KONGU ENGINEERING COLLEGE

(Autonomous Institution Affiliated to Anna University, Chennai)

PERUNDURAI ERODE – 638 060 TAMILNADU INDIA



REGULATIONS, CURRICULUM & SYLLABI – 2024

(CHOICE BASED CREDIT SYSTEM AND OUTCOME BASED EDUCATION)

(For the students admitted from the academic year 2024 - 2025)

BACHELOR OF TECHNOLOGY DEGREE IN FOOD TECHNOLOGY

DEPARTMENT OF FOOD TECHNOLOGY



B.TECH. FOOD TECHNOLOGY CURRICULUM – R2024 (For the students admitted from the academic year 2024-25 onwards)

| F | | | Н | ours / | Seme | ster | | | Maximum Marks | | | | |
|----------------|--|------|----------|--------|------|------|-----|------------|---------------|-----|-------|--------------|------|
| Course Code | Course Title | С | | LI | TW | SL | TH | Cre dit | CA | ESE | Total | Cate gory | Туре |
| - 1 | | L | Т | P | 1 99 | 3L | | 3 | GA . | LOL | Total | | |
| Theory/The | eory with Practical | | | | | | | | ĝ. | | | | |
| 24EGT11 | English for Effective Communication - I | 45 | 0 | 0 | 45 | 0 | 90 | 3 | 40 | 60 | 100 | HS | С |
| 24MAC11 | Matrices and Ordinary Differential Equations | 45 | 7 | 16 | 52 | 0 | 120 | 4 | 50 | 50 | 100 | BS | Α |
| 24CYT15 | Chemistry for Food Technology | 45 | 0 | 0 | 45 | 0 | 90 | 3 | 40 | 60 | 100 | BS | С |
| 24ÇSC11 | Problem Solving and Programming in C | 45 | 0 | 30 | 45 | 0 | 120 | 4 | 100 | 0 | 100 | ES | ОТ |
| 24FTT11 | Fundamentals of Biochemistry | 45 | 0 | 0 | 45 | 0 | 90 | 3 | 40 | 60 | 100 | ES | С |
| 24TAM01 | Heritage of Tamils | 15 | 0 | 0 | 15 | 0 | 30 | 1 | 100 | . 0 | 100 | HS | ОТ |
| Practical / | Employability Enhancement | | | | | | 2. | | | | | | |
| 24CYL15 | Chemistry Laboratory for Food Technology | 0 | 0 | 30 | 0 | 0 | 30 | 1 | 60 | 40 | 100 | BS | |
| 24GCL12 | Foundation Laboratory – Electrical, IoT and Web Technologies | 0 | 0 | 90 | 0 | 0 | 90 | 3 | 100 | 0 | 100 | ES | |
| 24MNT12 | Quantitative Aptitude – I | 30 | 0 | 0 | 0 | 0 | 30 | 0 | 100 | 0 | 100 | МС | |
| 24MNT11 | Student Induction Program | 0 | 0 | 90 | 0 | 0 | 90 | 0 | 100 | 0 | 100 | мс | |
| | Total Credits to be e | arne | <u> </u> | | | | - | 22 | | | | | |

CI – Classroom Instructions, LI – Laboratory Instructions, TW – Term Work, SL – Self Learning, L – Lecture, T – Tutorial, P – Practical, C – Credit, TH – Total Hours, CA – Continuous Assessment, ESE – End Semester Examination.

Type: A – Analytical, D – Design using Hardware, S – Simulation using Coding, C – Concept, OC – Online course, OT - others

Signature of the Chairman

Board of Studies - Food Technolog

B.TECH. FOOD TECHNOLOGY CURRICULUM – R2024 (For the students admitted from the academic year 2024-25 onwards)

| SEMESTE | K – II | | | | | | | | | | | | |
|-------------|---|----------------------------|------------|--------|------|-------|--------------|------|-----|--------|--------|-------|-----|
| | , | | Н | ours / | Seme | ster | | | Max | imum N | /larks | . * 1 | |
| Course Code | Course Title | Course Little Ci Li Li | Cre dit | CA | ESE | Total | Cate gory | Туре | | | | | |
| | | L T P | | | CA | ESE | Total | | Ξ. | | | | |
| Theory/Th | eory with Practical | | | - | | | ń | 1 | 7 | * . | 8. | | |
| 24EGT21 | English for Effective Communication - II | 45 | 0 | 0 | 45 | 0 | 90 | 3 | 40 | 60 | 100 | HS | С |
| 24MAC21 | Multivariable Calculus and Complex Analysis | 45 | 7 | 16 | 52 | 0 | 120 | 4 | 50 | 50 | 100 | BS | A |
| 24PHT24 | Physics for Food Technology | 45 | 0 | 0 | 45 | 0 | 90 | 3 | 40 | 60 | 100 | BS | С |
| 24ITC23 | Python Programming | 45 | 0 | 30 | 45 | 0 | 120 | 4 | 100 | 0 | 100 | ES | ОТ |
| 24MET11 | Engineering Drawing | 30 | 15 | 0 | 45 | 0 | 90 | 3 | 40 | 60 | 100 | ES | Α |
| 24TAM02 | Tamils and Technology | 15 | 0 | 0 | 15 | 0 | 30 | 1 | 100 | 0 | 100 | HS | ОТ |
| Practical / | Employability Enhancement | | | | | an . | | | 9 | | , î | 10 | - |
| 24PHL24 | Physics Laboratory for Food Technology | 0 | 0 | 30 | 0 | 0 | 30 | 1 | 60 | 40 | 100 | BS | |
| 24GCL11 | Foundation Laboratory – Manufacturing, Design and Robotics | 0 | 0 | 90 | 0 | 0 | 90 | 3 | 100 | 0 | 100 | ES | |
| 24MNT21 | Quantitative Aptitude – II | 30 | 0 | 0 | 0 | 0 | 30 | 0 | 100 | 0 | 100 | МС | il |
| 24VEC11 | Yoga and Values for Holistic Development | 15 | 0 | 15 | 0 | 0 | 30 | 1 | 100 | 0 | 100 | HS | |
| | Total Credits to be e | arne | i l | | | | | 23 | | 4 | | | . × |

CI – Classroom Instructions, LI – Laboratory Instructions, TW – Term Work, SL – Self Learning, L – Lecture, T – Tutorial, P – Practical, C – Credit, TH – Total Hours, CA – Continuous Assessment, ESE – End Semester Examination

Type: A - Analytical, D - Design using Hardware, S - Simulation using Coding, C - Concept, OC - Online course, OT - others

2. omuf.

Signature of the Chairman

Board of Studies - Food Technolog

B.TECH. FOOD TECHNOLOGY CURRICULUM – R2024 (For the students admitted from the academic year 2024-25 onwards)

| | | | Ho | ours / | Seme | ster | | 7 | Max | imum N | larks | | |
|----------------|---|------|----|--------|------|------|-----|------------|-----|--------|-------|--------------|------|
| Course Code | Course Title | С | 1 | LI | TW | SL | ТН | Cre dit | CA | ESE | Total | Cate gory | Туре |
| - | a | L | Т | Р | 1 44 | SL | ın | | CA | ESE | Total | 8 | |
| Theory/The | eory with Practical | | | i i | | | | | | - 4g | | | |
| 24FTC31 | Engineering Properties of Food Materials | 45 | 0 | 30 | 45 | 0 | 120 | 4 | 50 | 50 | 100 | PC | С |
| 24FTT31 | Food Science and Nutrition | 45 | 0 | 0 | 15 | 30 | 90 | 3 | 40 | 60 | 100 | РС | OC/C |
| 24FTT32 | Food Process Calculation | 45 | 15 | 0 | 60 | 0 | 120 | 4 | 40 | 60 | 100 | ES | Α |
| 24FTT33 | Process Fluid Mechanics | 45 | 15 | 0 | 60 | 0 | 120 | 4 | 40 | 60 | 100 | PC | Α |
| 24FTT34 | Food Chemistry | 45 | 0 | 0 | 45 | 0 | 90 | 3 | 40 | 60 | 100 | РС | С |
| 24GET31 | Universal Human Values | 30 | 0 | 0 | 30 | 0 | 60 | 2 | 100 | 0 | 100 | HS | ОТ |
| Practical / | Employability Enhancement | | | | | | | , - ut | | 127 | - | | |
| 24FTL31 | Fluid Flow Laboratory | 0 | 0 | 30 | 0 | 0 | 30 | 1 | 60 | 40 | 100 | PC | |
| 24FTL32 | Food Chemistry Laboratory | 0 | 0 | 30 | 0 | 0 | 30 | 1 | 60 | 40 | 100 | PC | |
| 24GEP31 | Mini Project - I | 0 | 0 | 30 | 0 | 0 | 30 | 1 | 100 | 0 | 100 | EC | |
| | Total Credits to be e | arne | d | | | | | 23 | 1 | | | - | |

CI – Classroom Instructions, LI – Laboratory Instructions, TW – Term Work, SL – Self Learning, L – Lecture, T – Tutorial, P – Practical, C – Credit, TH – Total Hours, CA – Continuous Assessment, ESE – End Semester Examination.

Type: A - Analytical, D - Design using Hardware, S - Simulation using Coding, C - Concept, OC - Online course, OT - others

Signature of the Chairman

Board of Studies - Food

| | | (Common to all Engine | ering and Tech | nnology Brand | hes) | | | | | |
|---|--|--|--|---|--|--|--|--|---|---|
| Programme Branch | | All B.E/B.Tech Branches | Sem | Category | L | Т | Р | SL* | Total | Credi |
| Prerequisit | tes | Nil | 1 | HS | 45 | 0 | 0 | 45 | 90 | 3 |
| Preamble | | s course is designed to enhance the co various workplace communication and | | | al apti | ude i | n Eng | lish la | nguage i | required |
| Unit – I | | ammar, Verbal Aptitude, Listening, S Speech – Articles – Determiners – | | | | | | | | 9 |
| Building a Po Unit – II Grammar: T Prefixes and Asking Ques Strategies: A | Gray ypes of Suffixed tions – n Exce | g: Importance of Good Communication Attitude: An Excerpt from You Can Windermar, Verbal Aptitude, Listening, Soff Sentences – Assertive, Interrogative is – Collocations – Idiomatic Expression Role Play – Reading: Reading for Corpt from You Can Win-Writing: Description | Writing: Empeaking, Read Imperative and Emperative an | nail Etiquette - ding & Writin and Exclamato : Identifying r - Verbal and | – Emai g ory – C nain a d Non- | Uuest nd Se Verba | ing – ion T econd | Respo ags- V ary Po mmunic | /erbal A ints – Sp | Emails 9 ptitude peaking Winning |
| Unit – III Grammar: To from a Disconding: Narra Unit – IV Grammar: P Sentence Correct | Graenses cussion—Sc ative an Graenmelsi annels Graenmels Graenmels Graenmels Graenmels | ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, S.— Phrasal Verbs— Verbal Aptitude: Jun — Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Stions — Transitional Words/Phrases — on — Listening: Listening for Specific of communication — Building Positive ammar, Verbal Aptitude, Listening, Sammar, Verbal Aptitude, Listening, S | peaking, Read mbled Senten nt — Discuss is Every Day: peaking, Read Discourse Ma Information — Self-Esteem a peaking, Read | ding & Writin lices – Senten sing Tourist An Excerpt fr ding & Writin arkers – Verl – Speaking: and Image: And | ice For Destin Com You Ig Bal Ap Small In Exce | matic ations ou Ca otitud Talk erpt fr | e: Oi Teleom Y | istenir Readi n – Wr ne Wo phonic | ng: Takir ng: Pro iting: Pro ord Subs c Conver n Win – | 9 ng Note ocess of aragrap 9 titution reations Writing |
| Unit – III Grammar: To from a Disc Communicati Writing: Narra Unit – IV Grammar: P Sentence Co Reading: Ch Instructions – Unit – V Grammar: S – Cloze Test Speaking: A Excerpt from Specific Voca | Graenses cussion cussion Scative an Preposi pmpleti nannels Recon Gra ubject t using greein you abulary | ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, S.— Phrasal Verbs— Verbal Aptitude: Jun — Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Stions — Transitional Words/Phrases — on — Listening: Listening for Specific of communication — Building Positive ammar, Verbal Aptitude, Listening, Sommar, Verbal Aptitude, Listening, S | peaking, Reambled Sentent — Discusses Every Day: peaking, Reambled Sentential Piscourse Mais Information — Self-Esteem and Peaking, Reambled Self-Esteem and Peaking, Reambled Self-Esteeming — Reading to the Peaking of the Peaking | ding & Writin ices – Senten sing Tourist An Excerpt fr ding & Writin arkers – Verl – Speaking: and Image: And ding & Writin Aptitude: Hore Listening and to Summarize | ng Destination Young Small n Exceeding The Small of the S | matic ations ou Ca otitud Talk rpt fr | e: Oi Tele om Y | istenir Readi n – Wr ne Wo phonic ou Cal nones a | ng: Takir ng: Pro iting: Pro ord Subs c Conver n Win – | 9 ng Note ocess of aragraph 9 titution reations Writing 9 nograph cription |
| Unit – III Grammar: To from a Disc Communicati Writing: Narra Unit – IV Grammar: P Sentence Co Reading: Ch Instructions – Unit – V Grammar: S – Cloze Test Speaking: A Excerpt from Specific Voca TEXT BOOK | Grannels - Recon - Grannels - Recon - Grannels - Recon - Grannels - Union - Grannels - G | ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, S — Phrasal Verbs— Verbal Aptitude: Jun — Speaking: Retelling an Incide anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Stions — Transitional Words/Phrases — on — Listening: Listening for Specific of communication — Building Positive ammar, Verbal Aptitude, Listening, Storm Agreement — Gerunds and Infinitive Forms, Prepositions and Articles and Disagreeing — Reading: Skimmir Can Win — Writing: Transcoding: Identity and N P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity and N P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A Pand Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A Pand Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A Pand Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English For Technical Can Win — Writing: Identity A Pan | peaking, Reacmbled Sentent — Discuss s Every Day: peaking, Reac Discourse Mail Information Self-Esteem a peaking, Reacyes—Verbal As—Listening: ng — Reading to tifying Trends | ding & Writing Ices – Sentending Tourist An Excerpt from | ice For Destin Tom Young Small In Exceeding Identification of the International Identification of Iden | maticn ation: bu Ca btitud Talk Talk rpt fr | e: Or Y | istenir Readi n – Wr ne Wo phonic ou Car nones a ts from chievin Expres | ng: Takir ng: Pro iting: Pa ord Subs c Conver n Win – | 9 ng Notes ocess of aragraph 9 titution reations Writing 9 nograph cription - ioals: Ai h Graph |
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^{*} includes Term Work (TW) & Assignments, Tutorials and Case Studies

| | SE OUTCOMES: mpletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-----|--|---------------------------|
| CO1 | learn and use various aspects of English vocabulary to perform well in verbal aptitude tests of different types | Applying (K3) |
| CO2 | listen and understand different spoken discourses | Applying (K3) |
| CO3 | present ideas clearly and confidently in formal and informal conversations and discussions | Creating (K6) |
| CO4 | comprehend the given text and respond appropriately for technical and professional purposes | Understanding (K2) |
| CO5 | select appropriate words , phrases and grammatical units and apply them in both spoken and written communication | Analyzing (K4) |

| COs/ POs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PS01 | PSO2 |
|-------------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|------|------|------|
| CO1 | | | | | | 1. | | 1 | 3 | 1 | .1 | | |
| CO2 | | | = , | | - | i i | | 1 | 3 | | 1 | | - 7 |
| CO3 | | | | | | | | 2 | 3 | 1 | 2 | | |
| CO4 | | | | | | 1 | | | 3 | 1 | 2 | | |
| CO5 | | | | | . =1 | | | | 3 | | 2 | | |

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN – THEORY

| Test / Bloom's Category* | Remembering (K1) % | Understa nding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total % |
|--------------------------------|--------------------|-----------------------------|--------------------|---------------------|----------------------|-----------------|---------|
| CAT1 | - | 35 | 50 | = | - | 15 | 100 |
| CAT2 | | 45 | 35 | · - 1 | y ee 🛌 | 20 | 100 |
| CAT3 | - | 30 | 35 | 35 | | | 100 |
| ESE | - | 20 | 40 | 20 | - | 20 | 100 |

* ±3% may be varied (CAT 1,2& 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman Board of Studies - Sr H (English)



| 1 | (Common to all Engi | neering and T | echnology l | orano | ches |) | | | |
|--|--|--|---|------------------|----------------|-----------------------------------|--------------------|------------------------|---|
| Programme & Branch | All B.E/B.Tech Branches | Sem. | Category | L | Т | Р | SL* | Total | Credit |
| Prerequisites | Nil | 1. | BS | 45 | 7 | 16 | 52 | 120 | 4 |
| Preamble | To provide the skills to the stude and ordinary differential equation | lents for solving | g different re | al tim | ne pr | oblen | ns by a | applying | matrices |
| Unit – I | Matrices: | C There | Jakob Fer Si | . 170 | | | 9 | Tell ? | 9 |
| and Eigen vector matrices – Ortho | naracteristic equation – Eigen valuors (without proof) – Cayley – Ha gonal transformation of a symmet on of quadratic form to canonical f | amilton theorer tric matrix to dia | m (Statemen agonal form - | t and Qua | d app adrat | olicati | ions or | nly) - Or | thogona |
| Unit – II | Ordinary Differential Equation | | | | 9 | | | | 9 |
| Introduction – Se | olution of First order differential ed | quations: Exac | t differential | equat | tions | – Le | ibnitz's | Linear I | Equation |
| Unit – III | ation – Clairaut's equation - Appli Ordinary Differential Equation | | | wth a | nd d | ecay | | | |
| | l equations of second and higher | | | ents - | Par | ticula | r Inten | rale for th | 9 |
| eax - cosax / | $\sin ax - x^n - e^{ax}x^n$, $e^{ax}\sin bx$ and $e^{ax}\cos ax$ | eax cosbx – Diff | erential Equa | ations | s with | h vari | able co | pefficient | s: Euler- |
| Cauchy's equati | on – Legendre's equation. | , , , , , , , , , , , , , , , , , , , | | 1. | | | | | |
| Unit – IV | Applications of Ordinary Diffe | | | | | | | k | 9 |
| Method of varia | ation of parameters – Simultan differential equations: Simple h | eous first ord | er linear eq | uatio | ns \ | with (| consta | nt coeffi | cients – |
| associated cond | itions need to be given). | iarmonic mond | on – ⊏iecuio | CITO | uits | (וווט | erentia | ıı equatio | ons and |
| Unit – V | Laplace Transform: | | | | - | | | - | 9 |
| Introduction - Co | onditions for existence - Laplace t | transform of ele | mentary fun | at: a = | | | | | |
| and integrals of | | | silicitially full | Cuon | s – E | Basic | proper | ties – De | rivatives |
| and integrals of t | ransforms – Transform of periodic | c functions - Inv | erse Laplace | e tran | sfor | m: Inv | verse L | aplace tr | ansform |
| of elementary fu | nctions – Partial fraction method | c functions - Inv | erse Laplace | e tran | sfor | m: Inv | verse L | aplace tr | ansform |
| of elementary fu | ransforms – Transform of periodic nctions – Partial fraction method th constant coefficients. | c functions - Inv | erse Laplace | e tran | sfor | m: Inv | verse L | aplace tr | ansform |
| of elementary fu second order wi | nctions – Partial fraction method | c functions - Inv | erse Laplace | e tran | sfor | m: Inv | verse L | aplace tr | ansform |
| of elementary fu second order with LIST OF EXPER | nctions – Partial fraction method th constant coefficients. | c functions - Inv | erse Laplace | e tran | sfor | m: Inv | verse L | aplace tr | ansform |
| of elementary fusecond order with second order w | nctions – Partial fraction method th constant coefficients. | c functions - Inv – Convolution | erse Laplace | e tran | sfor | m: Inv | verse L | aplace tr | ansform |
| LIST OF EXPER 1. Introduct 2. Compute | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: ction to MATLAB | c functions - Inv - Convolution /ectors | erse Laplace | e tran | sfor | m: Inv | verse L | aplace tr | ansform |
| LIST OF EXPER 1. Introduct 2. Comput 3. Solving | nctions – Partial fraction method the constant coefficients. RIMENTS / EXERCISES: etion to MATLAB the transfer of eigen values and eigen values eigen values and eigen values eigen eigen values eigen e | c functions - Inv - Convolution // Convolution // Convolution | erse Laplace | e tran | sfor | m: Inv | verse L | aplace tr | ansform |
| LIST OF EXPER 1. Introduct 2. Compute 3. Solving 4. Solving | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: etion to MATLAB that and eigen values and eigen values order ordinary differential equations. | c functions - Inv - Convolution /ectors uations equations | erse Laplace | e tran | sfor | m: Inv | verse L | aplace tr | ansform |
| of elementary fusecond order with second order w | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: etion to MATLAB ration of eigen values and eigen values order ordinary differential equipment order ordinary differential equipment order ordinary differential | c functions - Inv - Convolution // ectors uations equations | erse Laplace | e tran | sfor | m: Inv | verse L | aplace tr | ansform |
| of elementary fusecond order with second order w | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: ction to MATLAB ration of eigen values and eigen values order ordinary differential equipment of Simultaneous first order ODE | rectors uations equations s f parameters | rerse Laplace Theorem – A | e tran Applio | sfor | m: Inv | verse L | aplace tr | ansform |
| of elementary fusecond order with second order w | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: ction to MATLAB ration of eigen values and eigen values and eigen values order ordinary differential equipment of Simultaneous first order ODE second order ODE by variation or | rectors uations equations s f parameters e transform of | verse Laplace Theorem – / | e tran Applio | sfor | m: Inv | verse L | aplace tr | ansform |
| of elementary fusecond order will LIST OF EXPER 1. Introduct 2. Compute 3. Solving 4. Solving 5. Solution 6. Solving 7. Determ 8. Solution | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: Etion to MATLAB Lation of eigen values and eigen values and eigen values of eigen values of eigen values of eigen values and eigen values of eigen va | rectors uations equations s f parameters e transform of | verse Laplace Theorem – / | e tran Applio | sfor | m: Inv | verse L | aplace tr | ansform |
| of elementary fusecond order with second order w | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: etion to MATLAB ration of eigen values and eigen values of eigen values and eigen values of eigen order ordinary differential equipment of Simultaneous first order ODE second order ODE by variation of eigen of Second order ODE by employed of Second order ODE by employed of Second order ODE by employed or entry | c functions - Inv - Convolution /ectors uations equations s of parameters e transform of lying Laplace transform | verse Laplace Theorem – / | ns | esfori | m: Inv | verse L olution | aplace tr of linear | ansform ODE of |
| of elementary fusecond order with second order w | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: Etion to MATLAB Lation of eigen values and eigen values and eigen values of eigen values of eigen values of eigen values and eigen values of eigen va | c functions - Inv - Convolution //ectors uations equations s of parameters e transform of lying Laplace transform avathy K., "En | verse Laplace Theorem – / | ns | esfori | m: Inv | verse L olution | aplace tr of linear | ansform ODE of |
| of elementary fusecond order with second order w | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: etion to MATLAB ration of eigen values and eigen values of eigen values and eigen values of eigen order ordinary differential equipment of Simultaneous first order ODE second order ODE by variation of eigen values and inverse Laplace of Second order ODE by employed amy P., Thilagavathy K. and Gun | c functions - Inv - Convolution //ectors uations equations s of parameters e transform of lying Laplace transform avathy K., "En | verse Laplace Theorem – / | ns | esfori | m: Inv | verse L olution | aplace tr of linear | ansform ODE of |
| of elementary fusecond order with second order w | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: Etion to MATLAB Lation of eigen values and eigen values and eigen values and eigen values of simultaneous first order ordinary differential of Simultaneous first order ODE second order ODE by variation of simultaneous first order ODE of second order ODE by variation of simultaneous first order ODE of second order ODE by employed of Second order ODE by employed amy P., Thilagavathy K. and Gun Edition 2016, S.Chand and Co., I | c functions - Inv - Convolution /ectors uations equations s of parameters e transform of laying Laplace transform avathy K., "En New Delhi. | basic function ansforms | ns ather | natic | m: Inv | verse L olution | aplace tr of linear | B.Tech", |
| of elementary fusecond order with second order w | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: etion to MATLAB ration of eigen values and eigen values of eigen values and eigen values of eigen order ordinary differential equipment of Simultaneous first order ODE second order ODE by variation of eigen values and inverse Laplace of Second order ODE by employed amy P., Thilagavathy K. and Gun Edition 2016, S.Chand and Co., I | rectors uations equations s f parameters e transform of l ying Laplace transform of l avathy K., "En New Delhi. | basic function ansforms gineering Ma | ns Willem | natic: | m: Inv | First Y | ear B.E/ | B.Tech", |
| of elementary fusecond order with second order w | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: Etion to MATLAB sation of eigen values and eigen values and eigen values of eigen val | rectors vectors uations equations s of parameters e transform of lying Laplace transform enautics ", 10th ematics ", 10th ematics ", 1st Ed Prakash K. a | basic function ansforms Edition, Joh | n Wil | natic: | m: Inv ns: S s For New I | First Y | ear B.E/ | B.Tech", |
| of elementary fusecond order with second order w | nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: etion to MATLAB ration of eigen values and eigen values of eigen values and eigen values of eigen of simultaneous first order ODE second order ODE by variation of eigen and inverse Laplace of Second order ODE by employ of Second order ODE by employ any P., Thilagavathy K. and Gun Edition 2016, S.Chand and Co., Interest of eigen and inverse Eigen, "Advanced Engineering Mather eigen," Higher Engineering Mather eigen, Vengataasalam S., Arun | rectors uations equations s of parameters e transform of l ying Laplace tra lavathy K., "En New Delhi. mematics", 10th ematics", 1st Ed Prakash K. a lelhi, 2018. | basic function ansforms Edition, Joh lition, Tata M and Suresh M | n Will cGra | natic: ey, N | m: Inv ns: S s For New [| First Y Delhi, I | ear B.E/ndia, 201 | B.Tech", 6. ny - I", 2 nd |

