engineering
(Institute of Sciences, Humanities and Liberal Studies)

Subject Mind Mapping

Semeste | Semeste | Semeste | Semeste | Semeste | Semeste



To be used for the following Branches: Automobile Engineering

Name of Institute: Institute of Technology & Engineering
Name of Faculty: Prof. Kaushal R. Patel

Course code: EL0217
Course name: Elements of Electrical Engineering

Pre-requisites: Physics (12th)
Credit points: 03
Offered Semester: II

Course coordinator (weeks 01 - 15)
Full name: Prof. Kaushal R. Patel
Department with siting location: 5th floor, Electrical Design Lab
Telephone: 9426028096
Email: kaushalpatel.el@indusuni.ac.in
Consultation times: 4:30 PM to 5 PM

Course Lecturer
Full Name: Prof. Kaushal Patel
Department with siting location: 5th floor, Electrical Design Lab
Telephone: 9426028096
Email: kaushalpatel.el@indusuni.ac.in
Consultation times: 4:30 PM to 5 PM

Students will be contacted throughout the session via mail with important information relating to this course.

Course Objectives

By participating in and understanding all facets of this course a student will:

1. Describe, apply and analyze basics of electrical engineering.
2. Describe, apply and analyze circuit using of mesh and nodal techniques
3. Describe, apply and analyze various network theorems in solving the problems related to electrical circuits for DC source
4. Describe and analyze single phase and three phase AC circuit.

Course Outcomes (CO)

CO 1: Use the Ohm's Law and the Kirchhoff's Law and star delta transformation for solving resistive series, parallel and series - parallel circuits.

CO 2: Learn Network Theorems & solves problems based on theorems.

CO 3: Understand the Electric field and Magnetic field and parameter of each. Also understand the BH curve, Hysteresis loop and Eddy current losses

CO 4: Understand AC Quantities, the mathematical operation on AC waveforms and also understand the concepts of power quantities for series and parallel R-L-C circuits.

CO 5: Draw phasor diagram for balanced and unbalanced three phase circuit. Calculate power and it's measurement by wattmeter

CO 6: Understand construction & working principle of Electrical machines.

Course Outline

This course mainly deals with different methods to solve the network, concepts of AC and DC circuits, working principles of Machines and transformers and the fundamentals of magnetic circuits and electrostatics.

Method of delivery

Face to face lectures, Assignments, Quiz

Study time

3-Hour lecture per week

CO-PO Mapping (PO: Program Outcomes)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
CO1	1	3	2	2	3	1	3	-	1	2	1	3
CO2	2	1	-	3	2	2	1	1	3	2	1	2
CO3	1	3	-	1	2	1	3	1	3	2	2	3
CO4	1	1	3	2	1	2	2	1	-	3	2	2
CO5	2	1	3	1	1	1	3	2	2	2	3	1
CO6	3	2	2	3	1	3	-	1	1	2	2	1

Blooms Taxonomy and Knowledge retention (For reference)

(Blooms taxonomy has been given for reference)

