

B.Tech. – I Year I Semester (for Group-A Branches) → *CE, ME, PET, CHE*

S.No.	Category	Title	L/D	T	P	Credits
1	BS&H	Communicative English	2	0	0	2
2	BS&H	Engineering Chemistry/ Chemistry/Fundamental Chemistry	3	0	0	3
3	BS&H	Linear Algebra & Calculus	3	0	0	3
4	Engineering Science	Basic Civil & Mechanical Engineering	3	0	0	3
5	Engineering Science	Introduction to Programming	3	0	0	3
6	BS&H	Communicative English Lab	0	0	2	1
7	BS&H	Engineering Chemistry/ Chemistry/Fundamental Chemistry Lab	0	0	2	1
8	Engineering Science	Engineering Workshop	0	0	3	1.5
9	Engineering Science	Computer Programming Lab	0	0	3	1.5
10	BS&H	Health and wellness, Yoga and Sports	-	-	1	0.5
Total			14	00	11	19.5

UNIVERSITY COLLEGE OF ENGINEERING KAKINADA (AUTONOMOUS)
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

Minutes of the Board of Studies (BoS) - HSS – (R23)
on-line meeting on 28th October 2023

Ref.: (1) Proc. No. UCEK/BoS/B.Tech. (HSS)/2023 dt. 16.10.2023

With reference to the proceedings cited above the Board of Studies (BoS) of Humanities and Social Sciences held meeting on 28th October 2023 through on-line to discuss and prepare the syllabi of I year B. Tech. English (theory and lab) and finalize it. The expert members are

- | | |
|---|------------------------------|
| 1. Dr. S. Satya Veni
Assistant Professor of Chemistry
UCEK, JNTUK, Kakinada. | Chairperson (i/c)
Present |
| 2. Dr. P. Vijaya Kumar,
Prof. of Commerce (Retd.)
UCEK, JNTUK, Kakinada. | Internal Member
Present |
| 3. Dr. K. Sree Ramesh
Professor of English
Adikavi Nannaya University, Rajamahendravaram. | External Member
Present |

After discussions and deliberations, the Board of studies (HSS) unanimously resolved to follow the syllabi of I year B. Tech. English theory and lab as per that of JNTUK.



Dr. K. Sree Ramesh



Dr. P. Vijaya Kumar



Dr. S. Satya Veni

UNIVERSITY COLLEGE OF ENGINEERING KAKINADA (AUTONOMOUS)
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA (R23)

L	T	P	C
2	0	0	2

COMMUNICATIVE ENGLISH
(Common to All Branches of Engineering)

Course Objectives:

The main objective of introducing this course, *Communicative English*, is to facilitate effective listening, Reading, Speaking and Writing skills among the students. It enhances the same in their comprehending abilities, oral presentations, reporting useful information and providing knowledge of grammatical structures and vocabulary. This course helps the students to make them effective in speaking and writing skills and to make them industry ready.

Course Outcomes:

CO1: Understand the context, topic, and pieces of specific information from social or Transactional dialogues.

CO2: Apply grammatical structures to formulate sentences and correct word forms.

CO3: Analyze discourse markers to speak clearly on a specific topic in informal discussions.

CO4: Evaluate reading / listening texts and to write summaries based on global comprehension of these texts.

CO5: Create a coherent paragraph, essay, and resume.

UNIT I

Lesson: **HUMAN VALUES: Gift of Magi (Short Story)**

- Listening:** Identifying the topic, the context and specific pieces of information by listening to short audio texts and answering a series of questions.
- Speaking:** Asking and answering general questions on familiar topics such as home, family, work, studies and interests; introducing oneself and others.
- Reading:** Skimming to get the main idea of a text; scanning to look for specific pieces of information.
- Writing:** Mechanics of Writing-Capitalization, Spellings, Punctuation-Parts of Sentences.
- Grammar:** Parts of Speech, Basic Sentence Structures-forming questions
- Vocabulary:** Synonyms, Antonyms, Affixes (Prefixes/Suffixes), Root words.

UNIT II

Lesson: **NATURE: The Brook by Alfred Tennyson (Poem)**

- Listening:** Answering a series of questions about main ideas and supporting ideas after listening to audio texts.
- Speaking:** Discussion in pairs/small groups on specific topics followed by short structure talks.
- Reading:** Identifying sequence of ideas; recognizing verbal techniques that help to link the ideas in a paragraph together.
- Writing:** Structure of a paragraph - Paragraph writing (specific topics)
- Grammar:** Cohesive devices - linkers, use of articles and zero article; prepositions.



Vocabulary: Homonyms, Homophones, Homographs.