^{*}includes Term Work (TW) & Online / Certification course hours

| | SE OUTCOMES: expletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-----|--|------------------------------------|
| CO1 | Use the matrix algebra methods and MATLAB for solving practical problems. | Applying (K3) Manipulation (S2) |
| CO2 | Identify the appropriate method for solving first order ordinary differential equations. | Applying (K3) Manipulation (S2) |
| CO3 | Solve higher order linear differential equations with constant and variable coefficients. | Applying (K3) Manipulation (S2) |
| CO4 | Apply the concept of ordinary differential equations for modeling and finding solutions to engineering problems. | Applying (K3) Manipulation (S2) |
| CO5 | Apply Laplace Transform to solve complex engineering problems. | Applying (K3) Manipulation (S2) |

| Mapping | of C | COs | with | POs | and | PSOs |
|---------|------|-----|------|------------|-----|-------------|
|---------|------|-----|------|------------|-----|-------------|

| COs/POs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---------|-----|-----|-----|-----|-----|-----|----------|------------|---------|---------|------|--------|------|
| CO1 | 3 | 3 | 2 | 1 | 3 | | | 1 170 | | | | -j . | |
| CO2 | 3 | 3 | 2 | | 3 | 200 | ation of | Mark Carlo | | A 95 | | 1 _ Al | 14 |
| CO3 | 3 | 3 | 2 | | 3 | | - T | F E = 2 | = < 1 = | | | | |
| CO4 | 3 | 3 | 2 | | 3 | | | | , = | T = = = | I = | . 1- | |
| CO5 | 3 | 3 | 3 | | 3 | | | | | | | | |

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

| ASSESSMEN | TDATT | EDN _ T | HEUDY |
|-------------|-------|---------|--------|
| ASSESSIVIEN | IPALL | | HEUK I |

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total % |
|-----------------------------|-----------------------|-------------------------|-----------------|---------------------|----------------------|-----------------|------------|
| CAT1 | | 40 | 60 | | | | 100 |
| CAT2 | | 40 | 60 | gereich geit | i amerikan | 1 - 1 | 100 |
| CAT3 | | 30 | 70 | | | | 100 |
| ESE | | 30 | 70 | | | 1 | 100 |

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman Board of Studies - \$4 H



| | 24CYT15 - CHEMISTRY FO | JK FOOD IEC | HNOLOGY | | - | | 211 | 2.3751 | - 2 |
|---|---|-----------------------------------|-----------------------------|--------------|----------|---------------|---------|--|-----------------------|
| Programme & Branch | B.Tech - Food Technology | Sem. | Category | L | Т | Р | SL* | eters-estiment programment pro | Credi |
| Prerequisites | Nil | 1 | BS | 45 | 0 | 0 | 45 | | 3 |
| | 18 | | | | | | | | |
| Preamble | This course explores the basic principles of and sustainable food processing. It aims to in Technology and also for societal applications. | | | | | | | | |
| Unit – I | WATER TECHNOLOGY | | | - | | | | | 9 |
| hardness of wate disadvantages of carbonate and cal | es of water - hardness of water- expression of har er by EDTA method – determination of alkalin using hard water in industry: scale, sludge and Igon conditioning - External treatment method - de | nity - DO, BC boiler corrosio | D and COD n - softening | (De of w | finition | on a | nd Sig | nificance | only) |
| Unit – II | ENERGY STORAGE DEVICES | 5 1 1214 | et in the | | 1.45 | | E-1, | 190791 | 9 |
| Cells: Introduction | ondary battery: Ni-Cd battery -modern battery: Ii n - Importance and classification of fuel cells - de ric acid fuel cell and direct methanol fuel cell - col POLYMERS | scription, princ | iple, compor | ents | and | | | fuel cells: | alkalin |
| | | | | | | | | | _ |
| Unit – IV Introduction- clas introduction- type of surfactant - Ch | ation, properties and applications of PVC, Teflon - FOOD COLLOIDS sification of colloidal systems –sols, gels and s - methods for making emulsion/foam: Super sa manges in dispersity:Growth/Dissolution - Ostwal | d suspensions turation, Inject | - propertie | s of | collo | oids al en | -Emuls | sion and Over run | 9 Foams – Roles |
| Sedimentation. | | | | <u>. 5 E</u> | | | | STELL TO | |
| Unit – V | SUSTAINABLE FOOD PROCESSING | | | | | | | | |
| economic, consu | en engineering technologies in the food processi mer, corporate performance – environmental ironmental impact assessment methods in food | impacts of fo | ood process | ing: (| ener | gy, | solid w | aste, wa | ater and |
| | * | | | | | | - | | |
| ТЕХТ ВООК: | a | 17 1 3 | | N. | | | | | |
| ' 2013, for | , O.V. Gesser, H. D. " Applied Chemistry: A T Units I, II, III. | | | | | | | 1 | |
| 2 Palanisan Edition, P | ny P.N., Manikandan P., Geetha A., Manjula I earson Education, New Delhi, 2024,for Units III, I | Rani K., Kows V, V. | shalya V.N., | "Che | misti | ry fo | r Engir | neering", | Revise |
| REFERENCES: | | | | | 47. | | | le . | |
| 1. Sustainat States, 20 | ole Food Processing, Brijesh K. Tiwari, Tomas No 013. | rton, Nicholas | M. Holden, J | lohn \ | Viley | / & S | ons, N | ew Jerse | y, Unite |
| 2. Pieter Wa | alstra, "Physical Chemistry of Foods (Food Science | ce and Techno | logy), 1 st Edit | ion, N | /larce | el De | kker, 2 | 2003. | |
| | | | | | | | | | |

*includes Term Work(TW) & Online / Certification course hours

| SE OUTCOMES: Inpletion of the course, the students will be able to | BT Mapped (Highest Level) |
|--|---|
| analyze the water quality parameters for suitability of industrial and domestic applications | Analysing (K4) |
| examine the chemistry of energy storing devices and meeting the future prospectus of energy storage. | Analysing (K4) |
| examine the concepts of polymerization and fabrication process to get a variety of engineering plastics. | Analysing (K4) |
| investigate the concepts of colloids and emulsion in food industries. | Analysing (K4) |
| analyze the principle for sustainable food processing and life cycle assessment | Analysing (K4) |
| | analyze the water quality parameters for suitability of industrial and domestic applications examine the chemistry of energy storing devices and meeting the future prospectus of energy storage. examine the concepts of polymerization and fabrication process to get a variety of engineering plastics. investigate the concepts of colloids and emulsion in food industries. |

| COs/POs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PS01 | PSO2 |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|--------|------|------|------|----------|
| CO1 | 3 | 2 | 2 | 1 | | 1 | 7 7 | | 1-12-1 | | | | 144 (44) |
| CO2 | 3 | 2 | 1 | 1 | | 1 7 | | | - | - 1 | 2 | - | .e's) |
| CO3 | 3 | 2 | 1 | 1 | | | | | | | | | |
| CO4 | 3 | 2 | 1 | 1 | 191 | | | | | | | | |
| CO5 | 2 | 1 | 3 | 1 | | 2 | 1 | | | | | | |

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total % |
|-----------------------------|-----------------------|-------------------------|-----------------|---------------------|----------------------|--------------------|---------|
| CAT1 | n = 1 = 1 | 40 | 50 | 10 | | | 100 |
| CAT2 | - | 40 | 50 | 10 | 2 10 1- | a 70 | 100 |
| CAT3 | | 40 | 50 | 10 | | - 6 | 100 |
| ESE | * | 40 | 50 | 10 | 100 | | 100 |

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman
Board of Studies - Saus



| Programme & Branch | All BE/BTech Engineering & Technology branches, except CSE, IT,CSD, Al&ML, Al&DS | Sem | Category | L | т | P | SL* | Total | Credit |
|---|--|--------------------|-------------------------------|------------------|-----------|---------|----------------------|-----------------------|--------------------------|
| Prerequisites | Nil | 1 | ES | 45 | 0 | 30 | 45 | 120 | 4 |
| Preamble | The course is designed for use by free deals with the techniques needed to p solve problems and the ways the confocuses on developing programming sk | ractice of mputers | computationa can be use | I thinked to s | ing, | the a | art of u | sing con | nputers t |
| Unit – I | Introduction to Computer and Proble | | | | | - 1 | W | | 9 |
| | omputers: Types, Generations, Charact orithms - Flowcharts – Pseudo codes - | | | | | | | | |
| Unit – II | Introduction to C and Control Statem | | 7.9 10 37 12 3 | 100 | | 23.5 | THE SH | | 9 |
| identifiers- Basic looping stateme Unit – III | a C program – Compiling and executing data Types – Variables – constants – Ints Arrays and Functions: | nput / C | oram – C Tok Output statem | ens – ients – | Cha op | erato | er set in rs - de | n C — Ke cision ma | eywords aking an 9 |
| | izing and accessing arrays – operations | on arr | ave - Two d | imenc | iono | larro | We one | thoir o | 0.000 |
| Functions: Intro | duction- Using functions, function declara nctions: basic data types and arrays – sto | tion and | definition - f | unctio | n ca | II – re | | | |
| Unit – IV | Strings and Pointers: | | * | | | | | | 9 |
| character maniparithmetic, point | ction – operations on strings : finding I oulation functions, Arrays of strings. Poi ers and 1D arrays , pointers and strings | nters: d | | | | | | | |
| Unit – V | User-defined Data Types and File Ha | | | | | | | | 9 |
| unions - enume | ta types: Structure: Introduction – neste erated data type. File Handling: Introduct ng file position indicator : fseek(), ftell() an | ion - op | ening and cl | | | | | | |
| LIST OF EXPE | RIMENTS / EXERCISES: | | | | | | | | |
| 1 Writing a | algorithms and drawing flowcharts using Finishructures | Raptor T | ool for proble | ms inv | olvi | ng se | quentia | ıl, Select | ion and |
| | ns for demonstrating the use of different ty | pes of | format Specif | iers | - | | | | |
| 3. Program operator | ns for demonstrating the use of different ty | pes of c | perators like | arithm | etic | , logic | al, rela | itional ar | nd ternar |
| 4. Program | ns for demonstrating using decision maki | ing state | ments | ž. | | * | | ч | |
| 5. Program | ns for demonstrating using repetitive sta | tements | , e a | | | | | | |
| 6. Program | ns for demonstrating one-dimensional arra | ay | | 17,3 | | | | · | - <u>\</u> |
| 7. Program | ns for demonstrating two-dimensional arra | ay | | | 1 | - | | ie. | with process |
| 8. Program | ns to demonstrate modular programming of | concepts | s using function | ons | | | | = | |
| 9. Program | ns to demonstrate strings (Using built-in a | nd user- | defined funct | ions) | | | | | |
| 10. Program | is to illustrate the use of pointers | * | | | | · · | * | | |
| | | | | | | | | | |
| 11. Program | ns to illustrate the use of structures and ur | nions | 162, 24. 51 | in i | | . 7 | | | |
| | | nions | harish w | ini, | | 7 | 8 V. | | |

^{*}includes Term Work(TW) & Online / Certification course hours

| TEXT BO | OOK: | | | | | | 7 10 | | | F V | | | |
|-----------|-------------------------------------|----------|-----------|-----------|-----------|-----------|----------|-----------|------------|------------|------------|---------------------------------|----------|
| 1. | Reema TI | nareja, | "Progra | mming i | n C ", 2 | nd Editio | on, Oxfo | ord Unive | ersity Pr | ess, New | Delhi, 20 | 18 | 1 |
| REFERE | NCES/ MA | ANUAL | / SOFT | WARE: | ette 7 | into. | | 6 (514 | | | 1,161 | 47.5 | 4-2-1 |
| 1. | Yashavar | t Kanet | tkar, "Le | et us C", | 16th Ed | dition, B | PB Pub | lications | , 2018. | | | te, e se | |
| 2. | Sumitabh | a Das, | "Compu | ter Fund | damenta | als and | C Progr | amming | ", 1st Ed | dition, Mc | Graw Hill, | 2018. | |
| 3. | Balagurus | samy E. | ., "Progi | amming | in ANS | SI C", 7t | h Editio | n, McGra | aw Hill E | Education | , 2017. | | - I |
| 4. | Behrouz / C", 3 rd Ed | | | | F.Gilbe | erg, "Co | mputer | Science | A Struc | ctured Pro | grammin | g Approac | ch Using |
| 5. | https://ww | w.cpro | grammi | ng.com/ | tutorial/ | c-tutoria | ıl.html | 1. | 17.5 | 1,1 | | | 34. |
| | E OUTCOI | | urse, th | e stude | nts wil | l be abl | e to | | | | | BT Ma (Highest | |
| CO1 | apply pro | | | | | | | ons for t | he real v | world prob | olems. | Applyin Precisio | |
| CO2 | develop s | simple (| C progra | ıms usir | ng appr | opriate l | ooping | and con | trol state | ements | | Applyin Precisio | g (K3) |
| СОЗ | develop s | simple (| C progra | ms usir | g the co | oncepts | of array | s and m | nodular į | orogramm | ning | Applying (K3) Precision (S3) | |
| CO4 | apply the | concep | ots of po | inters a | nd deve | elop C p | rograms | s using s | strings a | nd pointe | rs | Applying (K3) Precision (S3) | |
| CO5 | make use | e of use | r-define | d data t | ypes an | d file co | ncepts | to solve | real wo | rld proble | ms | Applyin Precisio | |
| | | 2 6 | | M | anning | of COs | with Po | Os and | PSOs | | P 20 | | |
| COs/PC | s PO1 | PO2 | PO3 | PO4 | PO5 | P06 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3 | 2 | 1 | 1 | | | n te a V | - 1,5% | 1 | 1 | 1 | 5.7 | |
| CO2 | 3 | 2 | 2 | . 1 | | | | | 1 | 1 | 1 | | |
| CO3 | 3 | 2 | 2 | 1 | | | | | 1. | 1 | 1 | | - |
| CO4 | 3 | 2 | 2 | 1 | | | | | 1 | 1 | 1 | | |
| CO5 | 3 | 2 | 2 | 1 | 1 | . , | | , . | 1 | 1 | 1 | | |
| 1 – Sligh | nt, 2 – Mod | erate. 3 | B – Subs | stantial. | BT- Blo | om's Ta | xonomy | · | | 1/4 | | | |

Signature of the Chairman
Board of Studies - CSE

CADEMIC CELL

P. Malaivam

right



| Programme& Branch | B. Tech& Food Technology | Sem. | Category | L | T | Р | SL* | Total | Credit |
|--|--|---|---|------------------------------------|---|---|----------------------|--------------------------|--------------------|
| Prerequisites | Nil | 1 | PC | 45 | 0 | 0 | 45 | 90 | 3 |
| Preamble | To impart knowledge about the structure a | and properties of | biomolecul | es. ac | ctions | of er | zvmes | and met | abolism |
| Unit –I | Carbohydrates: | | | | | | | | 9 |
| structure-activity occurrence. Poly | mple Sugars: mono and disaccharides, Hygro relationship and sweetness index; Dextrosysaccharides: Starch-amylose and amylopectir ry fibres - Food sources, functional role. | se Equivalent; S | Sugar alco | hols; | Olig | osacc | charides | : struct | ure and |
| Unit –II | Lipids: | gen etnikaspijas Anton | | - | de arme | | in re | Mark I de | 9 |
| | crystal formation, polymorphism, melting point. conification, halogenation. Hydrolytic rancidity a Proteins: | | | | | | | | 9 |
| | Definition, structure and classification. Protein | n classification | and street | tural | conf | ormot | ion En | od cour | |
| | | | | | | | | | |
| | Properties of proteins in food systems: so | lubility, hydratior | i, ioami io | rmati | on & | stab | ilization | ı, gel fa | rmatior |
| biological role. emulsifying effec | | lubility, hydratior | i, ioam io | rmati | on & | stab | ilization | , gel fo | |
| biological role. emulsifying effec Unit –IV | t. Denaturation. Enzymes: | | | | | | | | 9 |
| biological role. emulsifying effec Unit –IV Introduction, Nat | t. Denaturation. Enzymes: ture, classification and nomenclature of enzyments. | nes. Mechanism | of enzyme | actio | on; ac | tive s | site; Sp | ecificity. | 9 Enzym |
| biological role. emulsifying effect Unit –IV Introduction, Nat kinetics – Michel | t. Denaturation. Enzymes: | nes. Mechanism | of enzyme | actio | on; ac | tive s | site; Sp | ecificity. | 9 Enzym |
| biological role. emulsifying effect Unit –IV Introduction, Nat kinetics – Michel in food Industries | tt. Denaturation. Enzymes: ture, classification and nomenclature of enzynlis - Menten equation, Factors affecting enzyms and food waste management. | nes. Mechanism ne action, Immobi | of enzyme | actio | on; ac | tive s | site; Sp | ecificity. | 9 Enzyme': |
| biological role. emulsifying effect Unit –IV Introduction, Nat kinetics – Michel in food Industries Unit –V | t. Denaturation. Enzymes: ture, classification and nomenclature of enzymes: ture and food waste management. Nucleic Acids and Energy Metabolism: | nes. Mechanism ne action, Immobi | of enzyme | action | on; ac | ctive s | site; Spe applica | ecificity. tion of e | 9 Enzyme |
| biological role. emulsifying effect Unit –IV Introduction, Nat kinetics – Michel in food Industries Unit –V Nucleic Acids: Co | tt. Denaturation. Enzymes: ture, classification and nomenclature of enzynlis - Menten equation, Factors affecting enzyms and food waste management. | nes. Mechanism ne action, Immobi ergy Metabolism | of enzyme | action thousands | on; ac | ctive sected | site; Spe applica | ecificity. ition of e | 9 Enzyme's |
| biological role. emulsifying effect Unit –IV Introduction, Nat kinetics – Michel in food Industries Unit –V Nucleic Acids: Co | t. Denaturation. Enzymes: ture, classification and nomenclature of enzymis - Menten equation, Factors affecting enzymis and food waste management. Nucleic Acids and Energy Metabolism: omposition and structure of DNA and RNA. En | nes. Mechanism ne action, Immobi ergy Metabolism | of enzyme | action thousands | on; ac | ctive sected | site; Spe applica | ecificity. ition of e | 9 Enzyme's nzyme's |
| biological role. emulsifying effect Unit –IV Introduction, Nat kinetics – Michel in food Industries Unit –V Nucleic Acids: Co | t. Denaturation. Enzymes: ture, classification and nomenclature of enzymis - Menten equation, Factors affecting enzymis and food waste management. Nucleic Acids and Energy Metabolism: omposition and structure of DNA and RNA. En | nes. Mechanism ne action, Immobi ergy Metabolism | of enzyme | action thousands | on; ac | ctive sected | site; Spe applica | ecificity. ition of e | 9 Enzyme's |
| biological role. emulsifying effect Unit –IV Introduction, Nat kinetics – Michel in food Industries Unit –V Nucleic Acids: Cophosphorylation. TEXT BOOK: | t. Denaturation. Enzymes: ture, classification and nomenclature of enzymis - Menten equation, Factors affecting enzymis and food waste management. Nucleic Acids and Energy Metabolism: omposition and structure of DNA and RNA. En | nes. Mechanism ne action, Immobi ergy Metabolism: Fatty acid metab | of enzyme ilization me Glycolysis colişm – bel | actic sthods ; TC/ :a oxi | on; ac s, sele A cycl dation | ctive sected | site; Spe applica | ecificity. ition of e | 9 Enzyme's nzyme's |
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| | SEOUTCOMES: mpletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-----|---|---------------------------------|
| CO1 | classify and outline the structure of biomolecules | Understanding (K2) |
| CO2 | Interpret the properties of biomolecules and utilize in Food processing | Applying(K3) |
| CO3 | Inspect the functional role of biomolecules and its applications in food processing | Analyzing (K4) |
| CO4 | Make use of the enzymes in food industries and interpret the enzyme action and their immobilization | Applying(K3) |
| CO5 | Infer the structure of nucleic acids and illustrate the basics of energy metabolism | Understanding (K2) |

| | | | | | Марр | ing of (| Cos wit | h Pos a | nd PSO | s | | | | * |
|---------|-----|-----|-----|-----|------|----------|---------|---------|--------|------|------|---|------|------|
| COs/POs | P01 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | | PSO1 | PSO2 |
| CO1 | 3 | 3 | 2 | 2 | | 1 | | | 1 | | 1 | | 3 | 2 |
| CO2 | 3 | 3 | 2 | 2 | | 1 | | | 1 | | 1 | | 3 | 2 |
| CO3 | 3 | 3 | 2 | 2 | | 2 | | | 1 | | 2 | 7 | 3 | 2 |
| CO4 | 3 | 3 | 3 | 2 | | 1 | | | 1 | | 2 | | 3 | 2 |
| CO5 | 3 | 1 | 1 | 1 | | | | | 1 | | 1 | 1 | 2 | 1 |