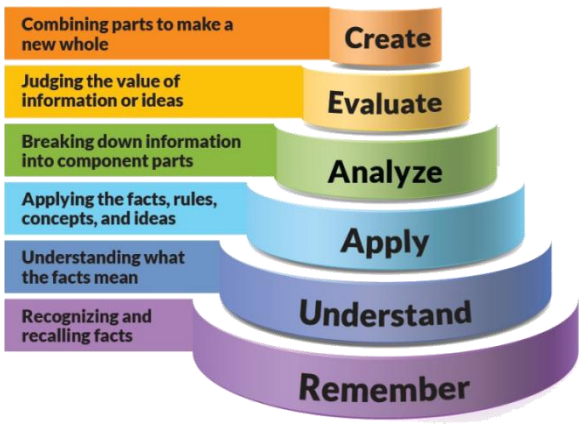


Figure 1: Blooms Taxonomy

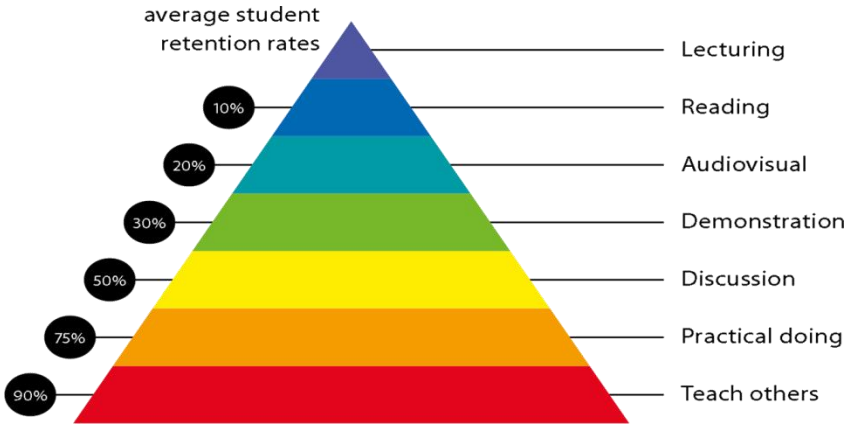


Figure 2: Knowledge retention

Graduate Qualities and Capabilities covered

(Qualities graduates harness crediting this Course)

General Graduate Qualities	Specific Department of _____Graduate Capabilities
Informed Have a sound knowledge of an area of study or profession and understand its current issues, locally and internationally. Know how to apply this knowledge. Understand how an area of study has developed and how it relates to other areas.	**1 Professional knowledge, grounding & awareness**
Independent learners Engage with new ideas and ways of thinking and critically analyze issues. Seek to extend knowledge through ongoing research, enquiry and reflection. Find and evaluate information, using a variety of sources and technologies. Acknowledge the work and ideas of others.	**2 Information literacy, gathering & processing**
Problem solvers Take on challenges and opportunities. Apply creative, logical and critical thinking skills to respond effectively. Make and implement decisions. Be flexible, thorough, innovative and aim for high standards.	**4 Problem solving skills**
Effective communicators Articulate ideas and convey them effectively using a range of media. Work collaboratively and engage with people in different settings. Recognize how culture can shape communication.	**5 Written communication** **6 Oral communication** **7 Teamwork**

Responsible Understand how decisions can affect others and make ethically informed choices. Appreciate and respect diversity. Act with integrity as part of local, national, global and professional communities.	**10 Sustainability, societal & environmental impact**

Practical work:

N.A.

Lecture/tutorial times

Lecture: Monday: 11:00-11:55
Wed: 11:55-12:50
Thursday:9:00-9:55

Attendance Requirements

The University norms states that it is the responsibility of students to attend all lectures, tutorials, seminars and practical work as stipulated in the course outline. Minimum attendance requirement as per university norms is compulsory for being eligible for semester examinations.

Details of referencing system to be used in written work

Text books

1. A. Chakrabarti, "Basic Electrical Engineering", Tata McGraw Hill, 1st edition, 2009, ISBN: 9780070669037.
2. A.E Fitzgerald, David E. Higginbotham, Arvin Grabel, "Basic Electrical Engineering", Tata McGraw Hill, 5th Edition, 2009, ISBN: 9780070682566.

Additional Materials

1. Vincent Del. Toro (2012), "Principles of Electrical Engineering", Prentice Hall, India
2. Electrical Estimating & Costing by Surjit Singh (Dhanpat Rai & sons).
3. J.N. Swamy, "Elements of Electrical Engineering" Mahajan Publishing House.
4. Nagrath I.J. and D. P. Kothari (2001), "Basic Electrical Engineering", Tata McGraw Hill.
5. Rajendra Prasad (2009), "Fundamentals of Electrical Engineering", Prentice Hall, India

Web Resource

ASSESSMENT GUIDELINES

Your final course mark will be calculated from the following:

Su

Class Test (20 marks)
Quiz (10 marks)
Assignment (20 marks)
Attendance (10 marks)

SUPPLEMENTARY ASSESSMENT

Students who receive an overall mark less than 40% in internal component or less than 40% in the end semester will be considered for supplementary assessment in the respective components (i.e internal component or end semester) of semester concerned. Students must make themselves available during the supplementary examination period to take up the respective components (internal component or end semester) and need to obtain the required minimum 40% marks to clear the concerned components.