UNIT III

Lesson: **BIOGRAPHY: Elon Musk**

Listening: Listening for global comprehension and summarizing what is listened to.
Speaking: Discussing specific topics in pairs or small groups and reporting what is discussed.
Reading: Reading a text in detail by making basic inferences -recognizing and interpreting specific context clues; strategies to use text clues for comprehension.
Writing: Summarizing, Note-making, paraphrasing
Grammar: Verbs - tenses; subject-verb agreement; Compound words, Collocations
Vocabulary: Compound words, Collocations

UNIT IV

Lesson: **INSPIRATION: The Toys of Peace** by Saki

Listening: Making predictions while listening to conversations/ transactional dialogues without video; listening with video.
Speaking: Role plays for practice of conversational English in academic contexts (formal and informal) - asking for and giving information/directions.
Reading: Studying the use of graphic elements in texts to convey information, reveal trends/patterns/relationships, communicate processes or display complicated data.
Writing: Letter Writing: Official Letters, Resumes
Grammar: Reporting verbs, Direct & Indirect speech, Active & Passive Voice
Vocabulary: Words often confused, Jargons

UNIT V

Lesson: **MOTIVATION: The Power of Intrapersonal Communication** (An Essay)

Listening: Identifying key terms, understanding concepts and answering a series of relevant questions that test comprehension.
Speaking: Formal oral presentations on topics from academic contexts
Reading: Reading comprehension.
Writing: Writing structured essays on specific topics.
Grammar: Editing short texts –identifying and correcting common errors in grammar and usage (articles, prepositions, tenses, subject verb agreement)
Vocabulary: Technical Jargons

Textbooks:

1. Pathfinder: Communicative English for Undergraduate Students, 1st Edition, Orient Black Swan, 2023 (Units 1,2 & 3)
2. Empowering with Language by Cengage Publications, 2023 (Units 4 & 5)

Reference Books:



1. Dubey, Sham Ji & Co. English for Engineers, Vikas Publishers, 2020
2. Bailey, Stephen. Academic writing: A Handbook for International Students. Routledge, 2014.
3. Murphy, Raymond. English Grammar in Use, Fourth Edition, Cambridge University Press, 2019.
4. Lewis, Norman. Word Power Made Easy- The Complete Handbook for Building a Superior Vocabulary. Anchor, 2014.

Web Resources:

GRAMMAR:

1. www.bbc.co.uk/learningenglish
2. <https://dictionary.cambridge.org/grammar/british-grammar/>
3. www.eslpod.com/index.html
4. <https://www.learngrammar.net/>
5. <https://english4today.com/english-grammar-online-with-quizzes/>
6. <https://www.talkenglish.com/grammar/grammar.aspx>

VOCABULARY

1. <https://www.youtube.com/c/DailyVideoVocabulary/videos>
2. https://www.youtube.com/channel/UC4cmBAit8i_NJZE8qK8sfpA

Rehman

SS

UNIVERSITY COLLEGE OF ENGINEERING KAKINADA (AUTONOMOUS)
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA (R23)

L	T	P	C
0	0	2	1

COMMUNICATIVE ENGLISH LAB
(Common to All Branches of Engineering)

Course Objectives:

The main objective of introducing this course, Communicative English Laboratory, is to expose the students to a variety of self-instructional, learner friendly modes of language learning. The students will get trained in basic communication skills and also make them ready to face job interviews.

Course Outcomes:

- CO1: Understand the different aspects of the English language proficiency with emphasis on LSRW skills.
- CO2: Apply communication skills through various language learning activities.
- CO3: Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.
- CO4: Evaluate and exhibit professionalism in participating in debates and group discussions.
- CO5: Create effective Course Objectives

List of Topics:

1. Vowels & Consonants
2. Neutralization/Accent Rules
3. Communication Skills & JAM
4. Role Play or Conversational Practice
5. E-mail Writing
6. Resume Writing, Cover letter, SOP
7. Group Discussions-methods & practice
8. Debates - Methods & Practice
9. PPT Presentations/ Poster Presentation
10. Interviews Skills

Suggested Software:

- Walden Infotech
- Young India Films

Reference Books:

1. Raman Meenakshi, Sangeeta-Sharma. Technical Communication. Oxford Press.2018.
2. Taylor Grant: English Conversation Practice, Tata McGraw-Hill Education India, 2016
3. Hewing's, Martin. Cambridge Academic English (B2). CUP, 2012.
4. J. Sethi & P.V. Dhamija. A Course in Phonetics and Spoken English, (2nd Ed) , Kindle, 2013



Web Resources:

Spoken English:

1. www.esl-lab.com
2. www.englishmedialab.com
3. www.englishinteractive.net
4. <https://www.britishcouncil.in/english/online>
5. <http://www.letstalkpodcast.com/>
6. https://www.youtube.com/c/mmmEnglish_Emma/featured
7. <https://www.youtube.com/c/ArnelsEverydayEnglish/featured>
8. <https://www.youtube.com/c/engvidAdam/featured>
9. <https://www.youtube.com/c/EnglishClass101/featured>
10. <https://www.youtube.com/c/SpeakEnglishWithTiffani/playlists>
11. https://www.youtube.com/channel/UCV1h_cBE0Drdx19qkTM0WNw

Voice & Accent:

1. <https://www.youtube.com/user/letstalkaccent/videos>
2. <https://www.youtube.com/c/EngLanguageClub/featured>
3. https://www.youtube.com/channel/UC_OskgZBoS4dAnVUgJVexc
4. https://www.youtube.com/channel/UCNfm92h83W2i2jc5Xwp_IA

Greenway

SG

**UNIVERSITY COLLEGE OF ENGINEERING KAKINADA (AUTONOMOUS)
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**

Minutes of the Board of Studies (BoS) - Chemistry – (R23)
on-line meeting on 28th October 2023

Ref.: (1) Proc. No. UCEK/BoS/B.Tech. (Chemistry)/2023 dt. 16.10.2023

With reference to the proceedings cited above the Board of Studies (BoS) of Chemistry held meeting on 28th October 2023 through on-line to discuss and prepare the syllabi of I year B. Tech. Engineering Chemistry and Chemistry (theory and lab) and finalize it. The expert members are:

1. Dr. S. Satya Veni
Assistant Professor of Chemistry
UCEK, JNTUK, Kakinada

Chairperson (i/c)
Present

2. Dr. D. Ramachandran,
Prof. of Chemistry
Acharya Nagarjuna University, Guntur

External Member
Present

After discussions and deliberations, the Board of studies (Chemistry) unanimously resolved to make minor changes in the syllabi of I year B. Tech. Engineering Chemistry and Chemistry (theory and lab) of JNTUK.


Dr. D. Ramachandran


Dr. S. Satya Veni

UNIVERSITY COLLEGE OF ENGINEERING KAKINADA (AUTONOMOUS)
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA (R23)

L	T	P	C
3	0	0	3

ENGINEERING CHEMISTRY

(Common to Civil, Chemical, Mechanical Engineering and allied branches)

Course Objectives:

- To familiarize engineering chemistry and its applications.
- To impart the concept of soft and hard waters, softening methods of hard water.
- To train the students on the principles and applications of electrochemistry, polymers, surface chemistry and modern engineering materials.

Course Outcomes: At the end of the course, the students will be able to

CO1: Analyze the suitable method of water treatment depending on the quality treatment.

CO2: Familiarize construction of electrochemical cells and understand corrosion mechanism and prevention.

CO3: Explain applications of polymers and concept of fuel technology.

CO4: Explain advanced applications of engineering materials like composites, refractories, lubricants, cement.

CO5: Summarize the concepts of colloids, micelles and nanomaterials.

UNIT I Water Technology

Soft and hard water - estimation of hardness of water by ethylene diamine tetra acetic acid (EDTA) method - estimation of dissolved oxygen - boiler troubles (priming, foaming, scale and sludge, caustic embrittlement), industrial water treatment - specifications for drinking water [Bureau of Indian Standards (BIS) and World health organization (WHO) standards], ion-exchange processes - desalination of brackish water [reverse osmosis (RO) and electrodialysis].

UNIT II Electrochemistry and Applications

Electrodes (standard hydrogen and calomel) - electrochemical cell - Nernst equation - cell potential calculations.

Batteries: Working principle including cell reactions of zinc-air battery, primary cells (dry cell) and secondary cells [nickel-cadmium (Ni-Cd) and lithium ion batteries] - fuel cells (basic principle and working of hydrogen-oxygen fuel cell).

Corrosion: Introduction to corrosion - electrochemical theory of corrosion - differential aeration cell corrosion - galvanic corrosion - metal oxide formation by dry/chemical corrosion - Pilling Bedworth ratio - factors affecting the corrosion - cathodic protection – cathodic and anodic coatings - electroplating and electroless plating (nickel and copper).

UNIT III Polymers and Fuel Chemistry

Polymers: Introduction - functionality of monomers - mechanism of chain growth, step growth polymerization.

Plastics: Thermoplastics and thermosetting plastics - moulding techniques (compression,



injection, extrusion, blow film) - preparation, properties and applications of Poly vinyl chloride (PVC), Nylon 6,6 and Bakelite.

Elastomers: Preparation, properties and applications of Buna-S, Buna-N and Thiokol rubber.

Fuels: Types - calorific value - numerical problems based on calorific value - analysis of coal (proximate and ultimate analysis) - liquid Fuels - refining of petroleum - octane and cetane number - alternative fuels (LPG, CNG, power alcohol and bio diesel).

UNIT IV Modern Engineering Materials

Composites: Definition - constituents - classification (particle, fibre and structural reinforced composites) - properties and engineering applications.

Refractories: Classification - properties (refractoriness, refractories under load, thermal spalling, porosity) - factors affecting the refractory materials - applications.

Lubricants: Classification - functions of lubricants - mechanism - properties of lubricating oils (viscosity, viscosity index, flashpoint, fire point, cloud point, saponification) - applications.

Building materials: Constituents of Portland cement - setting and hardening of cement.

UNIT V Surface Chemistry and Nanomaterials

Surface chemistry: Introduction, adsorption isotherms (Freundlich and Langmuir) - BET equation (no derivation)

Colloids: Micelle formation - synthesis of colloids (Bredig's arc method) - stability of colloids - applications

Nano-metals and nano-metal oxides: Chemical (sol-gel method) and biological method of preparation of nanometals and metal oxides - stabilization of nanomaterials by stabilizing agents - applications of nanomaterials.