1-Slight,2-Moderate,3-Substantial, BT-Bloom's Taxonomy

| ASSESSMENT | PAI | I ERN- | HEORY |
|------------|-----|--------|-------|
| | | | |

| Test/Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Tota |
|---------------------------|-----------------------|-------------------------|-----------------|---------------------|----------------------|-----------------|------|
| CAT1 | 2 | 75 | 10 | 15 | | 7. S | 100 |
| CAT2 | | 75 | 10 | 15 | | | 100 |
| CAT3 | | 90 | 10 | | | | 100 |
| ESE | | 60 | 20 | 20 | 2 1 1 | 1 - , | 100 |

*±3%may be varied (CAT1, 2, 3 – 50 marks & ESE –100marks)

Signature of the Chairman

Food Technology



On.

| | | - HERITAGE OF | | | | | | 11k (1p! | |
|---|--|--|--|--------------------------|--------------------|-----------------|----------------------|---|---|
| | (Common to All Eng | gineering and Tec | hnology Brar | nches |) | | y == 1 | | 1 - 2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - |
| Programme & Branch | All B.E/B.Tech Branches | Sem. | Category | L | Т | Р | SL* | Total | Credit |
| Prerequisites | NIL | 1 | HS | 15 | 0 | 0 | 15 | 30 | |
| Preamble | The objective of this course is to impararts, heroic games, doctrines, contribu | rt knowledge abo | ut Tamil lang | uage, | liter | ature | , painting | gs, sculptu | ires, folk |
| UNIT I | Language and Literature | 7 | | | | | | | 3 |
| sangam literatu buddhism & jai | lies in india - dravidian languages – tami ure – distributive justice in sangam litera nism in tamil land - bakthi literature azh nil - contribution of bharathiyar and bhara | ature - managem wars and nayanr | ent principles | s in th | niruk | ural - | tamil ep | oics and in | mpact o |
| UNIT II | Heritage - Rock Art Paintings to Mo | dern Art – Sculp | ture | | | | | : e04 | 3 |
| sculptures, villa | modern sculpture - bronze icons - tribes age deities, thiruvalluvar statue at kany aswaram - role of temples in social and e | akumari, making | of musical i | temp nstru | le ca | ar ma s - n | king nridhang | massive to am, parai | erracotta , veenai |
| UNIT III | Folk and Martial Arts | * · | - 3 | | | | | - | 3 |
| | karagattam - villu pattu - kaniyan kooth | ari e de la compania | | - , | | | | | |
| sports and gam | Thinai Concept of Tamils | n = 1 1 | 124 TS 1 | 5.95 | | | | 1 75 69 | 3 |
| Sports and gan UNIT IV Flora and faun education and | Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cit | ot from tholkappiy ties and ports of | /am and san sangam age | gam l | litera | iture and ir | - aram c | concept of | tamils · |
| unit iv Flora and faun | Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cit | ties and ports of | sangam age | - exp | ort a | iture and ir | - aram c | concept of ring sanga | tamils - |
| UNIT IV Flora and faun education and overseas conquents UNIT V Contribution of | Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. | tional Movement | t and Indian e of tamils o | - exp | ire | and in | arts of in | concept of ring sanga andia – sel | tamils am age |
| UNIT IV Flora and faun education and overseas conquent V Contribution of movement - ro | Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian Natatamils to indian freedom struggle - the | tional Movement | t and Indian e of tamils o | - exp | ire | and in | arts of in | concept of ring sanga andia – sel | tamils am age |
| UNIT IV Flora and faund education and overseas conquitation of movement - robooks. TEXT BOOK: | Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian Natatamils to indian freedom struggle - the | tional Movement cultural influence stems of medicin | sangam age t and Indian e of tamils of the — inscription | - exp Cultu ver th | ire ne ot ma | her p | arts of in | concept of ring sanga ndia – sel int history | tamils am age am age affective for tamils |
| WNIT IV Flora and faund education and overseas conquitaries UNIT V Contribution of movement - robooks. TEXT BOOK: 1. S.Mu | Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian Nata tamils to indian freedom struggle - the le of siddha medicine in indigenous systemathuramalingam, M.Saravanakumar, Heritatan description of Tamils to Indian Nata tamils to indian freedom struggle - the le of siddha medicine in indigenous systemathuramalingam, M.Saravanakumar, Heritatan description of Tamils to Indian Nata tamils | tional Movement cultural influence stems of medicin | sangam age t and Indian e of tamils of the — inscription | - exp Cultu ver th | ire ne ot ma | her p | arts of in | concept of ring sanga ndia – sel int history | tamils am age am age affective for tamils |
| WNIT IV Flora and faund education and overseas conquitation of movement - robooks. TEXT BOOK: 1. S.Mu REFERENCES | Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian Nata tamils to indian freedom struggle - the le of siddha medicine in indigenous systemathuramalingam, M.Saravanakumar, Heritatan description of Tamils to Indian Nata tamils to indian freedom struggle - the le of siddha medicine in indigenous systemathuramalingam, M.Saravanakumar, Heritatan description of Tamils to Indian Nata tamils | tional Movement cultural influence stems of medicin | t and Indian e of tamils one — inscription | Cultuver thons & | re ot ma | her p nuscr | arts of in ipts – pr | concept of ring sangarandia – sel rint history | f tamils am age of a frespect of tamil |
| Sports and game UNIT IV Flora and faund education and overseas conquitaries UNIT V Contribution of movement - robooks. TEXT BOOK: 1. S.Mu REFERENCES Historical Instite The Grant of Samuel Contribution of Movement - robooks. | Thinai Concept of Tamils a of tamils & aham and puram concept literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian National States of Stat | tional Movement cultural influence stems of medicin itage of Tamils, Y | t and Indian e of tamils one — inscription es Dee Publi | Culturer thous & | Pvt | her p nuscr | arts of in ipts – pr | concept of ring sanga andia – sel int history Units I,II,I | f tamils am age 3 f-respect of tami |

^{*}includes Term Work(TW) & Online / Certification course hours

| COUR | SE OUTCOMES: | BT Mapped |
|-------|--|--------------------|
| படிப் | பை முடித்தவுடன், மாணவர்கள் | (Highest Level) |
| CO1 | explain valuable concepts in language and literature of tamils. | Understanding (K2) |
| CO2 | illustrate about the tamils sculpture and their paintings. | Understanding (K2) |
| CO3 | summarize about the tamils folk and martial arts. | Understanding (K2) |
| CO4 | explain the thinai concept of tamils. | Understanding (K2) |
| CO5 | explain the contribution of Tamils to the Indian National Movement and Indian culture. | Understanding (K2) |

| COs/POs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---------|---------|-----|-----|---------|-----|-----|-----|-----|-----|------|------|------|---------|
| CO1 | s. Fr | | No. | | | 2 | 3 | 2 | 2 | y | 3 | | |
| CO2 | - 1 - 4 | | | | | 2 | 3 | 2 | 2 | | 3 | | 1 11 |
| CO3 | | | | | | 2 | 3 | 2 | 2 | | 3 | | × , |
| CO4 | | | | | | 2 . | 3 | 2 | 2 | | 3 | | |
| CO5 | | | | 2- T- F | | 2 | 3 | 2 | 2 | | 3 | | - n - 1 |

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) | Total % | |
|-----------------------------|-----------------------|-------------------------|-----------------|---------------------|-------------------|---------------------------------------|---------|--|
| CAT1 | 40 | 60 | = = / | 44. | v = e, = _ == | - | 100 | |
| CAT2 | 40 | 60 | н — а | | | | 100 | |
| CAT3 | 40 | 60 | | | | | 100 | |
| ESE | | | 1 . | NA | . , | · · · · · · · · · · · · · · · · · · · | | |

* $\pm 3\%$ may be varied (CAT 1, 2 & 3 – 50 marks)

Signature of the Chairman



| | 24TAM01-தமிழ | ுர் மரபு | | | 1 | | | my W | |
|--|--|---|--|----------------------------|-----------------------|-----------------------|----------------------------------|-----------------------------|----------------------------|
| | (Common to All Engineering and | d Technol | ogy Branches |) | | - | | | 3 1 |
| Programme & Branch | All B.E/B.Tech Branches | Sem. | Category | L | T | Р | SL* | Total | Credit |
| Prerequisites | NIL | 1 | нѕ | 15 | 0 | 0 | 15 | 30 | 1 |
| Preamble | தமிழர்களின் மொழி, இலக்கியம், ஓவியங் விளையாட்டுக்கள், திணைக் கோட்பாடுகள், ழ பற்றிய அறிவை வழங்குவதே இந்த பாடத்தில் | இந்திய | பண்பாட்டிற | | | _ | | கலைகள பங்கள் | |
| <mark>அ</mark> லகு <i>-</i> । | மொழி மற்றும் இலக்கியம் | | | | | | | | 3 2111 |
| இலக்கியத்தி கருத்துக்கள் ஆழ்வார்கள் இலக்கிய வ | ழிக் குடும்பங்கள் - திராவிட மொழிகள் - தமிழ் ன் சமயச் சார்பற்ற தன்மை - சங்க இலக்கியத் - தமிழ் காப்பியங்கள், தமிழகத்தில் சமண மற்றும் நாயன்மார்கள் - சிற்றிலக்கியங்கள் ளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகி | த்தில் ப பௌத்த - தமிழீ யோரின் | கிர்தல் அற சமயங்கவ இல் நவீன பங்களிப்பு |)ம் - ளின் இல | திரு தாச் க்கிய | க்குர கம் பத்தி | றளில் - பச் | மேலான தி இல ளர்ச்சி - | ன்மைச் க்கியம் தமிழ் |
| அலகு - ॥ | மரபு - பாறை ஓவியங்கள் முதல் நவீன ஓவி ல் நவீன சிற்பங்கள் வரை - ஐம்பொன் சிலை | | | | | | | | 3 |
| குமரிமுனை தமிழர்களின் அலகு - III தெருக்கூத்து | பொருட்கள், பொம்மைகள் - தேர் செய்யும் கணையில் திருவள்ளுவர் சிலை - இசைக் கருவிகள் சமூக பொருளாதார வாழ்வில் கோவில்களின் நாட்டுப்புறக் கலைகள் மற்றும் வீர் விளையார், கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து | ா - மிரு பங்கு. ட்டுக்கள் | நதங்கம், ப ர | றை, | ഖ്ങ | ळ ा, | யாழ், | நாதஸ் | வரம் 3 |
| | ாட்டம், தமிழர்களின் விளையாட்டுகள். | | | in the | | | | | |
| அலகு - IV | தமிழர்களின் திணைக் கோட்பாடுகள் | | | Fig. 3 | -119 | ď. | | | 3 |
| கோட்பாடுகள் சங்ககால ந | தாவரங்களும், விலங்குகளும் - தொல்காப்பிய ர் - தமிழர்கள் போற்றிய அறக்கோட்பாடு- சங் கரங்களும் துறை முகங்களும் - சங்ககாலத் சாழர்களின் வெற்றி. இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண் தெலைப்போரில் தமிழர்களின் பங்கு - இந்திய | கக்கால் ந்தில் ஏ ரபாட்டி <u>ர</u> ் | த்தில் தமிழ ரற்றுமதி ம ற குத் தமி ழ | ழகத்தி மற்றுட மர்களி | நில் ம் இ ன் ப | எழு இறக் பங்க | த்தறில குமதி ளிப்பு | பும் கல் - கட | வியும் லகடந்த |
| இந்திய விடு | த இயுக்கும் இக்கிய முகக்குமுக்கில் | | • | | _ | | | | |
| இந்திய விடு சுயமரியாதை | த இயக்கம் - இந்திய மருத்துவத்தில் ப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல | சித்த | மருத்துவ | | _ | ாங்கு | - | கல்வெ | |
| இந்திய விடு சுயமரியாதை | | சித்த | • | | _ | I ங்கு | - | | |
| இந்திய விடு சுயமரியாதை கையெழுத்து TEXT BOOK: | | சித்த பாறு. | மருத்துவத | | _ | Iங்கு | - | | |
| இந்திய விடு சுயமரியாதை கையெழுத்து TEXT BOOK: 1. ஆ. பூ | பப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல நபாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022, | சித்த பாறு. | மருத்துவத | | _ | ப ங்கு | | | |
| இந்திய விடு சுயமரியாதை கையெழுத்த TEXT BOOK: 1. ஆ ட REFERENCES நமிழ | பப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல பூபாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022, ச : க வரலாறு- மக்களும் பண்பாடும்- கே கே பிள்ளை கள் கழகம்) | சித்த மாறு. அலகு 1, ர (வெளி | மருத்துவ <u>த</u> | த்தின் | L | |)))) | கல்வெ | ட்டுகள் |
| இந்திய விடு சுயமரியாதை கையெழுத்த TEXT BOOK: 1. ஆ ட REFERENCES 1. தமிழ பணி | பப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல பாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022, : நக வரலாறு- மக்களும் பண்பாடும்- கே கே பிள்ளை கள் கழகம்) னித்தமிழ் - முனைவர் இல. சுந்தரம் (விகடன் பிர | சித்த மாறு. அலகு 1, r (வெளி! சுரம்) | மருத்துவத் II,III,IV,V. யீடு தமிழ்நா | ந்தின் ரடு பா | ட்டு | ால் ப |)))) | கல்வெ | ட்டுகள் |
| இந்திய விடு சுயமரியாதை கையெழுத்த TEXT BOOK: 1. ஆ ட REFERENCES 1. தமிழ பணி | பப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல பூபாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022, ச : க வரலாறு- மக்களும் பண்பாடும்- கே கே பிள்ளை கள் கழகம்) | சித்த மாறு. அலகு 1, r (வெளி! சுரம்) | மருத்துவத் II,III,IV,V. யீடு தமிழ்நா | ந்தின் ரடு பா | ட்டு | ால் ப |)))) | கல்வெ | ட்டுகள் |

^{*}includes Term Work(TW) & Online / Certification course hours

| SE OUTCOMES: | BT Mapped |
|--|--|
| ப முடித்தவுடன், மாணவர்கள் | (Highest Level) |
| தமிழ் மொழி மற்றும் இலக்கியத்தில் மதிப்புமிக்க கருத்துக்களை விளக்க முடியும். | Understanding (K2) |
| தமிழர்களின் சிற்பம் மற்றும் அவர்களின் ஓவியங்கள் பற்றி விளக்க முடியும். | Understanding (K2) |
| தமிழர்களின் நாட்டுப்புற மற்றும் தற்காப்புக் கலைகளைப் பற்றி சுருக்கமாகக் கூற முடியும். | Understanding (K2) |
| தமிழர்களின் திணைக் கோட்பாடுகளைப் பற்றி விளக்க முடியும். | Understanding (K2) |
| இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு பற்றி விளக்க முடியும். | Understanding (K2) |
| | ப முடித்தவுடன், மாணவர்கள் தமிழ் மொழி மற்றும் இலக்கியத்தில் மதிப்புமிக்க கருத்துக்களை விளக்க முடியும். தமிழர்களின் சிற்பம் மற்றும் அவர்களின் ஓவியங்கள் பற்றி விளக்க முடியும். தமிழர்களின் நாட்டுப்புற மற்றும் தற்காப்புக் கலைகளைப் பற்றி சுருக்கமாகக் கூற முடியும். தமிழர்களின் திணைக் கோட்பாடுகளைப் பற்றி விளக்க முடியும். இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு பற்றி |

| COs/POs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| CO1 | | | 1 | | | 2 | 3 | 2 | 2 | = | 3 | | |
| CO2 | | | 18 | A | | 2 | 3 | 2 | 2 | 2 2 | 3 | | |
| CO3 | 1 | | | | | 2 | 3 | 2 | 2 | | 3 | | |
| CO4 | | | _ | | | 2 | 3 | 2 | 2 | | 3 | | |
| CO5 | | | | | | 2 | 3 | 2 | 2 | | 3 | | |

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

| ASSESSMENT | PATTERN - | THEORY |
|------------|-----------|--------|
|------------|-----------|--------|

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total % | |
|-----------------------------|-----------------------|-------------------------|-----------------|---------------------|----------------------|-----------------|---------|--|
| CAT1 | 40 | 60 | 1/2 16 | d x | | | 100 | |
| CAT2 | 40 | 60 | | | 1 | 9 | 100 | |
| CAT3 | 40 | 60 | | | | | 100 | |
| ESE | _ | | | NA | | , | | |

* $\pm 3\%$ may be varied (CAT 1, 2 & 3 – 50 marks)

Signature of the Chairman
Board of Studies - S& H (Chemistry)



| Progra Branc | amme & h | В | Tech - Fe | ood Tech | nology | | _ | Sem. | Category | L | Т | Р | SL* | Total | Credit |
|-----------------|-----------------------------|--|-------------------------------------|-------------------------------------|-------------------------------------|------------------------|------------------------|-------------------------|---|-------------------|----------|--------------|----------|------------------------|----------|
| Prerec | quisites | N | il | | | | | 1 | BS | 0 | 0 | 30 | 0 | 30 | 1 |
| Pream | oble | i | calcium, a and also meter exp | alkalinity, aims to periments | chloride, impart th to improv | DO, CO | D, iron, a concepts | nd to deve of viscom | etermination elop the sk leter, condu | lls in | handlin | g diffe | erent l | asic inst | truments |
| 1. | | | | | | n food sar | mple by F | DTA meth | od | | an and | | V | | |
| | | | | | | | | | 3 . | | nla. | | | | |
| 2. | | | - | | | | | | re well water | | | | 12 | | |
| 3. | + | | | | | | | | entometric | | | | (1 | | |
| 4. | | Perform Winkler's method for the determination of dissolved oxygen in the given wastewater sample. | | | | | | | | | | | | | |
| 5. | Determi | Determination of COD in the given water sample. | | | | | | | | | | | | | |
| 6. | Estimati | Estimation of strength and amount of acid in a given solution using pH meter. | | | | | | | | | | | | | |
| 7. | Determi | natior | of stren | gth and a | mount of | mixture o | of acids pr | esent in th | e given sol | ution u | sing Co | onduc | tivity r | neter. | 2 |
| 8. | Spectro | photo | metric de | terminati | on of con | centration | n of Nicke | l. · | | | | | | | |
| 9. | Determi | ne the | e molecul | ar weight | t of a poly | mer by O | swald vis | cometer. | | | | | | | |
| 10. | Volume | ric es | stimation | of chromi | ium prese | ent in the | given sam | ple using | permangan | ometri | c metho | od. | | | JATA |
| 11. | Report | orepa | ration -ba | sed on th | ne data re | eceived fro | om the an | alysed wa | ter quality p | arame | eters (D | emon | stratio | on). | |
| 12. | Estimat | on of | iron usin | g Spectro | photome | ter (Demo | onstration |). | | | | | | | ø |
| 18 | - | | | | | | ··········· | 2 | | | | | | | |
| REFE | RENCES/ | | | | | | | | | | × 100 | | | | |
| 1. | | | | | n P., Ge de, 2024. | | and Mar | njula Rani | K., "Cher | nistry | Labora | tory | Manu | al", 1 st | Edition |
| | RSE OUTC | OME | S: | | | | | (| | | | | | ВТ Марі | |
| | mpletion | | | | | | | - | + , , = | | | | _ | Highest L Analyzing | |
| CO1 | Estimat | e the | Calcium i | in food sa | ample and | d alkalinity | y of the gi | ven water | sample. | | | | | Precision | (S3) |
| CO2 | Demons | strate | the wate | r quality p | oaramete | rs of wate | er sample | by estimat | ing Chlorid | e, DO | and CC | D. | | Analyzing Precision | |
| CO3 | Demons sample Spectro | by p | H meter | rmination and cor | of molectivity | cular weig meter, C | ht by viso Chromium | cometer ar by Perm | nd amount anganomet | of acid ry and | s the g | iven I by | | Analyzing Precision | |
| | | | | | Ma | apping of | COs wit | h POs and | d PSOs | | | | | | |
| | | ~ . l | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | Р | 011 | PS01 | PSO2 |
| COs/ | | | | | | | | | | | | | | / | |
| COs/ | 01 | 2 | 2 | 3 | 2 | | 2 | 1 | | | | | | - | |