Practical Work Report/Laboratory Report:

N.A.

Late Work

Late assignments will not be accepted without supporting documentation. Late submission of the reports will result in a deduction of -% of the maximum mark per calendar day

Format

All assignments must be presented in a neat, legible format with all information sources correctly referenced. **Assignment material handed in throughout the session that is not neat and legible will not be marked and will be returned to the student.**

Retention of Written Work

Written assessment work will be retained by the Course coordinator/lecturer for two weeks after marking to be collected by the students.

University and Faculty Policies

Students should make themselves aware of the University and/or Faculty Policies regarding plagiarism, special consideration, supplementary examinations and other educational issues and student matters.

Plagiarism - Plagiarism is not acceptable and may result in the imposition of severe penalties. Plagiarism is the use of another person's work, or idea, as if it is his or her own - if you have any doubts at all on what constitutes plagiarism, please consult your Course coordinator or lecturer. Plagiarism will be penalized severely.

Do not copy the work of other students.
Do not share your work with other students (except where required for a group activity or assessment)

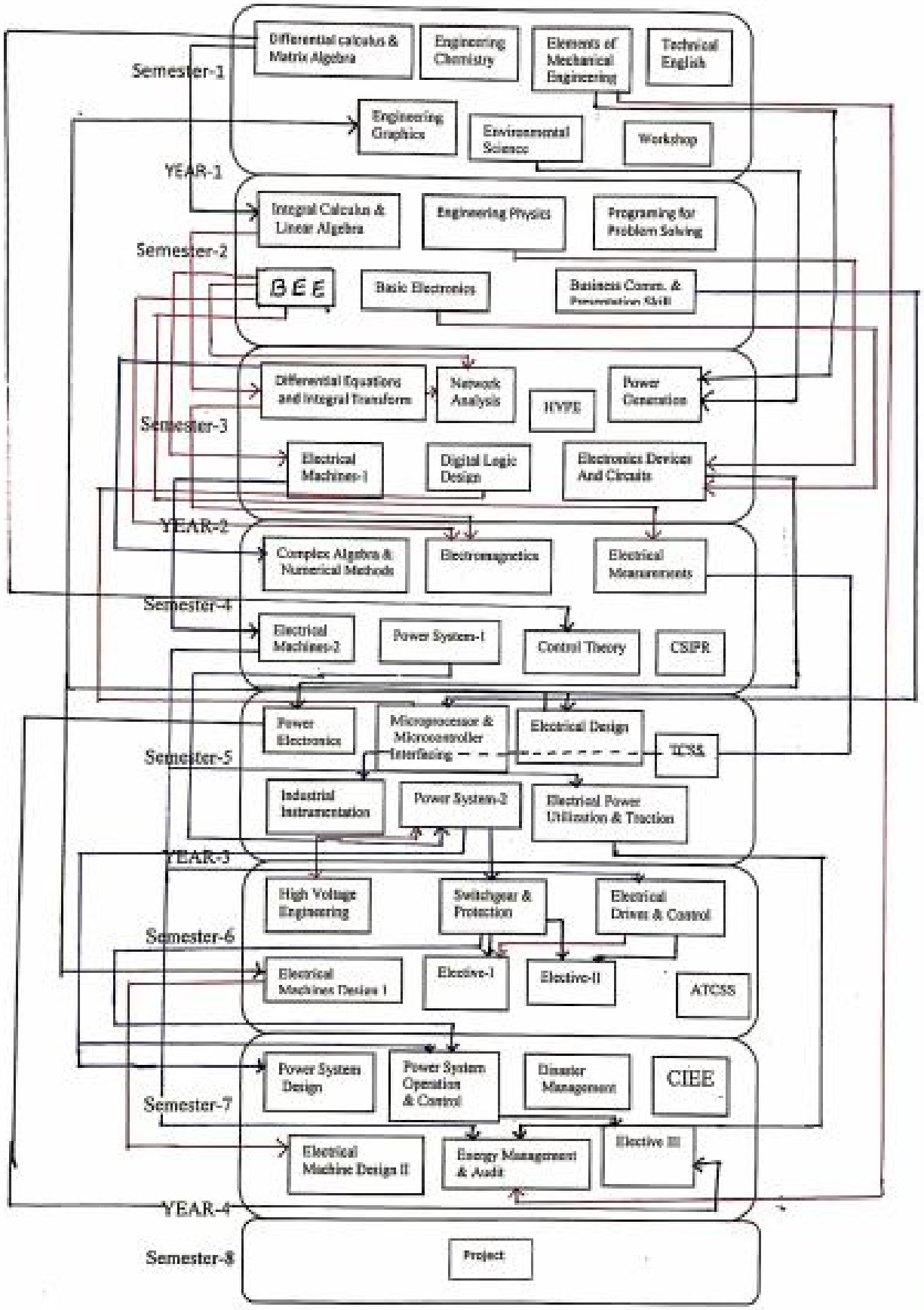
.