Textbooks:

1. Jain and Jain, Engineering Chemistry, 16/e, Dhanpat Rai, 2013.
2. Peter Atkins, Julio de Paula and James Keeler, Atkins' Physical Chemistry, 10/e, Oxford University Press, 2010.

Reference Books:

1. H. F. W. Taylor, Cement Chemistry, 2/e, Thomas Telford Publications, 1997.
2. D. J. Shaw, Introduction to Colloids and Surface Chemistry, Butterworth-Heinemann, 1992.
3. Textbook of Polymer Science, Fred W. Billmeyer Jr, 3rd Edition.



UNIVERSITY COLLEGE OF ENGINEERING KAKINADA (AUTONOMOUS)
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA (R23)

L	T	P	C
0	0	2	1

ENGINEERING CHEMISTRY LAB
(Common to Civil, Chemical, Mechanical Engineering & allied branches)

Course Objectives:

- To verify the fundamental concepts with experiments

Course Outcomes: At the end of the course, the students will be able to:

CO1: Determine the cell constant and conductance of solutions.

CO2: Prepare advanced polymeric materials.

CO3: Determine the physical properties like surface tension, adsorption and viscosity.

CO4: Estimate the iron and calcium in cement.

CO5: Calculate the hardness of water.

List of Experiments:

1. Determination of hardness of groundwater sample.
2. Estimation of dissolved oxygen by Winkler's method.
3. Determination of strength of an acid in Pb-Acid battery.
4. Preparation of a polymer (Bakelite).
5. Determination of percentage of iron in cement sample by colorimeter.
6. Estimation of calcium in Portland cement.
7. Preparation of nanomaterials by precipitation method.
8. Adsorption of acetic acid by charcoal.
9. Determination of percentage moisture content in a coal sample.
10. Determination of viscosity of lubricating oil by Redwood Viscometer 1.
11. Determination of viscosity of lubricating oil by Redwood Viscometer 2.
12. Determination of calorific value of gases by Junker's gas Calorimeter.
13. Determination of Mn^{2+} using standard oxalic acid solution.
14. Determination of concentration of acetic acid by p^H metry.
15. Estimation of Zn^{2+} using standard EDTA solution.
16. Determination of concentration of strong acid vs strong base by conductometric method.

Of the above experiments at-least 10 assessment experiments should be completed in a semester.

Reference:

- "Vogel's Quantitative Chemical Analysis 6th Edition 6th Edition "Pearson Publications by J. Mendham, R.C. Denney, J.D. Barnes and B. Sivasankar.



University Engineering College(A): J N T University Kakinada

Department of Mathematics

I Year I Semester

LINEAR ALGEBRA AND CALCULUS

(Common to All Branches)

COURSE OBJECTIVES

The main objective of this course is to provide the learner with variety of linear algebra techniques to solve linear systems, orthogonal representation of the quadratic surfaces and apply its knowledge in optimization problems. It aims further to calculate areas, surfaces and volumes in various coordinate systems.

COURSE OUTCOMES


Upon completion of the course, the student will be able to:		Cognitive Level
CO1	Compute rank and inverse of a matrix and hence solves linear system of equations both homogeneous and non-homogeneous.	K2 or K3
CO2	Calculate eigen values and eigen vectors and hence orthogonalize the given matrix and represent given quadratic form into canonical form.	K2 or K3
CO3	Find the mean value of a given function and use it to estimate the bounds of a given function.	K2 or K3
CO4	Compute change in the dependent variable with respect to many independent variables and Jacobians. Apply the knowledge in optimizing functions of several variables.	K2 or K3
CO5	Compute double and triple integrals of functions of several variables and must be able to change the coordinate systems from polar, spherical and cylindrical coordinates.	K2 or K3

K1- Remembering, K2- Understanding, K3-Applying, K4- Analyzing, K5- Evaluating, K6- Creating

Contribution of Course Outcomes towards achievement of Program Outcomes (1 – Low, 2 - Medium, 3 – High)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	-	-	-	-	-	-	-	-	-
CO2	3	3	2	-	-	-	-	-	-	-	-	-
CO3	3	3	2	-	-	-	-	-	-	-	-	-
CO4	3	3	2	-	-	-	-	-	-	-	-	-
CO5	3	3	2	-	-	-	-	-	-	-	-	-

Members of BoS:

Dr. V.Ravindranath (Chairman)	Dr. T.V.S. Sekhar (Member)	Dr. Ch. Ramireddy (Member)	Dr. T. Hymavathi (Member)	Dr.G.V.S.R. Deekshitulu (Member)	Dr. S.K.Vali (Member)	Dr.K.Sobhan Babu (Member)
						

University Engineering College(A): J N T University Kakinada

Department of Mathematics

SYLLABUS

UNIT I

Matrices:

Rank of a matrix by echelon form, normal form: Diagonalization of a matrix. Cauchy-Binet formulae (without proof). Inverse of Non-singular matrices by Gauss-Jordan method, System of linear equations: Solving system of Homogeneous and Non-Homogeneous equations by Gauss elimination method, Jacobi and Gauss Seidel Iteration Methods.