*includes Term Work(TW) & Online / Certification course hours

Signature of the Chairman Board of Studies - حراماً



| | | | | | | | | | AL, IOT A | | | | 02001 | | |
|-----------------|---------------|----------------------|------------|---------------|-------------|-------------|-------------|-----------|-------------|---------|----------|------------|---------|-----------------------|--------|
| Progra Branc | | . & | All BE | /BTech B | | | | Sem. | Categor | y L | Т | Р | SL* | Total | Credit |
| Prerec | | es | Nil | | | | 2 | 1/2 | ES | 0 | 0 | 90 | 0 | 90 | 3 |
| Pream | | | | | | | | | nowledge | | ineeri | 1 | th hand | 505 | - |
| LIST |)F FX | PERIM | | house wir | | net of Th | ings and | Web Te | echnologie | S. | | | | | |
| LIOT | <i>J</i> 1 LA | LIXIII | LINIO | LALKOR | | A – Elec | trical Ins | tallatio | n (30 Hou | rs) | | | - | | |
| 1. | Det | erminat | tion of Ic | ad curren | its and se | elect suita | able comp | onents | for Protec | tion | | | | | (4) |
| 2. | Dev | elop a | wiring c | ircuit for in | ncandesc | ent lamp | and fluor | escent | lamp using | Simpl | e and | Stair | case W | /iring | |
| 3. | Dev | elop ar | nd Inves | tigate wiri | ng circuit | ts for Call | ling Bell S | System : | and Dimm | able Li | ght | | 4 | | |
| 4. | Cre | ate wiri | ng circu | it for sing | e phase | motor | = 6 | e e | - 10.00 | | | | | | |
| 5. | Dev | elopme | ent of IC | T based | energy m | onitoring | and contr | rol | | 0 | | | | | = |
| 6. | Меа | asurem | ent and | analysis o | of electric | cal param | eters for l | Photovo | oltaic Sola | r Panel | X. | | | | |
| | 7 | | | | | | ernet of | Things | (30 Hour | s) | | | | | |
| 1. | Des | sign a S | lingle la | yer PCB I | ayout des | signing | | 1 | * 1 | | | | - | | |
| 2. | Fab | ricate S | Single la | yer PCB | printing | | | | | | | ji. | × | D | |
| 3. | Ass | emblin | g, solde | ring and c | lesolderii | ng practio | e on sing | le layer | PCB | | | | | - 200 | |
| 4. | Ser | sor an | d actuat | or interfac | ing with | internet e | nabled m | icrocon | troller | | | | | | |
| 5. | Ser | nsor an | d actuat | or calibrat | tion | | | | | | | | | | , |
| 6. | Inte | gration | of micr | ocontrolle | r based s | system wi | th Cloud | platforn | n | | | | | | |
| | Т | | | | PAR | TC-We | b Techn | ologies | s (30 Hour | s) | | | | | * |
| 1. | Des | sign a s | imple w | eb page ι | sing bas | ic HTML | tags and (| CSS pro | perties | | | | * | | |
| 2. | Des | sign a re | esponsiv | e webpag | e using E | Bootstrap | framewor | rk | · . | α < | | | | | |
| 3. | Des | sign a v | vebpage | e for signu | p and log | gin valida | tion form | using J | avascript a | and PH | Р | - | | · · · · · · | |
| 4. | | | | | | PHP, M | ySQL and | d host th | ne website | in the | serve | ſ . | | | *** |
| REFE | RENC | ES/ M | ANUAL | /SOFTW | ARE: | | | | | | | | | | |
| 1. | | | Manua | | | | | | | | | | | | |
| 2. | | CI.Free Reilly, 2 | | isabeth R | obson, "I | Head Firs | t JavaScr | ipt Prog | gramming | A Brair | n-Frier | idly G | Buide", | 1st Editio | n, |
| 3. | Eric | T.Free | eman,El | isabeth R | obson, "I | Head Firs | t HTML a | ind CSS | 6",2nd Edi | ion, O' | Reilly | , 201 | 2 | (4) | , , |
| 4. | Lyn | ın Beigl | nley,"He | ead First S | QL",1st | Edition, C | Reilly,20 | 007. | | | | | | | |
| | | UTCO | | urse, the | studente | ، مطالف | abla ta | | | | | 2 | Ι, | BT Map Highest I | |
| CO1 | 1 | | | viring circ | | | | heir rec | uirement | | | | | Applying | (K3) |
| | | - | | | | | | | | | | | | Precision Applying | |
| CO2 | - | | | d solution: | | 1 | | e cases | . | - | <u> </u> | | | Precision Applying | (S3) |
| CO3 | Des | sign an | a nost a | n interact | | | | h DO- | and Doc | | | | | Precision | |
| COs/F | | P01 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO PO | PO9 | PO | 10 | PO11 | PSO1 | PSO |
| /PSC | - | 3 | 3 | 3 | 2 | 3 | | 1 | 3 | 2 | 2 | | 2 | 1.001 | 1 302 |
| | | 3 | 3 | 3 | 2 | 3 | | 1 | 3 | 2 | 2 | - | 2 | | + |
| CO | | _ | | _ | _ | _ | | 1 | " | - | | | - | 1 | 1 |





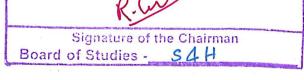


| | | · · · | | 24 | 4MNT12 | - QUAI | NTITATIV | VE AP | TITUDE - I | | | 2 | 17 | | |
|-------------------|--------------------|----------|------------------|-----------|------------|---------------------------------------|---------------|----------|---------------------------------------|---------|------------|---------|--|-----------------|---|
| | | | (C | ommo | n to all E | nginee | ring and | Tech | nology bra | ınche | s) | | | | · · · · · · · · · · · · · · · · · · · |
| Program Branch | nme & | All B.E | E/B.Tec | h Bran | ches | · · | Se | em. | Category | L | Т | Р | SL* | Total | Credit |
| Prerequ | isites | Basic | Mather | natical | skills | | | 1 | МС | 20 | 0 | 0 | 10 | 30 | 0 |
| | | | | | | | | | | | | | | | |
| Preamb | le | | | | lving skil | | nhance a | analyti | cal skills. | | | - | | - | |
| Unit – I | , avatama | | | | Equation | | divioibilit | , BO | DMAC Dl | - 11 | `F. | | 20.4 | . | 6 |
| -Simplif | ication – F | Problem | ıs. | | | | | | DMAS Rul | | | | | | |
| | | | | | | | | | linear equa | ations | with | ı two ı | /ariabl | les – Ap | plications |
| Unit - II | aneous li | | | | nd Perce | | simple pr | robiem | S. | | | | - | | 6 |
| Ratio ar | nd Propo | rtion: T | hird, Fo | ourth an | d mean p | proportio | | | son of ratio | | | ound | ratio - | Duplica | |
| | | | | | | | | | Simple pro | | | | | | |
| Unit - II | | | | ss, Inte | | ercentag | jes – Pro | biems | on populat | ion – | Pro | biems | on de | preciation | on. 8 |
| Profit ar | nd Loss: | Basic c | oncepts | - Cost | price – S | Selling p | orice – Pr | ofit an | d Loss – S | imple | pro | blems | | | - |
| Simple a | and Comp | pound i | interes | t: Conc | epts – Pe | ercentag | e of inter | est – D | Difference b | etwe | en s | imple | intere | st and c | ompound |
| | - Simple p | orobiem | S. | _ | | | | | | - | | | | | 1 |
| TEXT B | | | "0 | | ۸ - 4:4l 4 | · · · · · · · · · · · · · · · · · · · | | | | | . = . | | 0.01 | | |
| 1. | limited, 2 | | Quant | itative / | Aptitude 1 | or Com | ipetitive i | =xamır | nations", Re | evised | 1 Ec | lition, | S.Cha | ind and | company |
| REFERE | ENCES/ N | /IANUA | L/SOF | TWAR | E: | | | | - | | | | | | |
| 1. | Abhijit G 2020. | uha,"Qu | ıantitati | ve Apti | tude for | Compet | titive Exa | aminati | on", 7 th Ed | dition, | Мс | Graw | Hill E | Education | on, India, |
| 2. | https://wv | ww.india | abix.cor | n/aptitu | de/quest | ions-and | d-answer | <u>s</u> | | | | | | | *************************************** |
| 3. | https://w | ww.gee | ksforge | eks.org | /aptitude- | -questio | ns-and-a | answer | <u>'S</u> | | | | | | |
| | E OUTCO | | | the etc. | danta: | 11 ha ah | la 4a | | , | | | | | ВТ Мар | |
| CO1 | | | | | two varia | | ile to | 17. | | | | | | lighest | |
| | | 1.0 | | | | | | | | | | | | Applying | <u> </u> |
| CO2 | | | | | centage | | | | | | | | | Applying | (K3) |
| CO3 | Solve pr | ofit and | loss, s | imple in | iterest an | nd comp | ound inte | erest p | roblems. | | | | , | Applying | (K3) |
| | . " | | | | Mappin | g of CC |)s with F | Os ar | nd PSOs | · | | | | | |
| COs/PO | s PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | POS | PO9 | PO | 10 | PO1 | 1 P | SO1 | PSO2 |
| CO1 | 2 | 2 | | | | | | | | | | | | | |
| CO2 | 2 | 2 | | | | | | | | | | | 7 | | |
| CO3 | 3 | 3 | | | | 6 | | | 1 | | | | | | |
| 1 – Sligh | nt, 2 – Mo | derate, | 3 – Sul | bstantia | l, BT- Blo | oom's T | axonomy | / | 11 | | | | | *** | - |
| | ų, | -0 | | | ASSES | SMENT | PATTE | RN - T | HEORY | | | | | | (6) |
| | Bloom's gory* | | nember (K1) % | | Underst | | Apply (K3) | | Analyzing (K4) % | | alu (K5 | ating | | eating (6) % | Total % |
| | .Τ1 | | | | 30 | | 70 | | | | , , , | | \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | -, ,, | 100 |
| CA | T2 | | 0 _ | | 30 |) | 70 | | tionidade en actividade en actividade | | | | | | 100 |
| CA | T3 | | | | 30 |) | 70 | | \ \ | | | | 1 | | 100 |
| | | 1 | | | | | | | | | | | | | |



 * ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks) *includes Term Work (TW) & Online / Certification course hours







| | (Common to all E | ingineering and | Technology by | ranches | s) | | 1 3 | | |
|--|--|--|--|---|--|---|---|--|--|
| Programme & Branch | All B.E/B.Tech Branches | Sem | Category | L | T | Р | SL* | Total | Credit |
| Prerequisites | Nil | 2 | HS | 45 | 0 | 0 | 45 | 90 | 3 |
| Preamble | This course aims at up skilling students in practicing the langua and academic contexts. | ge skills to acc | quire verbal an | id com | munic | write a | as well proficie | as to fac ncy in pro | ilitate the ofessiona |
| sUnit – I | Grammar, Verbal Aptitude, List | ening, Speakir | ng. Reading & | Writin | a | | | | 9 |
| to a Match Comm Etiquette – Readi <i>Atomic Habit</i> s Wr i | , Compound, and Complex Senten entary and Filling in a Table – List ng: Scanning a Text, Power Point ting: Business Letters: Enquiry and | ening to TED ta Presentations Complaint | alks - Speakin – The Best V | g: Apol Vay to | logizir Start | na – T | alking a | about Mar : An Exc | nners and erpt from |
| Unit – II | Grammar, Verbal Aptitude, List and Indirect Speech – Verbal Apti | ening, Speakir | ig, Reading & | Writin | g | | | | 9 |
| Choices and Profe | ng Information – Career Related ssional Skills – Reading: Reading An Excerpt from <i>Atomic Habits</i> - Wr | for Local and G iting: Job Appl | Blobal Compret lication: Cover | nension | 1 – Ho | w to I | Find and | Fix the | auses o |
| W1116 111 | Grammar Verbal Antitude Liet | ening Speaking | na Readina 9 | Mritim | ~ | toour | 16 – Sil | | |
| | Grammar, Verbal Aptitude, List | ening, Speakir | ng, Reading & | Writin | q | | | | 9 |
| Grammar: Active | and Passive Voice - Verbal Aptitu | de: Error Spotti | ng, Reading & ng – Sentence | Writin | g /emer | nt – A | obreviat | ions and A | 9 Acronyms |
| Grammar: Active - Listening: Liste | and Passive Voice – Verbal Aptitu ning to Podcast Interviews and Nev | de: Error Spotti | ng, Reading & ng – Sentence Speeches – Sr | Writin Improv | g /emer a: Pre | nt – Al | obreviat | ions and A | 9 Acronyms |
| Grammar: Active - Listening: Liste Opinions about P | and Passive Voice – Verbal Aptitu ning to Podcast Interviews and Nev odcast – Reading: Reading a Pr | de: Error Spotti vs/Motivational ocedure – Cro | ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co | Writin Improv peaking | g /emer g: Pre icatio | nt – Al esentii n - H | obreviating a Poi | ions and A | 9 Acronyms / – Giving |
| Grammar: Active – Listening: Liste Opinions about P Inevitable and Bac | and Passive Voice – Verbal Aptitu ning to Podcast Interviews and Nev | de: Error Spotti vs/Motivational ocedure – Cro | ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co | Writin Improv peaking | g /emer g: Pre icatio | nt – Al esentii n - H | obreviating a Poi | ions and A | 9 Acronyms / – Giving |
| Grammar: Active – Listening: Liste Opinions about P Inevitable and Bac based Essays | and Passive Voice – Verbal Aptitu ning to Podcast Interviews and Nev odcast – Reading: Reading a Pr I Habits Impossible: An Excerpt fro | de: Error Spotti vs/Motivational ocedure – Cro m <i>Atomic Habit</i> : | ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co s – Writing: T | Writin Improverse Deaking Ommun Types o | g /emer g: Pre icatio f Essa | nt – Al esentii n - H | obreviating a Poi | ions and Ant of View Make Goo | 9 Acronyms / – Giving od Habits d Opinior |
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| Grammar: Active - Listening: Liste Opinions about P Inevitable and Bac based Essays Unit – IV Grammar: If/Conc Selection – Listen | and Passive Voice – Verbal Aptituning to Podcast Interviews and Newodcast – Reading: Reading a Pril Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, List litional Clause – Modals Verbs – Coing: Listening and Filling a Mind Mind Mind Mind Mind Mind Mind Mind | de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speakir onversational D ap — Listening to | ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co s – Writing: T ng, Reading & evices - Verba o Interviews, C | Writin Improve the seaking of the se | g /emer g: Pre icatio f Essa g ude: | nt – Alesentii n - Hays: / | obreviating a Poi ow to I Argumen nce Cor | ions and Ant of View Make Goontative and | 9 Acronym: / – Giving d Habit: d Opinion 9 Sentence |
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| Grammar: Active - Listening: Liste Opinions about P Inevitable and Bac based Essays Unit - IV Grammar: If/Conc Selection - Listen Suggestions - Inte Communication: M Atomic Habits Wri Unit - V Grammar: Comm Listening: Listeni about Gadgets, In Technology-based Habits - Writing: TEXT BOOK: | and Passive Voice – Verbal Aptituming to Podcast Interviews and New odcast – Reading: Reading a Professional Elements of Parametric Professional Clause – Modals Verbs – Coing: Listening and Filling a Mind Merviewing Classmates - Reading: Floodes of Technology-based Committing: Dialogue Writing – Writing Reference on Errors in Tenses – Verb – Ing for key points – Speeches of Newtons and Technology – Reading Communication – The Goldilocks Report Writing: IV Report and Case | de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speaking onversational D ap — Listening to Reading for Info unication — Ho views: Product a ening, Speaking Preposition cor New Inventions ng: Categorizing s Rule: How to Study Report | ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co ss – Writing: T ng, Reading & evices - Verba o Interviews, Co rmation, Rese w to Stick with and Document ng, Reading & mbinations – V – Speaking: g Information - Stay Motivate | Writin Improvocation Improvoca | g yemer g: Pre icatio f Essa g ude: y talks y for S Habi is/We g Apti for a nical (e.e.) | Sentes Supports Evide: In Grant Series Supports Evide: In Grant | obreviating a Poi ow to I Argumen nce Cor eaking: rting Every Day es Coding iving Penunication k: An E | ions and Ant of View Make Good Intative and Interesting Action Commission - Interesting and Department on Effective Accerpt from | 9 Acronyme 7 – Giving 8 d Habit 9 Sentence dvice and Technica erpt fron 9 coding - Talking we use o |
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^{*} includes Term Work (TW) & Assignments, Tutorials and Case Studies

| 2020 20 0 0 0 0 0 | SE OUTCOMES: npletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-------------------|---|------------------------------|
| CO1 | construct contextual and functional grammar to enhance the linguistic competence | Applying (K3) |
| CO2 | listen, comprehend and infer implied meanings of the given text | Applying (K3) |
| CO3 | speak clearly to develop competence to participate in oral discourses such as discussions / meetings / interviews and deliver presentations | Creating (K6) |
| CO4 | critically read various texts by understanding contextual meanings and respond appropriately | Understanding (K2) |
| CO5 | Analyze different genres of writing and making precise non-technical and technical documents | Analyzing (K4) |
| , VI (- | Mapping of COs with POs and PSOs | |

| COs/ POs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PS01 | PSO2 |
|-------------|------------|------|-----|-----|-----------|-----|---------|-------|-----|------|------|-----------|------|
| CO1 | a a mystic | ent. | | | system in | 1 1 | ومستهاج | 1 | 3 | 1 | 1 | | |
| CO2 | ie i | | | | | | | 2 | 3 | -3, | 1 | | E . |
| CO3 | | | | | 1 42 - | | 1 7 | 2 | 3 | 1 | 2 | i in lega | |
| CO4 | | | | | | 1 | | . 4.7 | 3 | 1 | 2 | | er f |
| CO5 | , - | | | | | | | | 3 | | 2 | | - 1 |

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

| Test / Bloom's Category* | Remembering (K1) % | Understand ing (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total % |
|--------------------------------|-----------------------|-----------------------|--------------------|---------------------|--|--------------------|---------|
| CAT1 | - | 30 | 70 | | The State of the S | <u> </u> | 100 |
| CAT2 | | 30 | 35 | | 67 July 1197 4 | 35 | 100 |
| CAT3 | - 1, 1- | 20 | 45 | 35 | 1 | | 100 |
| ESE | - | 20 | 55 | 10 | | 15 | 100 |

* $\pm 3\%$ may be varied (CAT 1, 2& 3 – 50 marks & ESE – 100 marks)

Door.

Signature of the Chairman Board of Studies - SaH (English) J. Region



| The second | 24MAC21 - MULTIVARIABLE CAL (Common to CIVIL, MECH, MTS | | | | | | 1 | | |
|------------------------|--|----------------------------|-----------------|---------|--------|----------|----------|------------------------|----------|
| Programme & | B.E – CIVIL, MECH,MTS, ECE,EEE,EIE | Sem. | Category | L | T | Р | SL* | Total | Credit |
| Branch | & B.Tech - FT | | | | | | | | |
| Prerequisites | Nil | 2 | BS | 45 | 7 | 16 | 52 | 120 | 4 |
| Preamble | To impart the knowledge of partial derivati and analytic functions to the students for so | | | | | | | | |
| Unit – I | Functions of Several Variables: | - N | | | | - 1 | | 11. 12. | 9 |
| Functions of two | or more variables – Partial derivatives – Tota nima – Lagrange's multiplier method. | l differentia | I – Application | ns: M | axim | a and | l minim | a – Con | straine |
| Unit – II | Multiple Integrals: | | | | | | | - | 9 |
| | on in cartesian coordinates – Change of order | of integrati | on – Applicat | ion: A | Area | hetwe | een two | CUIVES | |
| integration in ca | rtesian coordinates – Volume as triple integral | s. | , фр. ос. | | 00 | Dom | | o our voo | Tilpi |
| Unit – III | Vector Calculus: | | - | | | | | | 9 |
| | ative – Gradient of a scalar point function – Div | | | | | | | | |
| | vectors – Vector Integration: Introduction – e above theorems and evaluation of integrals | | | verge | ence | theo | rems (| without | proof) - |
| Unit – IV | Analytic Functions: | doing thom | | | | | | | 9 |
| Functions of a | complex variable - Analytic functions - Nec | essary and | sufficient co | nditio | ns (| exclu | ding pi | roof) – (| Cauchy |
| Riemann equation | ons (Statement only) – Properties of analytic f | unction (Sta | atement only) | – Ha | rmor | nic fur | nction - | - Constr | uction c |
| | - Conformal mapping: w = z + a, az, 1/z - Bil | linear trans | formation. | | | | | | T = |
| Unit – V | Complex Integration: | agral formu | la Cinavilari | | Clas | aifi a a | l: (| Na | 9 |
| | auchy's theorem (without proof) – Cauchy's int it proof) – Applications: Evaluation of definite | | | | | | | | |
| | ordinary and partial derivatives | 6 7 · . · | 18 4 | | | | | 1 1 1 1 1 | |
| | ng extreme values of function of two variables | 5 | | | | | | | 2 |
| | ng double and triple integrals | .4 | 7 | | | it. | 0 5 4 | | |
| 4. Finding | the area between two curves | - | | | | | | | |
| 5. Computi | ng gradient, divergence and curl of point func | tions | | | | | - | <u> </u> | |
| 6. Applying | Milne-Thomson method for constructing anal | lytic function | n | | | | | | |
| 7. Determin | nation of Mobius transformation for the given s | set of points | 3 | | | | | | |
| 8. Finding | poles and residues of an analytic function | F ² | | | | | | | - 1 |
| TEXT BOOK: | | | 5.70 | . 7 | | | | | - |
| | amy P., Thilagavathy K. and Gunavathy K., " 2016, S.Chand and Co., New Delhi. | Engineering | g Mathematic | s Fo | r Firs | st Yea | ar B.E/ | B.Tech", | Reprin |
| REFERENCES/ | MANUAL / SOFTWARE: | F - F | , L | | | 6 | -80 | | |
| 1. Kreyszig | E, "Advanced Engineering Mathematics ", 10 |) th Edition, c | lohn Wiley, N | ew D | elhi, | India | , 2016. | - | |
| 2. Ramana Delhi, 20 | B V, "Higher Engineering Mathematics", 1st | Edition, Ta | nta McGraw-F | Hill Pu | ublisl | hing (| Compa | ny Limit | ed, Nev |
| | ny C., Vengataasalam S., Arun Prakash K. India Education, New Delhi, 2018. | and Sures | sh M., "Engin | eerin | g Ma | athen | natics · | - II", 2 nd | Edition |
| 4. Grewal E | 3.S, "Higher Engineering Mathematics" 44th | dition, Khar | nna Publisher | s, Ne | w De | elhi, 2 | 018. | 121 | |
| 5. Multivari | able Calculus and Complex Analysis Laborato | ory Manual. | | | | | 1 | | |
| | | | | | | | | | |