Course schedule (subject to change)

(Mention quiz, assignment submission, breaks etc. as well in the table under the Teaching Learning Activity Column)

	Week #	Topic & contents	CO Addressed	Teaching Learning Activity (TLA)
	Week 1	Ohm's Law and Kirchhoff's Laws Analysis of series, parallel and series-parallel circuits; Star–Delta conversion;	1	Chalk & Talk
	Week 2	Nodal analysis, Mesh analysis Voltage sources and current sources ,Super position theorem Thevenin's theorem, Norton's theorem	1,2	Chalk & Talk
	Week 3	Equivalence of Thevenin's and Norton's theorem, Maximum power transfer theorem, Generation of sinusoidal voltage, Definition of average value, root mean square value, form factor and peak factor; Phasor representation of alternating quantities; Analysis with phasor diagrams of R circuit	2,4	Chalk & Talk
	Week 4	Analysis with phasor diagrams of L circuit Analysis with phasor diagrams of C circuit Analysis with phasor diagrams of R-L, R-C circuits;	4	Chalk & Talk
	Week 5	Analysis with phasor diagrams of R-L-C circuit; Concepts of Real power, Reactive power, Apparent power and Power factor, methods to improve power factor, Series, Parallel and Series - Parallel circuits Power in AC circuit, Resonance in series and parallel circuits.	4	Chalk & Talk
	Week 6	Necessity and Advantages of three phase systems, Generation of three phase power definition of Phase sequence, balanced supply and balanced load; Relationship between line and phase values of balanced star connections Relationship between line and phase values of balanced delta connections	4,5	Chalk & Talk

	Week 7	Power in balanced three phase circuits measurement of power by two wattmeter method Work, Power, Energy, Problems.	5	Chalk & Talk
	Week 8	Electric charge and Laws of electrostatic, Capacitor; Capacitor in series and parallel, variable capacitor Instantaneous voltage and current in capacitor charging and discharging of capacitor	3	Chalk & Talk
	Week 9	Energy stored in a capacitor, types of capacitor. Magneto motive force, magnetic field strength, reluctance, Relation between magnetic circuit parameter, Laws of magnetic circuit, composite magnetic circuit: series magnetic circuit, parallel magnetic circuit	3	Chalk & Talk
	Week 10	comparison of Electric and magnetic circuit, Effect of magnetic field on current carrying conductor; Statically and dynamically induced EMF Concepts of self-inductance, mutual inductance, energy stored in inductor,	3	Chalk & Talk
	Week 11	coefficient of coupling; Inductance in series and parallel;	3	Chalk & Talk
	Week 12	Hysteresis and Eddy current losses Transformers: Principle of operation Construction of single phase transformers (core and shell types).	3,6	Chalk & Talk
	Week 13	EMF equation, losses, efficiency Working principle of DC machine as a generator and a motor DC series motor constructional features	6	Chalk & Talk
	Week 14	DC shunt motor constructional features DC compound motor constructional features Principle of operation of IM	6	Chalk & Talk
	Week 15	Concept of rotating magnetic field types and constructional features slip and its significance, Problems based on above topics	6	Chalk & Talk



Elective-I: Advanced Control Theory, Industrial Automation, Soft Computing
Elective-II: Electrical Power Quality, EHV AC & DC, Special Machines, MOOC
Elective-III: FACTS, Advanced Power Electronics, Power System Planning, MOOC

Name of Institute: Indus Institute of Technology & Engineering
Name of Faculty: Prof. Jainisha Patel/ Prof. Pradnya Tikhe

Course code: CV0004
Course name: Environmental Science
Pre-requisites:
Basic knowledge on Environmental issues.
Knowledge on chemistry and laboratory equipment.