UNIT II

Eigenvalues, Eigenvectors and Orthogonal Transformation:

Eigenvalues, Eigenvectors and their properties, Diagonalization of a matrix, Cayley-Hamilton Theorem (without proof), finding inverse and power of a matrix by Cayley-Hamilton Theorem, Quadratic forms and Nature of the Quadratic Forms, Reduction of Quadratic form to canonical forms by Orthogonal Transformation.

UNIT III

Calculus:

Mean Value Theorems: Rolle's Theorem, Lagrange's mean value theorem with their geometrical interpretation, Cauchy's mean value theorem, Taylor's and Maclaurin theorems with remainders (without proof), Problems and applications on the above theorems. Taylor's and Maclaurin series.

UNIT IV

Partial differentiation and Applications (Multi variable calculus):

Functions of several variables: Continuity and Differentiability, Partial derivatives, total derivatives, chain rule, Taylor's and Maclaurin's series expansion of functions of two variables. Jacobians, Functional dependence, maxima and minima of functions of two variables, method of Lagrange multipliers

UNIT V

Multiple Integrals (Multi variable Calculus):

Double integrals, change of order of integration, triple integrals, change of variables to polar, cylindrical and spherical coordinates. Finding areas (by double integrals) and volumes (by double integrals and triple integrals).


TEXT BOOKS

1. Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers, 2017, 44th Edition
2. Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons, 2018, 10th Edition.

REFERENCE BOOKS

1. Thomas Calculus, George B. Thomas, Maurice D. Weir and Joel Hass, Pearson Publishers, 2018, 14th Edition.

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University Engineering College(A): J N T University Kakinada


Department of Mathematics

2. Advanced Engineering Mathematics, R. K. Jain and S. R. K. Iyengar, Alpha Science International Ltd., 2021 5th Edition (9th reprint).
3. Advanced Modern Engineering Mathematics, Glyn James, Pearson publishers, 2018, 5th Edition.
4. Advanced Engineering Mathematics, Micheael Greenberg, , Pearson publishers, 9th edition.
5. Higher Engineering Mathematics, H. K Das, Er. Rajnish Verma, S. Chand Publications, 2014, Third Edition (Reprint 2021)
6. Advanced Engineering Mathematics by H. K Dass, S. Chand Publications, 2022, Twenty Two Edition (Reprint 2022).

WEB RESOURCES

1. https://en.wikipedia.org/wiki/System_of_linear_equations
2. https://en.wikipedia.org/wiki/Eigenvalues_and_eigenvectors
3. <https://www.math.hmc.edu/calculus/tutorials/eigenstuff/>
4. https://en.wikipedia.org/wiki/Quadratic_form
5. <https://en.wikipedia.org/wiki/Calculus>
6. https://en.wikipedia.org/wiki/Partial_derivative
7. https://www.whitman.edu/mathematics/calculus_online/section14.03.html
8. https://en.wikipedia.org/wiki/Multiple_integral
9. <http://tutorial.math.lamar.edu/Classes/CalcIII/MultipleIntegralsIntro.aspx>

Members of BoS:

Dr. V.Ravindranath (Chairman)	Dr. T.V.S. Sekhar (Member)	Dr. Ch. Ramireddy (Member)	Dr. T. Hymavathi (Member)	Dr.G.V.S.R. Deekshitulu (Member)	Dr. S.K.Vali (Member)	Dr.K.Sobhan Babu (Member)
						

L	T	P	C
3	0	0	3

BASIC CIVIL AND MECHANICAL ENGINEERING

(Common to All branches of Engineering)

Course Objectives:

- Get familiarized with the scope and importance of Civil Engineering sub-divisions.
- Introduce the preliminary concepts of surveying.
- Acquire preliminary knowledge on Transportation and its importance in nation's economy.
- Get familiarized with the importance of quality, conveyance and storage of water.
- Introduction to basic civil engineering materials and construction techniques.

Course Outcomes: On completion of the course, the student should be able to:

- CO1: Understand various sub-divisions of Civil Engineering and to appreciate their role in ensuring better society.
- CO2: Know the concepts of surveying and to understand the measurement of distances, angles and levels through surveying.
- CO3: Realize the importance of Transportation in nation's economy and the engineering measures related to Transportation.
- CO4: Understand the importance of Water Storage and Conveyance Structures so that the social responsibilities of water conservation will be appreciated.
- CO5: Understand the basic characteristics of Civil Engineering Materials and attain knowledge on prefabricated technology.