*includes Term Work (TW) & Online / Certification course hours

| tel her seriorses | SE OUTCOMES: npletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-------------------|--|---|
| CO1 | Compute the total derivatives and extreme values of multivariable functions. | Applying (K3) Manipulation (S2) |
| CO2 | Apply multiple integrals to compute the area and volume of the regions. | Applying (K3) Manipulation (S2) |
| CO3 | Apply the concepts of derivatives and line integrals of point functions in engineering problems. | Applying (K3) Manipulation (S2) |
| CO4 | Construct analytic functions and bilinear transformations and determine the image of given region under the given conformal mapping. | Understanding (K2) Manipulation (S2) |
| CO5 | Apply the techniques of complex integration to evaluate real and complex integrals over closed curves. | Applying (K3) Manipulation (S2) |

| CO-/DO- | DO4 | DOG | DO2 | DO4 | DOE | DOC | DO7 | DOG | DOG | DO40 | DO44 | D004 | 2000 |
|---------|-----|-----|-----|-----|-----|-----|------|-----------------------|-----|------|------|--------|--------|
| COs/POs | PO1 | PUZ | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3 | 3 | 2 | | 3 | | | 97 8 ₁₀ | - | | | | 11.120 |
| CO2 | 3 | 3 | 2 | | 3 | | - 11 | Little | | | | | 1501 |
| CO3 | 3 | 3 | | - | 3 | | | | | | | - 45 Y | |
| CO4 | 3 | 3 | | | 3 | | | - = 8 | | | | Y F. | 42 7. |
| CO5 | 3 | 3 | 3 | | 3 | | | | 1. | | | | |

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total % |
|-----------------------------|-----------------------|-------------------------|-----------------|---------------------|----------------------------|------------------|------------|
| CAT1 | | 40 | 60 | | range g | Investigation of | 100 |
| CAT2 | 10 | 40 | 60 | | free will be present take. | | 100 |
| CAT3 | | 50 | 50 | | | | 100 |
| ESE | | 30 | 70 | | | | 100 |

* ±3% may be varied (CAT 1, 2 & 3 - 50 marks & ESE - 100 marks)







| Programme& Branch | B.Tech- Food Technology | Sem. | Category | L | Т | Р | SL* | Total | Credit |
|--|--|---|--|---|---|--|---|---|--|
| Prerequisites | Nil | 2 | BS | 45 | 0 | 0 | 45 | 90 | 3 |
| Preamble | This course aims to impart the knowledge physics, ultrasonic waves, microwaves, characterization techniques. It also describ | magnetic | materials, d | ielect | ric i | materi | alsand | select | materials |
| Unit – I | Crystal Physics: | | Mark and the second | 4 L | | | 11/1 | uai ten | 9 |
| temperature solu Unit – II Blackbody radia Schrodinger's tir | tical nucleus – Crystal growth techniques: Me ution growth – Low temperature solution growth Quantum Physics and Applications: tion – Planck's theory – Compton scattering me-independent and time-dependent wave equ | ExamplesMatter way | in food proce ves – Propert | ssing | Hei | senbe | rg unce | rtainty p | 9 rinciple - |
| dimensional box Unit – III | Ultrasonics and Microwaves: | , | * . | | | | 1 | | 9 |
| | Ultiasonics and wilcrowaves. | | | | | | | 1 | 9 |
| Iltraconice_ Dro | poerties - Magnetostrictive generator - Diezoel | actric genera | tor Determi | natio | of | olocit | v of ultr | oconice i | n a liqui |
| using acoustic g | operties – Magnetostrictive generator – Piezoel grating – Non-destructive testing – Flaw detec icrowaves into heat – Penetration depth – Appl | tion – Applic | cations of ultra | asoni | cs in | food | | | |
| using acoustic of models o | grating – Non-destructive testing – Flaw detection icrowaves into heat – Penetration depth – Appl Magnetic and Dielectric materials: | tion – Applic cations of m | cations of ultra icrowaves in f | asoni ood i | cs in | food try. | industr | y — Micro | owaves - |
| using acoustic of Conversion of munit – IV Ferromagnetism detector and mare frequency and | grating – Non-destructive testing – Flaw detection of the control of the properties of the control of the contr | tion – Applic cations of m eresis – Sof erials – Diele | cations of ultricrowaves in formation of the care of t | asoni ood ii nagne | cs in ndus etic r Type: | food try. nateria | industr | y — Micro | 9 ns: Meta |
| using acoustic of Conversion of munit – IV Ferromagnetism detector and market frequency and ohmic heating. | grating – Non-destructive testing – Flaw detection of the properties of the properti | tion – Applic cations of m eresis – Sof erials – Diele | cations of ultricrowaves in formation of the care of t | asoni ood ii nagne | cs in ndus etic r Type: | food try. nateria | industr | y — Micro | 9 ns: Meta |
| using acoustic of Conversion of many many many many many many many many | grating – Non-destructive testing – Flaw detection of the interval of the inte | tion – Applic cations of mi eresis – Sof erials – Diele ectric loss – | cations of ultricrowaves in factorial factoria | asoni rood in magne nt – reakdo | etic r Types own - | food try. materia s of p - Uses | industry | pplication ion (qua ectric ma | 9 ns: Meta litative) - aterials in |
| using acoustic of Conversion of many Unit – IV Ferromagnetism detector and many Frequency and ohmic heating. Unit – V Importance of many electron microscopics | grating – Non-destructive testing – Flaw detection depth – Applementation depth – Applementation depth – Applementation depth – Applementation – Domain theory of ferromagnetism – Hystagnetic inductive flow meter – Dielectric materials characterization: Materials characterization: Materials characterization – X-ray diffraction () | tion – Applic cations of mi eresis – Sof erials – Diele ectric loss – | cations of ultricrowaves in factorial factoria | asoni rood in magne nt – reakdo | etic r Types own - | food try. materia s of p - Uses | industry | pplication ion (qua ectric ma | 9 ns: Meta litative) - aterials in |
| using acoustic of Conversion of munit – IV Ferromagnetism detector and must requency and ohmic heating. Unit – V Importance of multiple of | grating – Non-destructive testing – Flaw detection of the content | tion – Applications of mineresis – Soferials – Dielectric loss – Dowder methectroscopy – | cations of ultricrowaves in factorial ft and hard in ectric constant Dielectric brond) – Scannen Nuclear Ma | nagnent – reakdo | etic r Types own - | food try. materia s of p - Uses on mid sonan | industry als – A olarizat s of diel croscop ce – Ti | pplication ion (qua ectric ma e – Tran | 9 ns: Meta litative) aterials i 9 nsmissio ravimetri |
| using acoustic of Conversion of munit – IV Ferromagnetism detector and magnetism detector and magnetism detector magnetism detector magnetism detector and magnetism detector magn | grating – Non-destructive testing – Flaw detection depth – Appl Magnetic and Dielectric materials: Domain theory of ferromagnetism – Hystiagnetic inductive flow meter – Dielectric materials temperature dependence of polarization – Dielectric materials characterization: Materials characterization: naterials characterization – X-ray diffraction (prope – UV-visible spectroscopy – Raman spectrosc | tion – Applications of mineresis – Soferials – Dielectric loss – Dowder methectroscopy – | cations of ultricrowaves in factorial ft and hard in ectric constant Dielectric brond) – Scannen Nuclear Ma | nagnent – reakdo | etic r Types own - | food try. materia s of p - Uses on mid sonan | industry als – A olarizat s of diel croscop ce – Ti | pplication ion (qua ectric ma e – Tran | 9 ns: Meta litative) aterials i 9 nsmissio ravimetri |
| using acoustic of Conversion of munit – IV Ferromagnetism detector and magnetism detector and magnetism detector and magnetism. Unit – V Importance of magnetism detectron microsom detectron detec | grating – Non-destructive testing – Flaw detection of the property of the prop | tion – Applications of mineresis – Soferials – Dielectric loss – Dowder methectroscopy – | cations of ultricrowaves in factorial ft and hard in ectric constant Dielectric brond) – Scannen Nuclear Ma | nagnent – reakdo | etic r Types own - | food try. materia s of p - Uses on mid sonan | industry als – A olarizat s of diel croscop ce – Ti | pplication ion (qua ectric ma e – Tran | 9 ns: Meta litative) aterials i 9 nsmissio ravimetri |
| using acoustic of Conversion of munit – IV Ferromagnetism detector and market frequency and ohmic heating. Unit – V Importance of melectron microsof analysis. TEXT BOOK: 1. Katiyar. 2. Tamilara (Unit III, REFERENCES: | grating – Non-destructive testing – Flaw detection of the property of the prop | tion – Applications of mineresis – Soferials – Dielectric loss – Dowder metrectroscopy – and Practica g I", 1st Edition | cations of ultricrowaves in formation of the categories of the cat | asoni ood ii nagne nagnet eakdo iing e gnetii | cs inndus: etic r Type: wn lectre c Re | food try. materia s of p - Uses on mid sonan | industry als – A colarizat s of diel croscop ce – Ti | pplication ion (qua ectric ma e - Tran nermo gi | 9 ns: Meta litative) aterials i 9 nsmission ravimetri |
| using acoustic of Conversion of Munit – IV Ferromagnetism detector and merce of the Munit – V Importance of melectron microsof analysis. TEXT BOOK: 1. Katiyar 1. Tamilara (Unit III, REFERENCES: 1. Avadha 2021. 2. Ludger | grating – Non-destructive testing – Flaw detection of the property of the prop | tion – Applications of mineresis – Soferials – Dielectrical loss – Dowder methodox of mineresis – Soferials – Dielectrical loss – Dowder methodox of l', 1st Edition – V.S., "A Texaspringer, 200 | cations of ultricrowaves in factorial formula for and hard rectric constant Dielectric brown McGraw Hartbook of English | asoni ood ii nagno nagno eakdo iing e gnetii | cs in ndus tetic r ypes wm lectric Re | food try. materia s of p - Uses on mid sonan | industry als – A olarizat s of diel croscop ce – Tl nit I, II). vt. Ltd., | pplication ion (qua ectric ma e - Tran hermo gi | 9 ns: Meta litative) aterials i 9 nsmissioravimetri |

*includes Term Work (TW) & Online / Certification course hours

| | SE OUTCOMES: mpletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-----|--|---------------------------|
| CO1 | explore seven crystal systems, types of crystal imperfections and utilize appropriate crystal growth techniques to grow crystals. | Analyzing (K4) |
| CO2 | investigate the concepts of quantum mechanics to describe Planck's theory, Compton effect and the behavior of electrons in a metal by solving Schrodinger's wave equations. | Analyzing (K4) |
| CO3 | examine the production techniques of ultrasonic wave, working of acoustic grating and non- destructive testing using ultrasonic waves and also to explain microwaves and their applications in food industries. | Analyzing (K4) |
| CO4 | analyze the concepts of ferromagnetism to comprehend the working of metal detector, magnetic inductive flow meter and also to describe the phenomena related to dielectric polarization, dielectric loss and dielectric breakdown and the application of dielectrics in ohmic heating. | Analyzing (K4) |
| CO5 | inspect the concepts of Raman effect, X-ray diffraction, matter waves and thermogram to describe the principle and working of select material characterization techniques. | Analyzing (K4) |

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|---------|----|-----|------|-----|-----|------|
| Mapping | OT | CUS | with | PUS | and | PSUS |

| COs/POs | PO1 | PO2 | PO3 | PO4 | PO5 | P06 | P07 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----------|------|
| CO1 | 3 | 2 | 2 | | | | | 1 | 1 | | 1 | - 1 miles | F |
| CO2 | 3 | 2 | 2 | | | | | 1 | 1 | | 1 | | |
| CO3 | 3 | 2 | 2 | | | | | . 1 | 1 | _ = | 1 | | 111 |
| CO4 | 3 | 2 | 2 | | | | | 1 | 1 | - | 1 | | |
| CO5 | 3 | 2 | 2 | | | | | 1 | 1 | | 1 | | 11 |

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total |
|-----------------------------|-----------------------|-------------------------|-----------------|---------------------|-------------------|--------------------|-------|
| CAT1 | Samuel Control Day | 40 | 50 | 10 | 41.8 | | 100 |
| CAT2 | | 40 | 50 | 10 | - | 1.000 | 100 |
| CAT3 | | 40 | 50 | 10 | | 7 - 2 - a | 100 |
| ESE | | 40 | 50 | 10 | - 1 | 1 4-1 | 100 |

* ±3% may be varied (CAT 1,2,3 - 50 marks & ESE - 100 marks)

Signature of the Chairman
Board of Studies - 3& H, Physics

| | Civil, Mechanical, Mechatronics, Chemica | i, Food Tec | nnology& A | utomo | bile | Eng | ineerin | g branc | hes) |
|--|---|--|--|----------------------|-------------|-------|-----------------------|-------------------------|----------|
| Programme & Branch | B. E Civil , Mechanical, Automobile B.Tech Chemical Engineering ,Food Technology | Sem. | Category | L | T | Р | SL* | Total | Credit |
| Prerequisites | Programming in C | 2 | ES | 45 | 0 | 30 | 45 | 120 | 4 |
| Preamble | This course deals with core python programm python constructs and libraries. | ing. It gives | a comprehens | sive in | trodu | ction | to probl | em solvi | ng using |
| Unit -I | Introduction: | | | | | | | 9 | F |
| identifiers - da | ng strategies – program design tools – Types of ata types – input operation – comments – resentents: Introduction – conditional statement – its sein loops. | /ed words - | indentation - | Opera | ators | and I | Express | ions - D | ecision |
| Unit –II | Lists, Tuples and Dictionary: | × | | | | | 1 2 3 | 9 | |
| add and modification unit –III Strings: Conca | ons, assignments, returning multiple values, nes y, delete, sort, looping, nested, built-in methods – Strings and Regular Expressions: atenation, append, multiply on strings – Immutal | list vs tuple ole – formatti | vs dictionary. | - Built- | in str | ing m | nethods | 9 and fund | tions – |
| findall and find | functions – operators – comparing – iteratiniter functions – flag options. | g – string m | iodule – Regi | ular Ex | kpres | sions | - mate | ch, searc | h, sub, |
| Unit –IV | Functions and Modules: | | | | | | | 9 | |
| documentation | oduction – definition – call – variable scope and l on strings – programming practices recursive fun | itetime – reti | ırn statement | - tunc | tion | argun | nents – | lambda f | unction |
| function redefin | nition. | ction- Modul | es: Modules - | - раска | ages | – sta | ndard lil | brary met | thods – |
| Unit –V | nition. Object Orientation: | | | | | | | 9 | |
| Unit –V Class and Obje | nition. Object Orientation: ects: Class and objects–class methods and self– | constructor– | class and obje | ct vari | able | s–des | structor- | 9 public an | |
| Unit –V Class and Obje private data me | nition. Object Orientation: | constructor– | class and obje | ct vari | able | s–des | structor- | 9 public an | |
| Unit –V Class and Objectivate data me | nition. Object Orientation: ects: Class and objects–class methods and self– ember. NumPy: NumPy Arrays – Computation o | constructor– | class and obje | ct vari | able | s–des | structor- | 9 public an | |
| Unit –V Class and Objectivate data median LISTOF EXPE | nition. Object Orientation: ects: Class and objects–class methods and self–ember. NumPy: NumPy Arrays – Computation o | constructor– | class and obje | ct vari | able | s–des | structor- | 9 public an | |
| Unit –V Class and Objectivate data median LISTOF EXPE 1. Program 2. Imp | nition. Object Orientation: ects: Class and objects–class methods and selfember. NumPy: NumPy Arrays – Computation of RIMENTS / EXERCISES: grams using conditional and looping statements | constructor– | class and obje | ct vari | able | s–des | structor- | 9 public an | |
| Unit –V Class and Objectivate data median LISTOF EXPE 1. Program 2. Imp 3. Imp | nition. Object Orientation: ects: Class and objects–class methods and self–ember. NumPy: NumPy Arrays – Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations | constructor– | class and obje | ct vari | able | s–des | structor- | 9 public an | |
| Unit –V Class and Objectivate data media in the control of the con | nition. Object Orientation: ects: Class and objects-class methods and self-ember. NumPy: NumPy Arrays - Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations | constructor– | class and obje | ct vari | able | s–des | structor- | 9 public an | |
| Unit –V Class and Objectivate data media in the control of the con | nition. Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and parameters. | constructor- n NumPy Arr | class and obje ays. Matplotli | ct vari | able | s–des | structor- | 9 public an | |
| Unit –V Class and Objectivate data media in the control of the con | Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays — Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations lementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and partelop programs using classes and objects | constructor- n NumPy Arr | class and obje ays. Matplotli | ct vari | able | s–des | structor- | 9 public an | |
| Unit –V Class and Objectivate data media in the control of the con | Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs and particular programs using classes and objects form computation on Numpy arrays | constructor- n NumPy Arr | class and obje ays. Matplotli | ct vari | able | s–des | structor- | 9 public an | |
| Unit –V Class and Objectivate data media in the control of the con | Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays — Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations lementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and partelop programs using classes and objects | constructor- n NumPy Arr | class and obje ays. Matplotli | ct vari | able | s–des | structor- | 9 public an | |
| Unit –V Class and Objectivate data media in the control of the con | Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs and particular programs using classes and objects form computation on Numpy arrays | constructor- n NumPy Arr | class and obje ays. Matplotli | ct vari | able | s–des | structor- | 9 public an | |
| Unit –V Class and Objectivate data media in the control of the con | Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs and particles programs using classes and objects form computation on Numpy arrays we different types of plots using Matplotlib | constructor— n NumPy Arr ameter pass | class and obje | ect vari | ables | s-des | structor- catter P | 9 public an Plots | nd |
| Unit –V Class and Objectivate data media in the control of the con | Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and particle programs using classes and objects form computation on Numpy arrays we different types of plots using Matplotlib | constructor— n NumPy Arr ameter pass | class and obje | ect vari | ables | s-des | structor- catter P | 9 public an Plots | nd |
| Unit –V Class and Objectivate data media in the control of the con | Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations lementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and particle programs using classes and objects form computation on Numpy arrays we different types of plots using Matplotlib | constructor— n NumPy Arr ameter pass | class and objective ays. Matplottiing | ect vari b : Line | ables e plo | s-des | structor- catter P | 9 public an Plots | nd |
| Unit –V Class and Objectivate data media in the control of the con | Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and particle programs using classes and objects form computation on Numpy arrays we different types of plots using Matplotlib | constructor— n NumPy Arr ameter pass vingapproac | class and objective ays. Matplottiing h",3 rd impress Press, New De | ion, O | ables e plo | s-des | structor- catter P | 9 public an Plots | nd |

^{*}includes Term Work(TW) & Online / Certification course hours

| | SE OUTCOMES: appletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-----|---|--------------------------------|
| CO1 | use basic python constructs to build simple programs | Applying(K3), Precision(S3) |
| CO2 | apply list, tuple and dictionary to handle variety of data. | Applying(K3), Precision(S3) |
| CO3 | apply strings and regular expression for searching and retrieval | Applying(K3), Precision(S3) |
| CO4 | solve the problems using functions and modules. | Applying(K3), Precision(S3) |
| CO5 | apply object oriented concepts and perform data science operations using python | Applying(K3), Precision(S3) |

| COs/Pos | PO1 | P02 | PO3 | PO4 | PO5 | P06 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| CO1 | 3 | 2 | 2 | 2 | 1 | | | | 1 | 1 | 1 | 3 | 1 |
| CO2 | 3 | 2 | 2 | 2 | 1 | 3 × | | | 1 | 1 | 1 | 3 | 1 |
| CO3 | 3 | 2 | 2 | 2 | 1 | | | | 1 | 1 | 1 | 3 | 1 |
| CO4 | 3 | 2 | 2 | 2 | 1 | | | V | 1 | 1 | 1 | 3 | 1 |
| CO5 | 3 | 2 | 2 | 2 | 1 | | | | 1 | 1 | - 1 | 3 | 1 |

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

| ASSESSME | NT PATTERN | N – THEORY |
|----------|------------|------------|
|----------|------------|------------|

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total % |
|-----------------------------|--------------------|-------------------------|-----------------|------------------|-------------------|-----------------|---------|
| CAT1 | | 25 | 75 | | | | 100 |
| CAT2 | | 25 | 75 | ** | | | 100 |
| CAT3 | | 25 | 75 | | | | 100 |
| ESE | | 25 | 75 | | | 7 | 100 |

*±3% may be varied (CAT 1,2,3-50marks & ESE-100marks)