Credit points: 2
Offered Semester: 1st (Information & Technology)

Course Coordinator

Full name: Prof. Pradnya Tikhe
Department with siting location: 3rd Floor staff Room, Bhanwar Builing
Telephone: 3006
Email: pradnyatikhe.cvl@indusuni.ac.in
Consultation times: 9.00 to 5.00

Course Lecturer

Full Name: Prof. Jainisha Patel
Department with siting location: Environmental Engineering Lab, Ground floor, Extension building
Telephone: 3006
Email: jainishapatel.cvl@indusuni.ac.in
Consultation times: 9.00 to 5.00

Students will be contacted throughout the Session via Mail with important information relating to this Course.

Course Objectives

By participating in and understanding all facets of this Course a student will:

- Understand key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
- Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving.
- Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
- Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

Course Outcomes (CO)

- Master core concepts and methods from ecological and physical sciences and their application in environmental problem solving.
- Master core concepts and methods from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
- Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
- Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.
- Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.
- Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

Course Outline

To introduce students to the integrated science, engineering, design and management concepts of engineered environmental systems. The course will cover environmental regulations and standards, environmental parameters, mass balance and natural systems, water quality management, water and wastewater treatment, air pollution control, noise pollution, and solid and hazardous waste management. Background material and laboratories in the environmental sciences and management areas will be covered. Group term papers and presentations will be required.

Method of delivery

60% of Lectures consist of Face to face lectures which are conducted in classrooms, 30% of lectures comprise of PowerPoint Presentation through which various videos and images of related topics are shown to the students, and 10% of lectures consist of hands on session.

Study time

2 hours of lectures (theory) per week.

CO-PO Mapping (PO: Program Outcomes)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CO1	3	-	-	-	-	2	-	-	-	1	-	-
CO2	-	3	-	-	-	-	3	2	-	-	-	1
CO3	-	-	-	-	-	3	2	-	-	-	1	-

CO4	-	3	2	-	-	-	1	-	-	1	-	-
CO5	-	2	-	3	-	-	-	-	-	-	-	-
CO6	3	-	2	-	1	1	-	-	-	-	-	-

1-Lightly Mapped 2- Moderately Mapped 3- Highly Mapped

Blooms Taxonomy and Knowledge retention (For reference)