UNIT I

Basics of Civil Engineering: Role of Civil Engineers in Society- Various Disciplines of Civil Engineering- Structural Engineering- Geo-technical Engineering- Transportation Engineering - Hydraulics and Water Resources Engineering - Environmental Engineering-Scope of each discipline - Building Construction and Planning - Construction Materials-Cement - Aggregate - Bricks- Cement concrete- Steel. Introduction to Prefabricated construction Techniques.

UNIT II

Surveying: Objectives of Surveying- Horizontal Measurements- Angular Measurements- Introduction to Bearings Levelling instruments used for levelling - Simple problems on levelling and bearings-Contour mapping.

UNIT III

Transportation Engineering: Importance of Transportation in Nation's economic development- Types of Highway Pavements- Flexible Pavements and Rigid Pavements - Simple Differences. Basics of Harbour, Tunnel, Airport, and Railway Engineering.

Water Resources and Environmental Engineering: Introduction. Sources of water- Quality of water- Specifications- Introduction to Hydrology-Rainwater Harvesting-Water Storage and Conveyance Structures (Simple introduction to Dams and Reservoirs).

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PROFESSOR & HEAD
Department of Civil Engineering
University College of Engineering
JNTUK, KAKINADA-533 003

Textbooks:

1. Basic Civil Engineering, M.S.Palanisamy, . Tata McGraw Hill publications (India) Pvt. Ltd. Fourth Edition
2. Introduction to Civil Engineering, S.S. Bhavikatti, New Age International Publishers, 2022, First Edition.
3. Basic Civil Engineering, Satheesh Gopi, Pearson Publications, 2009, First Edition.

Reference Books:

1. Surveying, Vol- I and Vol-II, S.K. Duggal, Tata McGraw Hill Publishers 2019, Fifth Edition
2. Hydrology and Water Resources Engineering, Santosh Kumar Garg, Khanna Publishers, Delhi, 2016
3. Irrigation Engineering and Hydraulic Structures - Santosh Kumar Garg, Khanna Publishers, Delhi 2023, 38th Edition.

I Year - I Semester	INTRODUCTION TO PROGRAMMING (Common to All branches of Engineering)	L	T	P	C
		3	0	0	3

Course Objectives:

The main objectives of the course are to

- Introduce students to the fundamentals of computer programming.
- Provide hands-on experience with coding and debugging.
- Foster logical thinking and problem-solving skills using programming.
- Familiarize students with programming concepts such as data types, control structures, functions, and arrays.
- Encourage collaborative learning and teamwork in coding projects.

Course Outcomes:

A student after completion of the course will be able to

CO1: Understand basics of computers, the concept of algorithm and algorithmic thinking.

CO2: Analyse a problem and develop an algorithm to solve it.

CO3: Implement various algorithms using the C programming language.

CO4: Understand more advanced features of C language.

CO5: Develop problem-solving skills and the ability to debug and optimize the code.

UNIT I:

Introduction to Programming and Problem Solving: History of Computers, Basic organization of a computer: ALU, input-output units, memory, program counter, Introduction to Programming Languages, Basics of a Computer Program- Algorithms, flowcharts (Using Dia Tool), pseudo code. Introduction to Compilation and Execution, Primitive Data Types, Variables, and Constants, Basic Input and Output, Operations, Type Conversion, and Casting. Problem solving techniques: Algorithmic approach, characteristics of algorithm, Problem solving strategies: Top-down approach, Bottom-up approach, Time and space complexities of algorithms.

UNIT II :

Control Structures: Simple sequential programs Conditional Statements (if, if-else, switch), Loops (for, while, do-while) and Unconditional statements: goto, Break and Continue.

UNIT III:

Arrays and Strings: Arrays indexing, memory model, programs with array of integers, two dimensional arrays, Introduction to Strings and string Operations

UNIT IV:

Pointers & User Defined Data types: Pointers, dereferencing and address operators, pointer and address arithmetic, array manipulation using pointers, User-defined data types-Structures and Unions.

UNIT V:

Functions & File Handling: Introduction to Functions, Function Declaration and Definition, Function call Return Types and Arguments, modifying parameters inside functions using pointers, arrays as parameters, Recursive functions. Scope and Lifetime of Variables, Basics of File Handling

18/11/2023

Note: The syllabus is designed with C Language as the fundamental language of implementation.

Textbooks:

1. "The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice-Hall, 1988
2. Schaum's Outline of Programming with C, Byron S Gottfried, McGraw-Hill Education, 1996

Reference Books:

1. Computing fundamentals and C Programming, Balagurusamy, E., McGraw-Hill Education, 2008.
2. Programming in C, Rema Theraja, Oxford, 2016, 2nd edition
3. C Programming, A Problem Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE, 3rd edition






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24/10/23

Mechanical Department HOD <mechhod@jntucek.ac.in>

JNTUK - UCEK - UG BOS - Request to send remuneration bill and approve the syllabus

6 messages

Mechanical Department HOD <mechhod@jntucek.ac.in>

Tue, Oct 31, 2023 at 5:06 PM

To: Gopala Krishna <dr.a.gopalakrishna@gmail.com>, Venkatesham B <venkatesham@iith.ac.in>

Dear Sir,

Greetings from DEPARTMENT OF MECHANICAL ENGINEERING, UNIVERSITY COLLEGE OF ENGINEERING KAKINADA.