Signature of the Chairman Board of Studies - IT



| , ! | 24MET11 – E | NGINEE | RING DRAW | ING | | | | | |
|--|---|---|---|--|---|--|------------------|---|--|
| | (Common to Civil, Mech, MTS, | Auto, Cl | hem, ECE, E | EE, EI | E, FT | brar | iches) | | |
| Programme & Branch | BE / BTech – Civil, Mech, MTS, Auto, Chem, ECE, EEE, EIE, FT branches | Sem. | Category | L | Т | Р | SL* | Total | Credit |
| Prerequisites | Nil | 1 / 2# | ES | 30 | 15 | 0 | 45 | 90 | 3 |
| Preamble | To impart knowledge on engineering surfaces, isometric projections and Auto | | | | | | | | |
| Unit – I | Introduction to Engineering drawing | and Eng | ineering Cui | ves | | | , | | 6+3 |
| dimensioning. P (Eccentricity met | nstruments - BIS conventions and speci rojection of pointsin different quadrants hod). Cycloidal Curves- Cycloids and Inv | . Engine | ering Curves | : Cor | ic se | | | | ola, Hyperbola |
| Unit – II | Projection of planes and Solids ygonal surface and circular lamina inclin | II | <u> </u> | | | | | 1 | 6+3 |
| p) | er and cone when the axis is inclined to o | | | | | | | | |
| to VP - Obtaini | Sectioning of Solids and Developments sms, pyramids, cylinder and cone in simple true shape of section. Development ders and Cones(Cutting planes inclined to | ole verticate | al position by eral Surfaces | cuttin of Si | g plan | es ir | clined | | |
| Sectioning of pri to VP - Obtaini | sms, pyramids, cylinder and cone in simp ng true shape of section. Developmen | ole verticate | al position by eral Surfaces | cuttin of Si | g plan | es ir | clined | | perpendicular |
| Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit - IV Principles of ison | sms, pyramids, cylinder and cone in simp ng true shape of section. Development ders and Cones(Cutting planes inclined to Isometric Projection metric projection - Isometric scale - Isom | ole vertica t of Late o HP and netric pro | al position by eral Surfaces perpendicula | cuttin of Si r to VI | g plan mple only | es ir and). | clined trunca | ted Solids | perpendicular Like Prisms, 6+3 |
| Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit - IV Principles of ison | sms, pyramids, cylinder and cone in simp true shape of section. Developmenters and Cones(Cutting planes inclined to Isometric Projection Isometric projection - Isometric scale - Isometric projection of orthographic in to isometric scale. | ole vertica t of Late o HP and netric pro- views | al position by eral Surfaces perpendicula jections of sir | cuttin of Si r to VI | g plan mple only | es ir and). | clined trunca | ted Solids | perpendicular Like Prisms, 6+3 |
| Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit - IV Principles of iso and cylinders. Counit - V Conversion of is Introduction to Codrawing with din | sms, pyramids, cylinder and cone in simp ng true shape of section. Development ders and Cones(Cutting planes inclined to Isometric Projection metric projection - Isometric scale - Isom | ole vertica t of Late o HP and netric pro- views uction to ection (Fro- design a um 2 exe | al position by eral Surfaces perpendicula jections of sir o AutoCAD eehand sketcland developmercises manda | cuttin of Si r to VI mple a hing onent o | g plan mple only and tru inly). f new | es ir and). uncat | ed soli | ds like pri | perpendicular Like Prisms 6+3 sms, pyramids 6+3 /o-dimensional |
| Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit - IV Principles of iso and cylinders. Counit - V Conversion of is Introduction to Codrawing with din | sms, pyramids, cylinder and cone in simple true shape of section. Developmenters and Cones(Cutting planes inclined to Isometric Projection metric projection - Isometric scale - Isomonversion of orthographic in to isometric orthographic Projection and Introdometric projection into orthographic projection projection into orthographic projection and Introdometric projection into orthographic | ole vertica t of Late o HP and netric pro- views uction to ection (Fro- design a um 2 exe | al position by eral Surfaces perpendicula jections of sir o AutoCAD eehand sketcland developmercises manda | cuttin of Si r to VI mple a hing onent o | g plan mple only and tru inly). f new | es ir and). uncat | ed soli | ds like pri | perpendicular Like Prisms 6+3 sms, pyramids 6+3 /o-dimensional |
| Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit – IV Principles of iso and cylinders. Counit – V Conversion of is Introduction to Codrawing with din 3D models of va | sms, pyramids, cylinder and cone in simple true shape of section. Developmenters and Cones(Cutting planes inclined to Isometric Projection metric projection - Isometric scale - Isomonversion of orthographic in to isometric orthographic Projection and Introdometric projection into orthographic projection projection into orthographic projection and Introdometric projection into orthographic | netric proviews uction (Froduction (Froduction) udesign a um 2 exempts software | al position by eral Surfaces perpendicular jections of sire of AutoCAD eehand sketcland developmercises mandare. (Minimum | cuttin of Si r to VI mple a hing onent o eatory) 2 exe | g planmple only only. Inly). In new only only only. Introises | es ir and). uncat proc ducti | ed soli | ted Solids ds like pri Creating two Solid Model). | perpendicular Like Prisms 6+3 sms, pyramids 6+3 /o-dimensional |
| Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit – IV Principles of iso and cylinders. Counit – V Conversion of is Introduction to Codrawing with din 3D models of va | sms, pyramids, cylinder and cone in simple true shape of section. Development ders and Cones(Cutting planes inclined to a lisometric Projection metric projection - Isometric scale - Isomonversion of orthographic in to isometric orthographic Projection and Introdometric projection into orthographic projection projection and introdometric projection into orthographic projection using suitable software (Minimurious components using suitable modelling | netric proviews uction (Froduction (Froduction) udesign a um 2 exempts software | al position by eral Surfaces perpendicular jections of sire of AutoCAD eehand sketcland developmercises mandare. (Minimum | cuttin of Si r to VI mple a hing onent o eatory) 2 exe | g planmple only only. Inly). In new only only only. Introises | es ir and). uncat proc ducti | ed soli | ted Solids ds like pri Creating two Solid Model). | perpendicular Like Prisms 6+3 sms, pyramids 6+3 /o-dimensional |

*includes Term Work(TW) & Online / Certification course hours

#sem1: Cvil, Mech, MTS, Auto, Chem branches & sem 2: ECE, EEE, EIE, FT branches

| | SE OUTCOMES: mpletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-----|---|------------------------------|
| CO1 | interpret international standards of drawings and sketch the engineering curves | Applying (K3) |
| CO2 | draw the projection of planes and solids | Applying (K3) |
| CO3 | draw sectioning and developing of 3D primitive objects like prisms, pyramids, cylinders, cones | Applying (K3) |
| CO4 | sketch the isometric projections of simple and truncated solids and convert orthographic projection in to isometric drawing | Applying (K3) |
| CO5 | obtain multi view projections and solid models of objects using CAD tools | Applying (K3) |

| Mapping | of | COs | with | POs | and | DSOc |
|---------|----|-----|------|-----|-----|------|
| Mapping | OI | CUS | with | PUS | anu | POUS |

| COs/POs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------------|------|------|
| CO1 | 3 | 1 | | , | 2 | | - | | | 3 | | | |
| CO2 | 3 | 1 | 1 | (8 | 2 | _ | | | | 3 | 4 mg - | | |
| CO3 | 3 | 1 | 1 | | 2 | | 9(| | | 3 | | | |
| CO4 | 3 | 1 | 1 | | 2 | | | | | 3 | <i>z</i> . | | |
| CO5 | 3 | 1 | 1 | | 2 | | ps. | | | 3 | | | |

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

| ASSESSMEN | T PATTI | FRN - TI | HEORY |
|--------------|---------|------------|-------|
| AGGLGGIVILIN | IFALL | -1/14 - 11 | ILUKI |

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total % |
|-----------------------------|-----------------------|-------------------------|-----------------|---------------------|----------------------|--------------------|------------|
| CAT1 | | - | 100 | - L | - | - | 100 |
| CAT2 | - | - | 100 | - | / - | . Class a | 100 |
| CAT3 | | | 100 | - | - | | 100 |
| ESE | - | - | 100 | - | - | P | 100 |

* $\pm 3\%$ may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman



| | 24TAM02 - TAMILS | | | | | | | | |
|--|---|--|---|-----------------|---------------|------------------|---------------------------|------------------------------|------------|
| | (Common to All Engineerin | ng and Techn | ology Branc | hes) | | | | . 12 EF5 | |
| Programme & Branch | All BE/BTech Branches | Sem. | Category | L | Т | Р | SL* | * ТОТ | Credit |
| Prerequisites | Nil | 2 | HS | 15 | 0 | 0 | 15 | 30 | 1 |
| Preamble | This course aims to impart the essential know | ledge on the t | tamil culture a | nd rel | ated | techn | ology | | |
| UNIT – I | WEAVING AND CERAMIC TECHNOLOGY | | | | | . 7 | | | 3 |
| Weaving Industr | y during Sangam Age – Ceramic technology – B | lack and Red | Ware Potterie | es (BF | RW) - | - Graf | fiti on P | otteries. | es la |
| UNIT – II | DESIGN AND CONSTRUCTION TECHNOLO | GY | 1 3243 | 25-4 | 4 | _ | PuP | 12/9 | 3 |
| stones of Sanga Temples of Cho | Structural construction House & Designs in hous am age – Details of Stage Constructions in Sila las and other worship places – Temples of Naya – Chetti Nadu Houses, Indo – Saracenic archited | ppathikaram aka Period – | SculpturesType study (M | and T ladura | Гетр ai Ме | les of | Mama | llapuram | - Grea |
| UNIT – III | MANUFACTURING TECHNOLOGY | , - | T = 3 | | | a - | | - | 3 |
| Minting of Coin | ding – Metallurgical studies – Iron industry – Iron is – Beads making – industries Stone beads vidences – Gem stone types described in Silappa | - Glass bea | | | | | | | |
| UNIT – IV | AGRICULTURE AND IRRIGATION TECHNO | LOGY | Let 1 | * | | | 71 | | 3 |
| | ids, Sluice, Significance of Kumizhi Thoompu of Agro Processing – Knowledge of Sea – Fishocific Society. | | | | | | | | |
| UNIT – V | SCIENTIFIC TAMIL & TAMIL COMPUTING | | | | | | | | 3 |
| | Scientific Tamil – Tamil computing – Digitalizationil Digital Library – Online Tamil Dictionaries – So | | | pmer | nt of | Tamil | Softwa | re – Tan | nil Virtua |
| TEXT BOOK: | | | · . | | | , (C_ | | | |
| 1. Social Life | e of Tamils (Dr.K.K.Pillay) A joint Publication of T | NTB & ESC a | ınd RMRL – (i | n prin | t) | | > - | | |
| 2. Social Life | e of the Tamils – The Classical Period (Dr.S.Siga | ravelu) (Publi | shed by: Inter | natior | nal In | stitute | of Tan | nil Studie | s). |
| REFERENCES: | | | | ar dish | W. | 9 | | | |
| 1 1. | வரலாறு - மக்களும் பண்பாடும் - கே ே ில் பணிகள் கழகம்), உலகத் தமிழாராட் | | | | U | ாடு ட | ாடநூ | ல் மற்ற | றும் |
| | ந்தமிழ் முனைவர் இல. சுந்தரம், விகட | | | | | | | 11111 | |
| 3. கீழடி ை | வகை நதிக்கரையில் சங்ககால நகர நா | ாகரிகம்.(தெ | ால்லியல் த | துறை | ၅ ရ | വണി | பீடு) | | |
| | ந ஆற்றங்கரை நாகரிகம் (தொல்லியல் | துறை வெ | பளியீடு | 1 | | | | t/ | |
| | ற் அற்றியால்லர் நாலர்மா (அவர்வளை | | | ublich | ed b | v : Inte | | | |
| 4. பொருன ₅ Historical | Heritage of the Tamils (Dr.S.V.Subatamanian, D | r.K.D. Thiruna | avukarasu) (Pi | ublisii | | , | ernatior | nal Institu | ite of |
| 4. பொருன 5. Historical Tamil Stu 6. The Contr | Heritage of the Tamils (Dr.S.V.Subatamanian, D dies) ribution of the Tamils to Indian Culture (Dr.M.Vala | armathi)(Pupli | shed by Interr | nation | al Ins | stitute | of Tam | il Studie: | |
| 4. G山爪仮の 5. Historical Tamil Stu 6. The Contr Keeladi – | Heritage of the Tamils (Dr.S.V.Subatamanian, D dies) | armathi)(Pupli aigai; (Jointly | shed by Interr | nation | al Ins | stitute | of Tam | il Studie: | |
| 4. GUIT(頂の 5. Historical Tamil Stu 6. The Contr 7. Keeladi – Tamilnadi 8. Studies in | Heritage of the Tamils (Dr.S.V.Subatamanian, D dies) ribution of the Tamils to Indian Culture (Dr.M.Vala 'Sangam City Civilzation on the banks of river Vala Text Book and Educational Services Corporation the History of India with Special Reference to Ta | armathi)(Pupli aigai; (Jointly on, Tamilnadu amilnadu (Dr.l | shed by Interr Published by:) K.K.Pillay) (Pu | nation Depa | al Ins | stitute nt of | of Tam Archae Autho | nil Studie: ology & r) | s). |
| 4. GUIT(頂面 5. Historical Tamil Stu 6. The Control 7. Keeladi — Tamilnadi 8. Studies in | Heritage of the Tamils (Dr.S.V.Subatamanian, Ddies) ribution of the Tamils to Indian Culture (Dr.M.Vala Sangam City Civilzation on the banks of river Vala Text Book and Educational Services Corporation | armathi)(Pupli aigai; (Jointly on, Tamilnadu amilnadu (Dr.l | shed by Interr Published by:) K.K.Pillay) (Pu | nation Depa | al Ins | stitute nt of | of Tam Archae Autho | nil Studie: ology & r) | s). |

*includes Term Work (TW) & Online / Certification course hours

| | SE OUTCOMES: mpletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-----|--|------------------------------|
| CO1 | explain weaving and ceramic technology in tamil culture and tamil society. | Understanding (K2) |
| CO2 | Illustrate about the design and construction technology. | Understanding (K2) |
| CO3 | summarize about the manufacturing technology. | Understanding (K2) |
| CO4 | explain the agriculture and irrigation technology. | Understanding (K2) |
| CO5 | explain the significance of tamil in scientific and computing. | Understanding (K2) |
| 000 | Oxplain the digitileaned of tariii in edicitatio and compating. | Onderstanding |

| COs/POs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---------|--------------|----------|-----|-----------|-------|-----|-----|-----|-----|------|------|----------|------------|
| CO1 | was wide | | | S. E.A.TH | -L | 3 | | 3 | 2 | 2 | | | |
| CO2 | เล้ากรณ์ | le de co | | · - × | 18 71 | 3 | in- | 3 | 2 | 2 | | Tuest II | al section |
| CO3 | THE STATE OF | | | | | 3 | | 3 | 2 | 2 | | | |
| CO4 | | | | | | 3 | | 3 | 2 | 2 | | | |
| CO5 | | | | | | 3 | | 3 | 2 | 2 | | . 0 | |

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

| ASSES | SMENT PA | ATTERN - | - THEORY |
|-------|----------|----------|----------|
|-------|----------|----------|----------|

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total % |
|-----------------------------|--------------------|-------------------------|-----------------|---------------------|-------------------|-----------------|------------|
| CAT1 | 40 | 60 | | | | | 100 |
| CAT2 | 40 | 60 | 2 | - 1 | | | 100 |
| CAT3 | 40 | 60 | | | | | 100 |
| ESE | | | | NA | f | | |

* ±3% may be varied (CAT 1,2,3 - 50 marks)

Signature of the Chairman

Board of Studies - 5 & H (Physia)



| | (Common to All Engineering and I | Technolog | y Branches) | | | (· | | | |
|---|---|---|--|---|---|--|--|---|-------------------------------------|
| Programme & Branch | All BE/BTech Branches | Sem. | Category | Ĺ | Т | P S | SL* | TOT | Cred |
| Prerequisites | Nil | 2 | HS | 15 | 0 | 0 | 15 | 30 | 104 |
| முன்னுரை | தமிழ் கலாச்சாரத்தோடு ஒன்றிய தொழில் நு | பட்பங்கன | ள பற்றிப் | எடுத் | துரை | ரத்த | ல் | F) C G | |
| அலகு - । | நெசவு மற்றும் பானை தொழில்நுட்பம் | | | | | HEV. | | 3 | 12 |
| சங்க காலத்த கீறல் குறியீடு | ில் நெசவு தொழில் – பானைத் தொழில்நுட்ட }கள் | பம் கரு | ப்பு சிவப்பு | - ЦП | ன் ∟ர் | பகள் | lm÷,l M, L, | பாண்ட | _களி |
| அ லகு - II | வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்ப | ம் | 1500 p. r. n. | l bei | | 1 5 | W. | 3 | Fa E |
| – சங்க கால விவரங்கள் – வழிபாட்டுத் மீனாட்சி அப | ில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சா ந்த்தில் கட்டுமான பொருட்களும் நடுகல்லும் மாமல்லபுரச்சிற்பங்களும், கோவில்களும் – ம தலங்கள் – நாயக்கர் காலக் கோயில்கள் மமன் ஆலயம் மற்றும் திருமலை நாயக்கர் | – சிலம் சோழர் (–மாதிரி | ப்பதிகாரத்தி காலத்து டெ கட்டமைப்பு | ல் (பருங் கள் | மேடை கோய பற்றீ | ار الفرا الفرا | அடை கள் அறித | மப்பு ப மற்று நல், ப | பற்றிட ம் பிர மதுை |
| | சன்னை இந்தோ-சாரோசெனிக் கட்டிடக் கலை. | | | | | | | | - 1 |
| <u>அலகு - III</u> | <mark>உற்பத்தித் தொழில்நுட்பம்</mark> ம் கலை – உலோகவியல் – இரும்புத் தெ | | | | | | | 3 | 1 |
| வரலாற்றுச்ச உருவாக்கும் | | ıங்கள் ₊ மணிக | - நாணயா ள் – சுடும | ங்கள் ன் ப | அ ெணிக | ச்சடி ள் - | த்த ச | ა – | மன |
| | | | | | | oii. | NE_" | Charles and the | |
| அணை, ஏரி, | வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில்ந குளங்கள், மதகு – சோழர்கால குமிழித் தூட தக்காக வடிவரைக்கப்பட்ட திணமுகள் – வேளான் | ம்பின் பூ | | | - впе | ல்நஎ | | | |
| அணை, ஏரி, கால்நடைகளு – கடல்சார் அ அறிவுசார் சமூ | குளங்கள், மதகு – சோழர்கால குமிழித் தூட நக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் 4றிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குவ | ம்பின் பு ன்மை மர | ற்றும் வேள | ाळा ६ | - கா மை ச | ல்நஎ ார்ந் ₂ | த செ | பராம் சயல்ப | ாடுக |
| கால்நடைகளு – கடல்சார் ச அறிவுசார்சளு அலகு - v அறிவியல் த மென்பொருட் தமிழ் அகராத | குளங்கள், மதகு – சோழர்கால குமிழித் தூட நக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குவ நகம். | ம்பின் பு னமை மர ரித்தல் — — தமிழ் | ற்றும் வேள பெருங்கட நூல்களை | ாண் ல் கு மில் | - காஎமை ச மை ச மித்த பதிப் | ல்நன ார்ந் பன் | த செ ன்னை செய் | பராம் சயல்ப டய அ 3 தல் – | ாடுக் பறிவு தமிழ |
| அணை, ஏரி, கால்நடைகளு – கடல்சார் ச அறிவுசார்சமூ அலகு - v அறிவியல் த மென்பொருட் தமிழ் அகராத | குளங்கள், மதகு – சோழர்கால குமிழித் தூடி தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குவ றகம். அறிவியல் தமிழ் மற்றும் கணினித்தமிழ் மிழின் வளர்ச்சி – கணினிதத்தமிழ் வளர்ச்சி கள் உருவாக்கம் – தமிழ் இணையக் கல்விச் திகள் சொற்குவைத் திட்டம். | ம்பின் பு ன்மை மர ரித்தல் – – தமிழ் ககழகம் | ற்றும் வேள பெருங்கட நூல்களை – தமிழ் மி | ாண் ல் கு மின் | ் கான மை ச றித்த பித்த | ல்நன ார்ந்த பென் பபு செ | த செ ன்னை செய் | பராம் சயல்ப டய அ 3 தல் – ணைய | ாடுக பறிவு தமிழ பத்தி |
| அணை, ஏரி, கால்நடைகளு – கடல்சார் உ அறிவுசார்ச்சூ அலகு - V அறிவியல் த மென்பொருட் தமிழ் அகராத TEXT BOOK: | குளங்கள், மதகு – சோழர்கால குமிழித் தூடி தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்கு வ நகம். அறிவியல் தமிழ் மற்றும் கணினித்தமிழ் மிழின் வளர்ச்சி – கணினிதத்தமிழ் வளர்ச்சி கள் உருவாக்கம் – தமிழ் இணையக் கல்விச் திகள் சொற்குவைத் திட்டம். | ம்பின் பு ன்மை மர ரித்தல் – – தமிழ் ககழகம் | ற்றும் வேள பெருங்கட நூல்களை – தமிழ் மி | ாண் ல் சூ மின் ழநா | ் கான மை ச றித்த பித்த | ல்நன ார்ந்த பென் பபு செ | த செ ன்னை செய் | பராம் சயல்ப டய அ 3 தல் – ணைய | ாடுக பறிவு தமிழ பத்தி |
| அணை, ஏரி, கால்நடைகளு – கடல்சார் அ அறிவுசார்ச்டூ அலகு - V அறிவியல் த மென்பொருட் தமிழ் அகராத TEXT BOOK: 1. தமிழக கல்வியி | குளங்கள், மதகு – சோழர்கால குமிழித் தூடி தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குவ றகம். அறிவியல் தமிழ் மற்றும் கணினித்தமிழ் மிழின் வளர்ச்சி – கணினிதத்தமிழ் வளர்ச்சி கள் உருவாக்கம் – தமிழ் இணையக் கல்விச் திகள் சொற்குவைத் திட்டம். | ம்பின் பு ன்மை மர ரித்தல் – – தமிழ் ககழகம் ளை (வெ | ற்றும் வேள பெருங்கட நூல்களை – தமிழ் மி | ாண் ல் சூ மின் ழநா | ் கான மை ச றித்த பித்த | ல்நன ார்ந்த பென் பபு செ | த செ ன்னை செய் | பராம் சயல்ப டய அ 3 தல் – ணைய | ாடுக பறிவு தமிபு பத்தி |
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| பர்ப | | | | மாணவர் | | <u> </u> | | | - | | | | (Highest L | evei) | |
| CO1 | தமி <u>ு</u> தொ | | | ம் மற்ற ற்றி வி | | • | | த்தினு | டைய | ப நெசவு | மற்றும் | பானை | Understanding (K2) | | |
| CO2 தமிழர்களின் வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்ப ஆற்றல் பற்றி விளக்க முடியும். | | | | | | | | | | | | | Understanding (K2) | | |
| CO3 தமிழர்களின் உற்பத்தித் தொழில்நுட்பம் பற்றி சுருக்கமாகக் கூற முடியும். | | | | | | | | | | | | | | ng (K2) | |
| CO4 | | ஓர்களி .யும். | ன் வே | ளாண்டை | ம மற | ற்றும் | நீர்ப்ப | ாசனத் | தெ | ாழில்நுட்ப | ம் பற்றி | விளக்க | Understandi | ng (K2) | |
| CO5 | தமிழ | ழர்களி | ன் அறி | வியல் | தமிழ் | மற்றுப் | ் கன | ளினித் <u>த</u> | ழ்வ | பற்றி வி | ாக்க முடியு | ம். | Understandi | ng (K2) | |
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| | Test / Bloom's Remembering Understanding Applying Analyzing Category* (K1) % (K2) % (K3) % (K4) % Evaluating (K5) % | | | | | | | | | g (K5) % | Creating (K6) % | Total | | | |
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Signature of the Chairman
Board of Studies - 5 & H (Physics