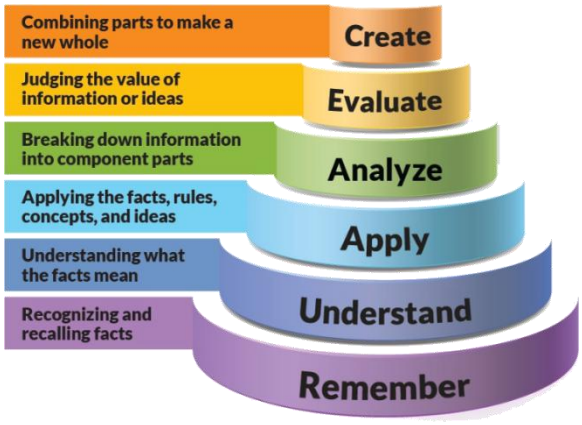


Figure 1: Blooms Taxonomy

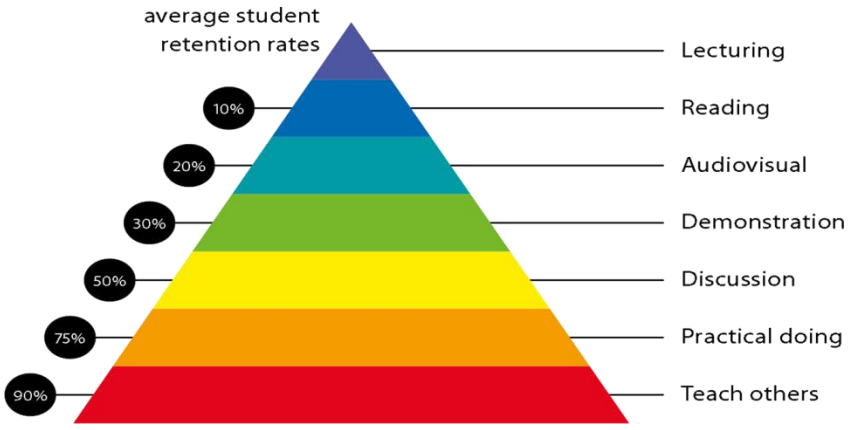


Figure 2: Knowledge retention

Graduate Qualities and Capabilities covered

(Qualities graduates harness crediting this Course)

General Graduate Qualities	Specific Department of _____Graduate Capabilities
Informed Have a sound knowledge of an area of study or profession and understand its current issues, locally and internationally. Know how to apply this knowledge. Understand how an area of study has developed and how it relates to other areas.	**1 Professional knowledge, grounding & awareness**

Independent learners Engage with new ideas and ways of thinking and critically analyze issues. Seek to extend knowledge through ongoing research, enquiry and reflection. Find and evaluate information, using a variety of sources and technologies. Acknowledge the work and ideas of others.	**2 Information literacy, gathering & processing**
Problem solvers Take on challenges and opportunities. Apply creative, logical and critical thinking skills to respond effectively. Make and implement decisions. Be flexible, thorough, innovative and aim for high standards.	**4 Problem solving skills**
Effective communicators Articulate ideas and convey them effectively using a range of media. Work collaboratively and engage with people in different settings. Recognize how culture can shape communication.	**5 Written communication** **6 Oral communication** **7 Teamwork**
Responsible Understand how decisions can affect others and make ethically informed choices. Appreciate and respect diversity. Act with integrity as part of local, national, global and professional communities.	**10 Sustainability, societal & environmental impact**

Practical work:

Lecture/laboratory times

Lecture (IT-I)
Tuesday 09:55 to 10:50
Wednesday 11:55 to 12:50

Lecture (IT-II)
Thursday 09:00 to 09:55
Friday 2:25-3:20

Attendance Requirements

The University norms states that it is the responsibility of students to attend all lectures, tutorials, seminars and practical work as stipulated in the Course outline. Minimum attendance requirement as per university norms is compulsory for being eligible for mid and end semester examinations.

Details of referencing system to be used in written work

Text books

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha Second edition, 2013 Publisher: Universities Press (India) Private Ltd, Hyderabad

Reference Books:

Basics of Environmental Studies by Prof Dr N S Varandani ,2013 Publisher: LAP Lambert Academic Publishing , Germany
Environmental Studies by Anindita Basak ,2009 Publisher: Drling Kindersley(India)Pvt. Ltd
Pearson Textbook of Environmental Studies by Deeksha Dave & S S Kateva , Cengage Publishers.
Environmental Sciences by Daniel B Botkin & Edward A Keller Publisher: John Wiley & Sons.
Environmental Studies by R. Rajagopalan, Oxford University Press
Environmental Studies by Benny Joseph, TMH publishers
Environmental Studies by Dr. Suresh K Dhameja, 2007 Published by: S K Kataria & Sons New Delhi
Basics of Environmental Studies by U K Khare, 2011 Published by Tata McGraw Hill

Additional Materials

ASSESSMENT GUIDELINES

Your final course mark will be calculated from the following:

Example:		
Class test	**05**	
Power Point Presentation	**15**	
Final exam (*closed book*)		**40**

SUPPLEMENTARY ASSESSMENT

Students who receive an overall mark less than 40% in mid semester or end semester will be considered for supplementary assessment in the respective components (i.e mid semester or end semester) of semester concerned. Students must make them available during the supplementary examination period to take up the respective components (mid semester or end semester) and need to obtain the required minimum 40% marks to clear the concerned components.