Thank you for attending the Board of studies meeting held on 28-10-2023 through ONLINE mode for curriculum revision of B. Tech (Mechanical Engineering) according to R23 regulations.

I am herewith sending the syllabi of the subjects, after incorporating the changes suggested during the BOS meeting. It is requested to give approval for the same.

Also, it is requested to send a scanned copy of the filled in bill form as per format enclosed herewith.

Dr. N. Mohan Rao,
Professor & Head,
University College of Engineering,
KAKINADA-533003
Mobile:9849340437

2 attachments **R23 BTech I year.docx**
29K **bill form _UG BOS 28102023.docx**
141K**Venkatesham B** <venkatesham@mae.iith.ac.in>

Tue, Oct 31, 2023 at 5:26 PM

To: Mechanical Department HOD <mechhod@jntucek.ac.in>

Cc: Gopala Krishna <dr.a.gopalakrishna@gmail.com>, Venkatesham B <venkatesham@iith.ac.in>

Approved Professor. I will send the bill later.

Thanks and regards
Venkatesham

[Quoted text hidden]

Disclaimer:- This footer text is to convey that this email is sent by one of the users of IITH. So, do not mark it as SPAM.

Venkatesham B <venkatesham@mae.iith.ac.in>

Thu, Nov 2, 2023 at 10:20 AM

To: Mechanical Department HOD <mechhod@jntucek.ac.in>

Cc: Gopala Krishna <dr.a.gopalakrishna@gmail.com>, Venkatesham B <venkatesham@iith.ac.in>

Dear Professor,

Please find the attached signed bill form for UG BOS.

Thanks and Regards

11/3/23 3:43 PM University College of Engineering Kakinada Mail - JNTUK - UCEK - UG BOS - Request to send remuneration bill and approve the ...
Venkatesham

[Content hidden]
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<R23 BTech I year.docx><bill form _UG BOS 28102023.docx>

[Content hidden]

bill form _UG BOS 28102023_BV.pdf
183K

Fri, Nov 3, 2023 at 9:38 AM

Mechanical Department HOD <mechhod@jntucek.ac.in>
To: Venkatesham B <venkatesham@mae.iith.ac.in>

Thank you sir. The bill will be processed.

[Content hidden]

Fri, Nov 3, 2023 at 9:39 AM

Mechanical Department HOD <mechhod@jntucek.ac.in>
To: nagesh rao <mananageshg@gmail.com>

[Content hidden]

2 attachments

R23 BTech I year.docx
29K

bill form _UG BOS 28102023.docx
141K

Fri, Nov 3, 2023 at 10:31 AM

Mechanical Department HOD <mechhod@jntucek.ac.in>
To: nagesh rao <mananageshg@gmail.com>

[Content hidden]

bill form _UG BOS 28102023_BV.pdf
183K

DEPARTMENT OF MECHANICAL ENGINEERING
UNIVERSITY COLLEGE OF ENGINEERING KAKIANADA
JNTUK, KAKINADA - 533003

BOARD OF STUDIES MEETING held on 28-10-2023

Program: B.Tech

I B.Tech – I Semester

Basic Civil & Mechanical Engineering
Engineering Workshop
Engineering Graphics

I- B.Tech – II Semester

Engineering Mechanics
Engineering Mechanics Lab

Minutes of BOS meeting held on 28-10-2023 with regard to syllabus of First year B. Tech. program

The members suggested the following additions to the syllabus suggested by the JNTUK University.

1. BASIC MECHANICAL ENGINEERING:

Include the practical examples for all the topics to enhance the comprehension of the students and include one tutorial hour per week.

2. ENGINEERING GRAPHICS:

- a. Enhance the lecture hours to 2 hours per week.
- b. Include the practice of free hand sketches using Sketching books for few examples in addition to conventional drawing by drawing instruments

3. ENGINEERING WORKSHOP: Same as University syllabus.

4. ENGINEERING MECHANICS: Same as University syllabus.

5. ENGINEERING MECHANICS LAB: Same as University syllabus.

M
H. M. C. D

A
(Dr. A. Gopala Krishnan)

PART B: BASIC MECHANICAL ENGINEERING

Course Objectives: The students after completing the course are expected to

- Get familiarized with the scope and importance of Mechanical Engineering in different sectors and industries.
- Explain different engineering materials and different manufacturing processes.
- Provide an overview of different thermal and mechanical transmission systems and introduce basics of robotics and its applications.

Course Outcomes: On completion of the course, the student should be able to

CO1: Explain the role of mechanical engineering in industrial sectors. Identify different materials used in engineering applications.

CO2: Enlist different manufacturing processes and their practical applications. Explain the working principles of Boilers and I.C engines and power cycles.

CO3: Describe the construction and working of different power transmission systems. Explain the working principle of different power plants. Describe the basic components of a robot and its applications.