* ±3% may be varied (CAT 1,2,3 – 50 marks)



| Programme& Branch | | | B.Tech - Food Technology Sem. Category L T P | | | | | | | | Р | SL* | тот | Credi | | | |
|----------------------|--|--------|--|---|---------------------------------|----------------------|----------------------|-----------------------|-----------|----------------------|---|--------|--------|-------|---|-------------------------------------|---------|
| Prerec | quisites | N | lil | | | | | | | 2 | BS | 0 | 0 | 30 | 0 | 30 | 1 |
| Pream | ble OF EXPE | f s | reque specif coding | ency, co ic resis g / deve | mpress tance, t eloping p | sibility o hermal | f a liquio conduc | d, wave tivity, vi | length of | of laser, thickne | termination of particle size, ess of thin film equirement. | You | ing's | mod | ulus, ri | aiditv m | nodulus |
| 1. | 1 | | | | | f altern: | ating cu | rrent us | sing ele | etrically | vibrating tuni | na fa | ork (N | Aolda | o'c opp | aratı ıa\ | |
| 2. | Determination of the frequency of alternating current using electrically vibrating tuning fork (Melde's apparatus). Determination of the wavelength of the given semiconductor laser. | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| 3. | Determination of the particle size of the given powder using laser. | | | | | | | | | | | | | | | | |
| 4. | Determ | inatio | n of t | he You | ng's mo | dulus o | f the ma | aterial c | of the gi | en bea | m using unifo | orm b | endi | ng m | ethod. | 0 | |
| 5. | Determ | inatio | n of t | he rigid | ity mod | ulus of | the met | allic wir | e using | torsion | al pendulum. | | | | | | |
| 6. | Determ | inatio | n of t | he spec | cific res | istance | of the g | iven me | etallic w | ire usin | g Carey-Fost | er's l | bridg | e. | | | |
| 7. | Determ | inatio | n of t | he theri | mal con | ductivit | y of a b | ad cond | ductor u | sing Le | e's disc. | | | | | | |
| 8. | Determ | inatio | n of t | he coef | ficient c | of viscos | sity of lie | quid usi | ng Pois | euille's | method. | | | | | | |
| 9. | Determ | inatio | n of t | hicknes | s of a t | hin film | using a | ir-wedg | e arran | gement | 2 | | | | | | |
| 10. | Writing | codir | ng for | any on | e of the | above | experim | nents / o | develop | ng a pr | oject / a prod | uct. | | | *************************************** | Name . | |
| DEFE | | | | | | | | | | | -, | | - | | | | |
| W 2000000 W 500 | RENCES | | | TOTAL SERVICE NAME AND ADDRESS OF THE PARTY | WARE | | | | | | | | | | | | - 10 |
| 1. | Labora | | | u. | | | | | × | | | | | | | | |
| | SE OUTO | | | ırse. th | e stud | ents wi | II be ab | le to | | | | | | 1 | | T Mapp ghest L | |
| CO1 | | ne th | e fred | quency | of an a | alternati | ing curr | | e wavel | ength c | of a semicon | ducto | or las | er | Ana | alyzing (| (K4), |
| CO2 | | ne th | e You | ung's m | nodulus | | | the rigi | dity mo | dulus o | f a wire and | the | speci | fic | Ana | ecision (alyzing (ecision (| (K4), |
| CO3 | determ | ine th | e the | rmal co | onductiv | ity of a | bad co | nducto g / proie | r, the co | pefficier duct. | nt of viscosity | of a | a liqu | id, | An | alyzing (ecision | (K4), |
| | | | | | | | | | vith PO | | SOs | | *** | | | 00.01011 | (00) |
| COs/P | Os PC | 1 F | 202 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | T | PO1 | 1 | PSO | 1 | PSO2 |
| CO1 | 1 3 | | 2 | 2 | 3 | | | | 3 | 1 | × | \top | 2 | | | | |
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| COS | 3 3 | | 2 | 2 | 3 | | | | 3 | | | | | | | | |

*includes Term Work (TW) & Online / Certification course hours

Signature of the Chairman
Board of Studies - SAH (Physica)



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|---------------------|---|------------|----------|----------|----------|-----------|----------|----------|------------------------|------------|----------|------------------|-------------------------|---------|
| Programme Branch | & | | All BE/ | BTech | Branch | es | Se | m. C | ategory | L | ТР | SL* | Total | Credi |
| Prerequisite | s | | | Nil | | | . 1. | /2 | ES | 0 | 0 90 | 0 | 90 | 3 |
| Preamble | | | puter-a | ided De | | | | | velop a p s, 3D Pri | | | | basic kn tics and | owledge |
| LIST OF EXF | PERIM | ENTS / | EXER | CISES: | | , | | | · . | | * 7 | | | |
| | | | | PART | A – Ma | nufactı | iring La | borato | ory (30 H | ours) | | | | |
| 1 Selection | n of pr | oduct, fr | ee han | d sketch | ning and | detailir | ng | | o A | | | 4 | | |
| 2 Constru | ction o | f model | using A | rc/TIG/ | MIG/Ga | s/Spot | welding | operati | ions | | | | ui) | |
| 3 Enhanci | ing the model with sheet metal | | | | | | | | | | | | | |
| 4 Creating | the pa | arts of tl | ne mod | el using | lathe | | | | | | i | | | |
| 5 Creating | the pa | arts of tl | ne mod | el using | milling | and dril | ling mad | chines | a . | | | | | |
| | | P | ART B | – Produ | uct Des | ign and | l Develo | pmen | t Labora | tory (30 | Hours) | | | |
| 1 Free ha | nd ske | tching a | nd deta | iling of | the com | ponent | } | | | | | r. | | |
| 2 3D part | modell | ling of th | ne comp | onent u | using CA | AD softv | vare | 7 | | | - | _ | 7.1 | _ |
| 3 Enginee | ring A | nalysis | of the c | ompone | nt mode | el | | | is a | | | | | |
| 4 Generat | e the o | compon | ent usir | ıg 3D pr | inter | 4. | | | | | | 4. | | |
| | | | | PA | RT C - | Roboti | cs Labo | ratory | (30 Hou | rs) | | | | i i |
| Design o | of elec | tronic ci | rcuit an | d its de | bugging | | | | | | | | | |
| 2 Assemb | ly and | interfac | ing of s | ensors, | actuato | ors and | wireless | comm | union mo | odules w | ith audr | no UNC |) | - |
| 3 Develop | ment o | of embe | dded p | rogramr | ning and | d interfa | cing for | motion | control | and obs | tacle av | oidance | | |
| 4 Demons | stration | and te | sting of | robot in | static e | environn | nent | | | | | | | |
| | | | | R | EFERE | NCES/ | MANUA | AL /SO | FTWARE | : : | 24 | ž. | | 1 |
| 1 Foundat | tion Er | ngineerii | ng Labo | ratory N | Manual | | - | | | W a | | | | * |
| 2 SOLID | WORK | S 2022 | Softwa | re | | ** | | | | | | ii e | | |
| COURSE OI | | | ırse, th | e stude | ents wil | l be abl | e to | | R 5 | 2 4 | | | Γ Mappe thest Lev | |
| CO1 | develo | | rototype | model | using m | | | ations | like weldi | ing, | | Ap | plying (Ka | 3), |
| CO2 | sketch | 3D mo | del and | develo | p the pr | ototype | using 3 | D printe | er | * | | | plying (K ecision (S | |
| CO3 | design and develop the autonomous robot for real-time applications Applying (K3), Precision (S3) | | | | | | | | | | | | | |
| | | | | | Mappin | g of C | Os with | POs a | nd PSOs | S | | , , | _ | |
| COs/POs /PSOs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 | PO11 | PSO ² | 1 - F | PSO2 |
| CO1 | 3 | 3 | 3 | 2 | | | | 3 | 2 | | 2 | | | ¥ |
| CO2 | 3 | 3 | 3 | 3 | | | | 3 | 2 | | 2 | | | |
| CO3 | 3 | 3 | 3 | 2 | | | | 3 | 2 | | 2 | | | |

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Signature of the Chairman Board of Studies - Mechanical

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| | | | | 24 | MNT21 | - QUAN | VITATIT | E AP | TITUDE - II | | | | | | | | |
|--------------------------------------|---|---|--|--|---|--|---|--|---------------------------|----------|---------------|--------|---|--------------------------------|--|--|--|
| 9 0 | | | (C | ommon | to all E | nginee | ring and | Techi | nology bra | nches |). | | | | | | |
| Progra Branch | mme & 1 | All B. | E/B.Tec | h Branc | ches | | Se | em. | Category | L | T P SL* Total | | | | | | |
| Prereq | uisites | Basic | Mather | natical | skills | | | 2 | MC | 20 | 0 0 | 10 | 30 | 0 | | | |
| Preaml | ble | To imp | art prob | olem sol | ving skil | Is and e | enhance a | analytic | cal skills. | | | 1 | - | , | | | |
| Unit – I | | | | | s, Time | | | | 3 | | | | | 6 | | | |
| Mixture | rule – App nd Work: | olication Concep | s – Pro | blems. ork and v | | | | | i – Simple Simple prob | | ns on | averag | jes – All | | | | |
| Time a | | ce: Tim | e, spee | d and d | | | | Avera | ige speed - | Relat | ve spe | ed – P | roblems | on boat | | | |
| Unit – I | | | | | | | bability: | | K. | | | | | 8 | | | |
| | tation and | | | | | | | | | | | -, | | | | | |
| TEXT E | pility: Bas | ic Conce | epis – P | фрисац | ons – Si | mpie pri | obiems. | | | | | | | | | | |
| 1. | Dr.R.S.A limited, 2 | | "Quant | itative A | ptitude 1 | for Com | petitive E | xamin | nations", Re | vised | Edition | , S.Ch | and and | compan | | | |
| | | · | | | | | | | | | | | | • | | | |
| REFER | RENCES/ | | L/SOF | TWARE | Ē: | | | | | | | | | | | | |
| REFER | | MANUA | | | | Compe | titive Exa | minati | on", 7 th Ed | ition, I | /lcGrav | w Hill | Education | on, India | | | |
| | Abhijit G 2020. | MANUA uha,"Qเ | ıantitati | ve Aptiti | ude for | | titive Exa | | on", 7 th Ed | ition, I | /IcGra | w Hill | Educatio | on, India | | | |
| 1. | Abhijit G 2020. https://w | MANUA uha,"Qu ww.india | iantitati | ve Aptitu | ude for le/quest | ions-and | | <u>s</u> | | ition, I | /lcGra | w Hill | Educatio | on, India | | | |
| 1. 2. 3. | Abhijit G 2020. https://w | MANUA uha,"Qu ww.india ww.geel | uantitativabix.com | ve Aptitud | ude for le/quest aptitude | ions-and | d-answers | <u>s</u> | | ition, I | /IcGrav | | Education BT Map | pped | | | |
| 1. 2. 3. COURS | Abhijit G 2020. https://w https://w | ww.india ww.geel | antitativabix.con | ve Aptituden/apt | ude for le/quest aptitude | ions-and questio | d-answers | <u>s</u> inswer | <u>s</u> | ition, I | /IcGra | (1 | ВТ Мар | ped Level) | | | |
| 1. 2. 3. COURS | Abhijit G 2020. https://ww https://ww SE OUTCO npletion of Solve av | ww.india ww.geel DMES: of the coverages he prob | abix.con ssforges ourse, t , alligation | n/aptitudeks.org/sithe stud | ude for le/quest aptitude lents wi | ions-and -question II be ab | d-answers ons-and-a ole to ond work p | s inswer | <u>s</u> | | | (1 | BT Mar Highest | pped Level) | | | |
| 1. 2. 3. COURS On cor | Abhijit G 2020. https://ww https://ww SE OUTCO mpletion of Solve av Solve t applicat | ww.india ww.geel OMES: of the co | abix.con esforged burse, t , alligation blems oblems. | n/aptitudeks.org/siche stud | ude for de/quest aptitude lents wi mixtures and d | ions-and question II be ab time and istance, | d-answers ons-and-a ole to ond work p upstrea | s nswer problen m and | ns. | eam o | | (1) | BT Map Highest Applying | pped Level) (K3) | | | |
| 1. 2. 3. COURS On con CO1 | Abhijit G 2020. https://ww https://ww SE OUTCO mpletion of Solve av Solve t applicat | ww.india ww.geel OMES: of the co | abix.con esforged burse, t , alligation blems oblems. | n/aptitudeks.org/sine studions or ron time | de/quest aptitude lents wi nixtures and d utation, | ions-and question II be ab , time and istance, combina | d-answers ons-and-a ole to ond work p upstrea | s inswer problen m and proba | ns. d downstre | eam o | | (1) | BT Map Highest Applying Applying | pped Level) (K3) | | | |
| 1. 2. 3. COURSON COT | Abhijit G 2020. https://w https://w SE OUTCO npletion of Solve av Solve t applicat Solve pi | ww.india ww.geel OMES: of the co | abix.con esforged burse, t , alligation blems oblems. | n/aptitudeks.org/sine studions or ron time | de/quest aptitude lents wi nixtures and d utation, | ions-and question II be ab , time and istance, combina | d-answers ons-and-a ole to ond work p one upstrea ation and | s inswer problen m and proba | ns. d downstre | eam o | riented | (1) | BT Map Highest Applying Applying | pped Level) (K3) | | | |
| 1. 2. 3. COURS On cor CO1 CO2 CO3 | Abhijit G 2020. https://ww https://ww SE OUTCO mpletion of Solve av Solve t applicat Solve pi | ww.india ww.geel DMES: of the coverages he problems | abix.con ksforged burse, t , alligation blems of blems. involvir | n/aptitudeks.org/sche stude ions or report time | de/quest aptitude lents wi nixtures and d utation, Mappin | ions-and- question II be ab , time and istance, combinating of CC | d-answers ons-and-a ole to ond work p upstrea ation and Os with P | s nswer problen m and proba | ns. d downstre | eam o | riented | (1) | BT Map Highest Applying Applying | pped Level) (K3) (K3) | | | |
| 1. 2. 3. COURSON CON CON CO1 CO2 CO3 | Abhijit G 2020. https://ww https://ww SE OUTCO mpletion of Solve at applicat Solve pi Os PO1 2 | ww.india ww.geel OMES: of the co verages he problems roblems | abix.con ksforged burse, t , alligation blems of blems. involvir | n/aptitudeks.org/sche stude ions or report time | de/quest aptitude lents wi nixtures and d utation, Mappin | ions-and- question II be ab , time and istance, combinating of CC | d-answers ons-and-a ole to ond work p upstrea ation and Os with P | s nswer problen m and proba | ns. d downstre | eam o | riented | (1) | BT Map Highest Applying Applying | pped Level) (K3) (K3) | | | |

ASSESSMENT PATTERN - THEORY

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total % |
|-----------------------------|-----------------------|-------------------------|-----------------|---------------------|-------------------|-----------------|---------|
| CAT1 | | 30 | 70 | ž. | | | 100 |
| CAT2 | | 30 | 70 | | | 2 | 100 |
| CAT3 | - | 30 | 70 | | - | | 100 |

 * ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

*includes Term Work (TW) & Online / Certification course hour

Signature of the Chairman Board of Studies - \$4 H





| Sermode Ac- | 24VEC11 - YOGA AND VALUES | FOR H | OLISTIC DE | VELO | OPM | ENT | | | |
|----------------------------------|--|-------------------------|--------------------------|--------------|--------------------|---------|----------|----------------------|----------|
| e. Action | (Common to All Engineering | ng and Te | chnology B | ranch | es) | | | | |
| rogramme & Branch | All B.E./B.Tech. Branches | Sem. | Category | L | Т | P. | SL* | Total | Credit |
| Prerequisites | Nil | 1 | HS | 15 | 0 | 15 | 0 | 30 | 1 |
| E + 3130m th 3 m 1 | | Mad al | March 1274 | - | -171 | 1.57 | | e a l | H. 150 H |
| Preamble | Yoga or yogasanas are considered as is method to bring harmony of body a of the greatest gifts to the world benefitted by learning yoga. | nd mind | for general v | wellbe | ing. | Yoga | is cor | sidered | as one |
| Unit – I | Introduction: | 5 925 15 | almen evi. | (F = 1 = 5 = | ele i e | | No age | | 2 |
| and Regulatior & Bandhas - Sl | Yoga – Definitions - Concepts - Aims ar as of Asanas – Classifications of Yogasa hatkarma (Cleansing Practice) - Streams | anas – Pa | atanjali's As | htang | a Yo | ga – | | | Mudras |
| Unit – II | Yoga and Mind: | | | | | | | | 2 |
| | Mind - Five Elements and the Mind - M | | | | | | | | Role of |
| Unit – III | ological problems: Mood Disorders, Major Yoga and Values, Diet: | or Depres | Sive Disorde | er, Cy | ciotn | ymic | Disord | ler. | |
| | - Social Values - Role of Yoga in Person | nality Int | ogration C | 00000 | oto o | f Nloti | ural Di | t Not | 2 |
| | ve Diet – Soothing Diet – Constructive D | | egration - C | oncer | วเร บ | ı wall | irai Die | et - Matt | ıropatny |
| Unit – IV | Asanas: | 1 - | | | - | | | | 2 |
| Prayer - Startin | ng & Closing - Preparatory practices - L | oosening | Practices - | - Mea | ning, | Defi | nitions | and Ob | jectives |
| of Asanas - Pri | nciples of Practicing Asanas. Asanas: Si | tanding – | Sitting - Pr | one – | Sup | ine – | Surya | namask | ar. |
| Unit – V | Pranayama and Meditation: | | | | | | | | 2 |
| Pranayama. P Techniques – N | ctices for awareness - Definitions an ranayama: Nadi Shuddhi - Kapalaba Meditation. | | | | | | | | |
| TEXT BOOK: | | | | | | | | | |
| 1. Swami 1969. | satyananda saraswathi, "Asana prana | yama mu | dra bandha | a", Bih | nar s | choo | l of yo | oga, 4 th | Edition, |
| 2. Swami | mukthi Bodhanandha, "Hatha yoga prad | ipika", Bi | nar school o | f yoga | a, 4 th | Editi | on, 19 | 85. | |
| REFERENCES | S: | > * | | 7. | | | | | |
| 1. B.K.S. I | yenkar, "Yoga the path of holistic health | ", DK Lim | ited, 2 nd Ed | ition, 1 | 1969 | | | | |
| 2. Selvara | su, "Kriya cleansing in yoga", Aruvi yoga | a, 3 rd Edit | ion, 2002. | 1.5 | | | × , , 2 | - f | - |
| Z. Selvara | isu, "Kriya cleansing in yoga", Aruvi yoga | a, 3° Edit | ion, 2002. | 24 | - | - | | 2 | - |

| | SE OUTCOMES: npletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-----|--|------------------------------|
| CO1 | realize the importance of yoga in physical health. | Applying (K3) |
| CO2 | realize the importance of yoga in mental health. | Applying (K3) |
| CO3 | realize the role of yoga in personality development and diet. | Applying (K3) |
| CO4 | do the loosening practices, Asanas and realize its benefits. | Applying (K3) |
| CO5 | do the practice of Pranayama, meditation and realize its benefits | Applying (K3) |

| Map | oing of | COs with | POs | and PSOs | |
|-----|---------|----------|-----|----------|---|
| | | | | | • |

| COs/POs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | P011 |
|---------|----------|-----|-----|-------|-----|-----|-----|-----|-------|-----------|------|
| CO1 | 4 9 80 1 | | | - , . | 6- | 3 | | 2 | 1 | | |
| CO2 | | | | | | 3 | | 2 | | 4-5 | |
| CO3 | 1 | | 7 | | | 3 | a . | 3 | - / - | Townships | |
| CO4 | | | | | | 3 | | 2 | 3 | | |
| CO5 | T ABOUT | | | | | 3 | | . 3 | | | |

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

| ASSESSMENT | PATTERN - | THEORY |
|------------|-----------|--------|
|------------|-----------|--------|

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzin g (K4) % | Evaluati ng (K5) % | Creating (K6) % | Total % |
|--------------------------------|--------------------|-------------------------|-----------------|----------------------|--------------------------|--------------------|------------|
| CAT1 | e le mari | - <u>-</u> | | | r - Emily | | = |
| CAT2 | g. . | | - | - | | <u>.</u> | |
| CAT3 | 20 | 30 | 50 | - | - | | 100 |
| ESE | | <u>-</u> | | | - | - | - |

* ±3% may be varied (CAT3 - 100 marks)