Practical Work Report/Laboratory Report:

A report on the practical work is due the subsequent week after completion of the class by each group.

Late Work

Late assignments will not be accepted without supporting documentation. Late submission of the reports will result in a deduction of -% of the maximum mark per calendar day

Format

All assignments must be presented in a neat, legible format with all information sources correctly referenced. **Assignment material handed in throughout the session that is not neat and legible will not be marked and will be returned to the student.**

Retention of Written Work

Written assessment work will be retained by the Course coordinator/lecturer for two weeks after marking to be collected by the students.

University and Faculty Policies

Students should make themselves aware of the University and/or Faculty Policies regarding plagiarism, special consideration, supplementary examinations and other educational issues and student matters.

Plagiarism - Plagiarism is not acceptable and may result in the imposition of severe penalties. Plagiarism is the use of another person's work, or idea, as if it is his or her own - if you have any doubts at all on what constitutes plagiarism, please consult your Course coordinator or lecturer. Plagiarism will be penalized severely.

Do not copy the work of other students.
Do not share your work with other students (except where required for a group activity or assessment)

.

Course schedule (subject to change)

	Week #	Topic & contents	CO Addressed	Teaching Learning Activity (TLA)
	Weeks 1	Environment: Levels of organizations in environment, Structure and functions in an ecosystem Biosphere: Its Origin and distribution on land, in water and in air, Ecosystem and functioning of Ecosystem	1,3	PPT and BB
	Weeks 2	Natural Resources	2,1,4	PPT
	Week 3	Biodiversity and its conservation	3,2	BB and PPT
	Week 4	Environmental Pollution:	2,4,6	BB
	Week 5	Environmental Pollution, and Environmental Prevention	1,3	BB and PPT
	Week 6	Concept of clean Environment, man-made disasters, Case Studies of Indian Studies, Urban flooding, Heat Island Effect	*2,4*	*BB*
	Week 7	Management of pollution Technologies for Pollution Control Environmental Monitoring	1,5	BB and PPT
	Week 8	Research and Policies relating to environmental Protection	2,4,6	BB and PPT
	Week 9	Concept of sustainability and environmental Sustainability Index Environmental Ethics, people's participation	*2,4,6*	BB and PPT
	Week 10	Green Business (Profitability in managing Environment) Sustainable Development,	1,5,6,3	BB and PPT
	Week 11	Public awareness, public participation	5.6.4	BB and PPT
	Week 12	Revision		PPT

Subject: Environmental Science								
Program: **B.Tech. offered by Civil Dept.**				Subject Code:CV0004			Semester: **I/II**	
Teaching Scheme				**Examination Evaluation Scheme**				
Lecture	**Tutorial**	**Practical**	**Credits**	**Continuous Internal Evaluation (CIE)-Theory**	**Continuous Internal Evaluation (CIE)-Practical**	**University Theory Examination**	**University Practical Examination**	**Total**
02	00	-	02	24/60	-	16/40	-	100

Course Objectives:

- Understand key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
- Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving.
- Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
- Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

Course Outcomes:

- Master core concepts and methods from ecological and physical sciences and their application in environmental problem solving.
- Master core concepts and methods from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
- Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
- Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.
- Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.
- Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

COURSE CONTENTS

Unit I

Concepts of Environmental Sciences: **Environment:** Levels of organizations in environment, Structure and functions in an ecosystem;

Biosphere: Its Origin and distribution on land, in water and in air, Ecosystem and functioning of Ecosystem.

Natural Resources: Renewable and Non-renewable Resources, Forests, water, minerals, Food and land (with example of one case study); Energy, Growing energy needs, energy sources (conventional and alternatives), State of Indian Environment.

Biodiversity and its conservation:

Biodiversity at global, national and local levels; India as a mega-diversity nation; Threats to biodiversity (biotic, abiotic stresses), and strategies for conservation.

Unit II

***Environmental Pollution*:**

Types of pollution- Air, water (including urban, rural, marine), soil, noise, thermal, nuclear, Solid Waste (Organic and Inorganic), Concept of clean Environment; Case Studies of Indian Studies.