UNIT I

Introduction to Mechanical Engineering: Role of Mechanical Engineering in Industries and Society- Technologies in different sectors such as Energy, Manufacturing, Automotive, Aerospace, and Marine sectors with examples.

Engineering Materials - Metals-Ferrous and Non-ferrous, Ceramics, Composites, Smart materials.

UNIT II

Manufacturing Processes: Principles and practical applications of Casting, Forming, joining processes, Machining, Introduction to CNC machines, 3D printing, and Smart manufacturing.

Thermal Engineering – Working principles and demo models of Boilers, Otto cycle, Diesel cycle, Refrigeration and air-conditioning cycles, IC engines, 2-Stroke and 4-Stroke engines, SI/CI Engines, Components of Electric and Hybrid Vehicles.

UNIT III

Power plants – Working principle of Steam, Diesel, Hydro, Nuclear power plants.

Mechanical Power Transmission - Belt Drives, Chain, Rope drives, Gear Drives and their applications.

Introduction to Robotics - Joints & links, configurations, and applications of robotics. Demo on operation of a robot

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(Note: The subject covers only the basic principles of Civil and Mechanical Engineering systems. The evaluation shall be intended to test only the fundamentals of the subject.)

Textbooks:

1. Internal Combustion Engines by V.Ganesan, By Tata McGraw Hill publications (India) Pvt. Ltd.
2. A text book of Theory of Machines by S.S. Rattan, Tata McGraw Hill Publications, (India) Pvt. Ltd.
3. An introduction to Mechanical Engg by Jonathan Wicker and Kemper Lewis, Cengage learning India Pvt. Ltd.

Reference Books:

1. G. Shanmugam and M.S.Palanisamy, Basic Civil and the Mechanical Engineering, Tata McGraw Hill publications (India) Pvt. Ltd.
2. Thermal Engineering by Mahesh M Rathore Tata McGraw Hill publications (India) Pvt. Ltd.
3. 3D printing & Additive Manufacturing Technology- L. Jyothish Kumar, Pulak M Pandey, Springer publications
4. Appuu Kuttan KK, Robotics, I.K. International Publishing House Pvt. Ltd. Volume-I

MR

ENGINEERING WORKSHOP

(Common to All branches of Engineering)

Course Objectives:

To familiarize students with wood working, sheet metal operations, fitting, electrical house wiring skills, and basic repairs of two-wheeler vehicle.

Course Outcomes:

CO1: Identify workshop tools and their operational capabilities.

CO2: Practice on manufacturing of components using workshop trades including fitting, carpentry, foundry and welding.

CO3: Apply fitting operations in various applications.

CO4: Apply basic electrical engineering knowledge for House Wiring Practice

SYLLABUS

- 1 **Demonstration:** Safety practices and precautions to be observed in workshop.
- 2 **Wood Working:** Familiarity with different types of woods and tools used in wood working and make following joints.
 - a) Half – Lap joint b) Mortise and Tenon joint c) Corner Dovetail joint or Bridle joint
- 3 **Sheet Metal Working:** Familiarity with different types of tools used in sheet metal working, Developments of following sheet metal job from GI sheets.
 - a) Tapered tray b) Conical funnel c) Elbow pipe d) Brazing
4. **Fitting:** Familiarity with different types of tools used in fitting and do the following fitting exercises.
 - a) V-fit b) Dovetail fit c) Semi-circular fit
 - d) Bicycle tire puncture and change of two-wheeler tyre
5. **Electrical Wiring:** Familiarity with different types of basic electrical circuits and make the following connections.
 - a) Parallel and series b) Two-way switch c) Godown lighting d) Tube light
 - e) Three phase motor f) Soldering of wires
6. **Foundry Trade:** Demonstration and practice on Moulding tools and processes, Preparation of Green Sand Moulds for given Patterns.
7. **Welding Shop:** Demonstration and practice on Arc Welding and Gas welding. Preparation of Lap joint and Butt joint.
8. **Plumbing:** Demonstration and practice of Plumbing tools, Preparation of Pipe joints with coupling for same diameter and with reducer for different diameters.
9. **Basic repairs of Two-wheeler vehicle** – Demonstration of working of two-wheeler vehicle and its repairs.

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Textbooks:

1. Basic Workshop Technology: Manufacturing Process, Felix W.; Independently Published, 2019. Workshop Processes, Practices and Materials; Bruce J. Black, Routledge publishers, 5th Edn. 2015.
2. A Course in Workshop Technology Vol I. & II, B.S. Raghuwanshi, Dhanpath Rai & Co., 2015 & 2017.

Reference Books:

1. Elements of Workshop Technology, Vol. I by S. K. Hajra Choudhury & Others, Media Promoters and Publishers, Mumbai. 2007, 14th edition
2. Workshop Practice by H. S. Bawa, Tata-McGraw Hill, 2004.
3. Wiring Estimating, Costing and Contracting; Soni P.M. & Upadhyay P.A.; Atul Prakashan, 2021-22.

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