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U Unature of the Chairman
Board of Studies - SAH (modfs)





| I they I M SELF- | 24FTC31 - ENGINEERING PROI | PERTIES OF F | OUD MAIE | KIALS | | | | نسسانا | 41 |
|---|---|-------------------------------|---|----------------------------|-------------------|--------|-------------|------------|-----------------|
| Programme & Branch | B.Tech & Food Technology | Sem. | Category | L | T | Р | SL* | Total | Credi |
| Prerequisites | s Nil | 3 | PC | 45 | 0 | 30 | 45 | 120 | 4 |
| Preamble | To impart knowledge on physical, thermal, optic materials and its measurement methods | al, electromagn | etic, rheolog | ical ar | nd tex | xtural | proper | ties of fo | ood |
| Unit- I | Physical Properties: | | | | | | | | 9 |
| area - defini | of engineering properties, Physical properties of foot tions and measurements, Frictional properties –coe ance and angle of internal friction – definition, Aero | efficient of friction | on, angle of | repos | e – t | ypes | and its | determi | nation, |
| Unit – II | Thermal Properties: | Restriction of the second | | | | | | , - | 9 |
| specific heat | specific heat, enthalpy, thermal conductivity, therm, thermal conductivity – steady state and unsteady d, Bomb calorimeter, Boiling point elevation and | state methods, | thermal diffu | usivity | – Di | ckers | on's m | ethod, C | Calorific |
| Unit – III | Optical and Electrical Properties: ex of food items, Abbe's refractometer, Optical and | | | | | | | | 9 |
| dielectric propapplications. Unit – IV Classification or relationships in | applications. Electromagnetic Properties: Electrical erties - measurement methods, effect on moistue Rheological Properties: of rheology, Stress Strain behavior of Newtonian and solids, liquids and viscoelastic behavior- stress rela agrams, Rheological models – Kelvin and Maxwell r | d Non- Newtoni | e and comp an fluids- Bir ep test and d | osition ngham lynami | and | Non- | ave he | eating ar | 9 ss- strair |
| Capillary, Ori | fice, Falling and Rotational viscometers. | | #1100 F 1889 | | | | 7 1 | dr' - | |
| Unit – V | Textural Properties: textures, Texture measuring instruments- Compress | | | 01 | | | | | 9 |
| order systems | ood powders. Color: Interaction of object with light, Munsel color system, CIE color system, Hunter lab ERIMENTS / EXERCISES: | | | | hotor | meter | and C | olorimet | er, Colo |
| | rmination of size, roundness, sphericity and 1000 gra | ain weight of fo | od grains. | | | | | | - |
| 2. Dete | rmination of bulk density, true density and porosity. | | | | | | - e | | |
| 3. Dete | rmination of angle of repose for grain sample. | * | . 4 | - 1 | | | | 9 | |
| 4. Dete | rmination of co-efficient of friction for grain sample. | | VI 10-10-1 - XV | e dijer | | | | | |
| 5. Dete | rmination of energy value of foods using bomb calor | imeter. | | | | | | | |
| 6. Dete | rmination of refractive index and viscosity of food ma | aterials. | IENUX JALLE | 9 9 9 | Te, be | 1 1 | | | |
| 7. Expe | eriment on drying characteristics of food material usin | ng microwave d | ryer. | | SAME LATER | - Film | 13 3 511 61 | | |
| 8. Dete | rmination of tensile strength of different packaging m | naterials. | | | | | - | | |
| 9. Dete | rmination of texture profile analysis of food materials | i. | | | | | | | |
| 10. Dete | rmination of colour analysis of food materials. | | 8 | | | | | | , |
| TEXT BOOK: | | | | u . | | | * | | 30 |
| 1. Serp | il Sahin and Servet Gulum Sumnu, "Physical Proper | ties of Foods", 1 | st Edition, Sp | ringer | , Ne | w Yor | k, 2006 | S | |
| REFERENCE | S/ MANUAL / SOFTWARE: | 0 | - u _ | 1) | | | 11 | * | |
| 1. Saha | ay K.M. and Singh K.K., "Unit Operations of Agricultu | ıral Processing" | , 2 nd Edition, | Vikas | Pub | lishin | g, New | Delhi, 2 | 004. |
| 2. Rao | M.A. and Rizvi S.S.H., "Engineering Properties of Fo | oods", 4 th Editio | n, CRC Pres | s, Nev | v Yor | rk, 20 | 14. | | |
| 3. Labo | oratory Manual | | | | | | | | |
| | , M., et al., "Practical Lab Manual: Engineering Proportications, 2023. | erties of Food a | nd Dairy Pro | ducts, | " 1 st | Editio | n, Prak | char Goo | nj |
| *inc | ludes Term Work (TW) & Online / Certification cours | a hours | | | | | | | |

| | SE OUTCOMES: npletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-----|--|---------------------------------------|
| CO1 | apply the various physical properties in food process design | Applying (K3), Precision (S3) |
| CO2 | outline the thermal properties of foods and its measurement methods | Understanding (K2), Precision (S3) |
| CO3 | make use of optical and electromagnetic properties of food materials in food processes | Applying (K3), Precision (S3) |
| CO4 | explain various rheological behavior of solid, liquid and viscoelastic food materials | Understanding (K2), Precision (S3) |
| CO5 | choose suitable textural and color measurement techniques for food materials | Applying (K3), Precision (S3) |

| Manning | of CO | s with P | Os and | PSOs. |
|---------|-------|----------|--------|-------|

| COs/POs/PSOs | P01 | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 | PO11 | PS01 | PSO2 |
|--------------|-----|-----|-----|-----|-----|-----|-----|-------------|-----|----------------------|------|------|------|
| CO1 | 3 | 3 | 2 | 1 | 1 | | | You down to | 1 | e propini teation to | 1 | 3 | 3 |
| CO2 | 3 | 3 | 2 | 1 | 1 | | | | 1 | | 1 | 2 | 3 |
| CO3 | 3 | 3 | 2 | 1 | 1 | × - | | _ | 1 | | 2 | 2 | 3 |
| CO4 | 3 | 3 | 3 | 2 | 2 | | | | 1 | | 2 | 3 | 3 |
| CO5 | 3 | 3 | 3 | 2 | 2 | | | | 1 | | 2 | 3 | 3 |

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

| Δ | SSES | SME | NT | PΔ | TTFR | N- | THEORY | • |
|---|------|-----|----|----|------|----|----------|---|
| _ | JULU | | | - | | | IIILOIVI | |

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Tota % |
|-----------------------------|-----------------------|-------------------------|-----------------|---------------------|-------------------|-----------------|-----------|
| CAT1 | | 75 | 35 | = | | | 100 |
| CAT2 | 15 1 | 40 | 60 | | | • - | 100 |
| CAT3 | | 50 | 50 | 5 | | 8 | 100 |
| ESE | | 40 | 60 | | | | 100 |

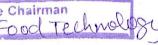
* ±3% may be varied (CAT 1, 2 & 3- 50 marks & ESE – 100 marks)

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Signature of the Chairman

Roard of Studies -







| Programme & Branch | BTech & Food Technology | Sem. | Category | L | т | Р | SL* | Total | Credi |
|--|--|--|--|---|---|--|---|--|--|
| Prerequisites | Nil | 3 | PC | 45 | 0 | 0 | 45 | 90 | 3 |
| Preamble | This course will deal about the importance of different age groups | of nutrients and | its assimilatio | on, en | ergy b | alance | and n | utrition f | or |
| Unit – I | Food Groups and Nutrition: | 7 | | | | | | | 9 |
| nutrition and unde | asses of nutrients, RDA, nutritional status a er nutrition. Balanced diet: Diet planning princip echanical and chemical digestion, absorption a | les, dietary guid | delines; food | | | | | | |
| Unit – II | Carbohydrates - Sugars, Starch and Fibe | r: | | | | | | | 9 |
| | sorption of carbohydrates, lactose intolerance; or health, health effects of fiber and starch intak | | | | | | | ndations | |
| Unit - III | Lipids and Proteins: | A11 70 | - 10 | . 6 | | | rv . | The state of | 9 |
| assessing protei Marasmus and K | s. Digestion and absorption of proteins; Fundamental quality; Recommended intakes of proteins; washiorkor. Energy Value, Energy Balance and Body | unctions of pro protein and am | oteins; amin | o acid | ds; P | rotein | | , meth | ods of |
| assessing protein Marasmus and K Unit - IV Calorific value of - components - | n quality; Recommended intakes of proteins; washiorkor. | unctions of proprotein and am Composition: ion of foods, phase processes and processes are provided to the processes are processes and processes are proces | oteins; amino ino acid supp nysiological e | o acio | ds; P nts; P value | rotein rotein of foo | quality Energy ds. Ene | y, methy y Malnut | ods of trition - |
| assessing protein Marasmus and K Unit - IV Calorific value of - components - body composition Unit - V | n quality; Recommended intakes of proteins; washiorkor. Energy Value, Energy Balance and Body foods; basal metabolism, specific dynamic act energy intake, energy expenditure, energy recontechniques. Obesity- BMR and BMI calculation Nutrition for Different Age Groups: | Composition: ion of foods, phuirement. Bodyns. | oteins; aminino acid supp ino acid supp nysiological e or composition | o acio pleme nergy nergy | ds; P nts; P value ve leve | rotein rotein of foo els of l | quality Energy ds. End body co | y, methy Malnut | ods of trition - 9 ance ion - |
| assessing protein Marasmus and K Unit - IV Calorific value of - components - body composition Unit - V Factors to be confident or components. Information (Toddlers and Proteguirements, Imprequirements, Imprequirements, Impreciate (Information of the Impreciate (Information of the Impreciate (Information of Information of Impreciate (Information of Impreciate (Information of Information of Impreciate (Information of Information o | n quality; Recommended intakes of proteins; washiorkor. Energy Value, Energy Balance and Body foods; basal metabolism, specific dynamic act energy intake, energy expenditure, energy recommendation techniques. Obesity- BMR and BMI calculation | Composition: ion of foods, physician requirement. Bodyns. - nutrition requirement formula. I onal related proce - Growth, | oteins; amino acid supplino acid supplication acid | nergy i – Fix d food f suppling Pads, fo | value ve leve d sele- plemen attern. od ch | of fooels of location. | ds. Encody co | ergy bal pomposition - nut early chilten - Nut habits, | ods of trition - 9 ance ion - 9 tritional dhood. tritional |
| assessing protein Marasmus and K Unit - IV Calorific value of components body composition Unit - V Factors to be conference of the | n quality; Recommended intakes of proteins; washiorkor. Energy Value, Energy Balance and Body foods; basal metabolism, specific dynamic act energy intake, energy expenditure, energy recontection techniques. Obesity- BMR and BMI calculation Nutrition for Different Age Groups: Insidered in meal/menu planning. Pregnancy ancy - nutritional requirements, breast feeding, eschoolers) - Growth and nutrient needs, nutrition protance of snacks, school lunch. Adolescer | Composition: ion of foods, physician requirement. Bodyns. - nutrition requirement formula. I onal related proce - Growth, | oteins; amino acid supplino acid supplication acid | nergy i – Fix d food f suppling Pads, fo | value ve leve d sele- plemen attern. od ch | of fooels of location. | ds. Encody co | ergy bal pomposition - nut early chilten - Nut habits, | ods of trition - 9 ance ion - 9 tritional dhood. tritional |
| assessing protein Marasmus and K Unit - IV Calorific value of — components — body composition Unit - V Factors to be confequirements. Infoodlers and Protein requirements, Important of the confequirements of | n quality; Recommended intakes of proteins; washiorkor. Energy Value, Energy Balance and Body foods; basal metabolism, specific dynamic act energy intake, energy expenditure, energy recontection techniques. Obesity- BMR and BMI calculation Nutrition for Different Age Groups: Insidered in meal/menu planning. Pregnancy ancy - nutritional requirements, breast feeding, eschoolers) - Growth and nutrient needs, nutrition protance of snacks, school lunch. Adolescer | composition: ion of foods, physician requirement. Bodyns. - nutrition requirement formula. I onal related pronce - Growth, nutrients use, n | oteins; amino ino acid supp nysiological e v composition direments and introduction of oblems, Feed Nutrient needs | nergy nergy nergy d food f supping Pa ds, fo | value ve leve d sele- blemen attern. od ch | of foo | ds. Encody co | ergy bal pomposition - nut early chilten - Nut habits, | ods of trition - 9 ance ion - 9 tritional dhood. tritional |
| assessing protein Marasmus and K Unit - IV Calorific value of — components — body composition Unit - V Factors to be confequirements. Infinity (Toddlers and Princequirements, Imminfluencing. Gerial TEXT BOOK: | n quality; Recommended intakes of proteins; washiorkor. Energy Value, Energy Balance and Body foods; basal metabolism, specific dynamic act energy intake, energy expenditure, energy recontechniques. Obesity- BMR and BMI calculation. Nutrition for Different Age Groups: In considered in meal/menu planning. Pregnancy ancy - nutritional requirements, breast feeding, eschoolers) - Growth and nutrient needs, nutriting action. Adolescer action Nutrition - Factors affecting food intake and | composition: ion of foods, physician requirement. Bodyns. - nutrition requirement formula. I onal related pronce - Growth, nutrients use, n | oteins; amino ino acid supp nysiological e v composition direments and introduction of oblems, Feed Nutrient needs | nergy nergy nergy d food f supping Pa ds, fo | value ve leve d sele- blemen attern. od ch | of foo | ds. Encody co | ergy bal pomposition - nut early chilten - Nut habits, | ods of trition - 9 ance ion - 9 tritional idhood. tritional |
| assessing protein Marasmus and K Unit - IV Calorific value of — components — body composition Unit - V Factors to be confide to be confided and Protein for the components of the confidence o | n quality; Recommended intakes of proteins; washiorkor. Energy Value, Energy Balance and Body foods; basal metabolism, specific dynamic act energy intake, energy expenditure, energy recommended in the calculation of the control of | composition: ion of foods, physician requirement. Bodyns. - nutrition requirement formula. I onal related pronce - Growth, nutrients use, nutrients use, nutrients use, nutrients requirements requirements requirements. | oteins; amino acid supplementation acid supplements and introduction cooling and introduction cooling and introduction cooling and introduction to a policy and introduction to a policy and introduction and intr | nergy a — Fix d foocoff suppring Pads, for nutre | value ve leve d selection d selection d chition re | of foo | ds. Encody co | y, methy Malnut y Malnut ergy bal compositi con - nut arly chil en - Nut habits, ns. | ods of trition - 9 ance fon - 9 tritional dhood. tritional factors |

*includes Term Work (TW) & Online / Certification course hours



| | OUTCOMES: pletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-----|---|------------------------------|
| CO1 | interpret the physiological and metabolic functions of nutrients | Understanding (K2) |
| CO2 | discover appropriate carbohydrate diet based on their health effects | Analyzing(K4) |
| CO3 | outline the lipids and proteins based on their nutritional value | Understanding (K2) |
| CO4 | interpret the energy value of foods and body composition and explain the energy balance | Understanding (K2) |
| CO5 | construct diet for different age groups based on nutritional requirements | Applying(K3) |

| | | | | | Mapping | of COs | with PO | s and PS | Os | | | | |
|------------------|-----|-----|-----|------------|---------|--------|---------|----------|-----|-------------------|------|------|------|
| COs/POs/ PSOs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3 | 3 | 1 | 1 | - I V | 3 | | | 1 | | 1 | 1 | 1 . |
| CO2 | 3 | 3 | 1 | ≟ 1 | - = | 3 | | | 1 | | 1 | 1 | 2 |
| CO3 | 3 | 3 | 1 | 1 | , | 3 | | | 1 | | 1 | 1 | 2 |
| CO4 | 3 | 3 | 1 | 1 | # 7 5 | 3 | 4 S | = v = | 1 | E _a II | 1 | . 1 | 1 |
| CO5 | , 3 | 3 | 1 | 1 | 1. | 3 | _ | | 1 | < | 1 | 1 | - 1 |

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

| ASSESSMENT D | ATTEDN | THEODY |
|--------------|--------|--------|

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total % |
|--------------------------------|--------------------|-------------------------|--------------------|---------------------|----------------------|--------------------|---------|
| CAT1 | 1 41 | 60 | 20 | 20 | | | 100 |
| CAT2 | | 60 | 20 | 20 | | 1 | 100 |
| CAT3 | | 70 | 30 | | | | 100 |
| ESE | . × | 60 | 20 . | 20 | | | 100 |

* ±3% may be varied (CAT 1 ,2 ,3 – 50 marks & ESE – 100 marks)

Signature of the Chairman

Signature of the Chairman

Food Technolo



8pm



| | 24F1132- FOOD FROCE | SS CALCU | LATIONS | | | | | | |
|--|--|---|---|---|--------------|--------------|------------------|------------------|--|
| Programme & Branch | B. Tech & Food Technology | Sem. | Category | L | Т | Р | SL* | Total | Credit |
| Prerequisites | Nil | 3 | ES | 45 | 15 | 0 | 60 | 120 | 4 |
| Preamble | The course helps the student to understand fu energy balance associated with unit operation | | and the stoic | chiom | etric | calcu | lations | , materia | al and |
| Unit –I | Units and Dimensions, Fundamental Calcu | lations: | | 41.4 | | | | | 9+3 |
| solutions, ideal an | units, unit conversions, use of model units in ca d real gas laws –gas constant -calculations of pr artial pressure and pure component volume in ga | essure, volu | me and ter | | | | | | |
| Unit -II | Material Balance Calculation: | | 4-1-2-4 | | -7- | | 75 / 19 | | 9+3 |
| | nciples, material balance without chemical reactio allization, drying, blending of food ingredients and | | n of materia | al bala | ance t | o uni | t opera | tions: di | stillation, |
| Unit-III | Humidity and Saturation and Recycle Oper | | | | | | | | 9+3 |
| Unit –IV | operations, purge ratio, recycle ratio and purge st Energy Balance Calculation: | ream. | | | | | | | 0.0 |
| Heat capacity of s | olids, liquids, gases and solutions, use of mean h | | | | | | | | |
| Heat capacity of sheat and latent he | | eaction, hea | ts of format | ion, c | ombu | | | | ensible |
| Heat capacity of s heat and latent he calculation of stan Unit –V | olids, liquids, gases and solutions, use of mean hats, enthalpy changes in food. Standard heat of r dard heat of reaction - Effect of pressure and term Combustion and Process Flow Sheet Calc | eaction, hear perature on ulation: | ts of format heat of rea | ion, c | ombu | stion | , soluti | on, mixir | ensible ng etc., |
| Heat capacity of s heat and latent he calculation of stan Unit –V Combustion: Com | olids, liquids, gases and solutions, use of mean hats, enthalpy changes in food. Standard heat of redard heat of reaction - Effect of pressure and term Combustion and Process Flow Sheet Calce bustion of solids, liquid and gas, determination of cion of excess air, theoretical oxygen requirement | eaction, hear perature on ulation: NHV and G | ts of format heat of rea HV. Determ | ion, c ction. ninatio | ombu | comp | , solution | on, mixir | ensible ng etc., |
| Heat capacity of s heat and latent he calculation of stan Unit –V Combustion: Com analysis - Calculation | olids, liquids, gases and solutions, use of mean hats, enthalpy changes in food. Standard heat of redard heat of reaction - Effect of pressure and term Combustion and Process Flow Sheet Calce bustion of solids, liquid and gas, determination of cion of excess air, theoretical oxygen requirement | eaction, hear perature on ulation: NHV and G | ts of format heat of rea HV. Determ | ion, c ction. ninatio | ombu | comp | , solution | on, mixir | ensible ng etc., |
| Heat capacity of sheat and latent he calculation of stan Unit –V Combustion: Comanalysis - Calculation selected food F | olids, liquids, gases and solutions, use of mean hats, enthalpy changes in food. Standard heat of redard heat of reaction - Effect of pressure and tem Combustion and Process Flow Sheet Calcibustion of solids, liquid and gas, determination of ition of excess air, theoretical oxygen requirement Process. au D.M.," Basic Principles and Calculations in Ch | eaction, hean perature on ulation: NHV and G. Process Floor | ts of format heat of rea HV. Determ ow Sheet C | ion, c ction. nination | on of ation: | comp Mate | osition | by Orsa | ensible ng etc., 9+3 t v Balance |
| Heat capacity of sheat and latent he calculation of stan Unit –V Combustion: Comanalysis - Calculation selected food F TEXT BOOK: 1. Himmelbl. Delhi, 201 | olids, liquids, gases and solutions, use of mean hats, enthalpy changes in food. Standard heat of redard heat of reaction - Effect of pressure and tem Combustion and Process Flow Sheet Calcibustion of solids, liquid and gas, determination of ition of excess air, theoretical oxygen requirement Process. au D.M.," Basic Principles and Calculations in Ch | eaction, hean perature on ulation: NHV and G. Process Floor | ts of format heat of rea HV. Determ ow Sheet C | ion, c ction. nination | on of ation: | comp Mate | osition | by Orsa | ensible ng etc., 9+3 t v Balance |
| Heat capacity of s heat and latent he calculation of stan Unit –V Combustion: Com analysis - Calculat for selected food F TEXT BOOK: 1. Himmelbl. Delhi, 201 REFERENCES: | olids, liquids, gases and solutions, use of mean hats, enthalpy changes in food. Standard heat of redard heat of reaction - Effect of pressure and tem Combustion and Process Flow Sheet Calcibustion of solids, liquid and gas, determination of ition of excess air, theoretical oxygen requirement Process. au D.M.," Basic Principles and Calculations in Ch | eaction, hean perature on ulation: NHV and G Process Floor | ts of format heat of rea HV. Determ ow Sheet C | ion, c ction. ninational calcula | on of ation: | comp | osition rial and | by Orsa d Energy | ensible ng etc., 9+3 t v Balance |
| Heat capacity of sheat and latent he calculation of stan Unit –V Combustion: Comanalysis - Calculation selected food F TEXT BOOK: 1. Himmelbl. Delhi, 201 REFERENCES: 1. Gavhane | olids, liquids, gases and solutions, use of mean hats, enthalpy changes in food. Standard heat of redard heat of reaction - Effect of pressure and term Combustion and Process Flow Sheet Calc bustion of solids, liquid and gas, determination of ition of excess air, theoretical oxygen requirement Process. | eaction, hear perature on ulation: NHV and G Process Floor. | ts of format heat of rea heat of the heat | ion, c ction. nination alcula Edition | on of ation: | comp Mate | osition rial and | by Orsa d Energy | ensible ng etc., 9+3 t v Balance |

^{*}Includes Term Work (TW) & Online / Certification course hours



| | 2,000,000,000,000,000 | TCOME: | | e, the stude | ents will | be abl | e to | | | | 2 | (| BT Mapp Highest Le | | | |
|--------|-----------------------|---|-------------|--------------------|-----------|-----------------|----------|--------------------|----------|---------------|-------------------|--------------|-----------------------|-------------|--|--|
| CO1 | mak solut | | different s | systems of | units and | d dimen | isions, | calculate (| compos | itions of r | mixtures and | | Applying(k | (3) | | |
| CO2 | outli | ne the sto | oichiome | try principle | s and ap | ply ma | terial b | alance for | differer | nt unit ope | erations | Applying(K3) | | | | |
| СОЗ | Perf | Perform humidification calculations and apply material balance for bypass, recycle operations | | | | | | | | | | Applying(K3) | | | | |
| CO4 | mak | e use of | energy b | alance for s | ystem w | ithout c | chemic | al reaction | s | | | | Applying(h | (3) | | |
| CO5 | | e use of a | | and energy | balance | in vario | ous pro | ocess and | determi | ne the GI | HV, NHV and | I . | Analyzing(| K4) | | |
| | | | | | Мај | oping o | of COs | with POs | and PS | SOs | | -10 | | | | |
| | /POs/ iOs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 | | |
| (| 001 | 3 | 3 | 1 | 1 | 1 | | | | 1 | - 1 | 1 | 1 | 1 | | |
| (| 002 | 3 | 3 | 2 | 2 | 2 | | - | | 1 | | 1 | 3 | . 3 | | |
| (| 003 | 3 | 3 | 2 | 2 | 2 | 1 | | | 1. | | 1 | 3 | 3 | | |
| (| 004 | 3 | 3 | 2 | 2 | 2 | | | | 1 | | 1 | 2 | 2 | | |
| (| 005 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | | 1 | | 2 | 3 | 3 | | |
| 1 – SI | ight, 2 | - Modera | ate, 3 – S | Substantial, | BT- Blo | om's Ta | axonon | ny | | | | - ». | | | | |
| | | | | | A | SSESS | MENT | PATTER | N-THEC | RY | | | · - | | | |
| | st/Blo Catego | | | embering (K1) % | | rstand K2) % | ing | Applying (K3) % | | yzing I) % | Evaluating (K5) % | | reating (K6) % | Total % | | |
| | CAT | 1 | | | | 20 | | 80 | | | | 11 × | | 100 | | |
| | CAT | 2 | | | × | 20 | | 80 | | | | | | 100 | | |
| | CAT | 3 | | | | 20 | | 60 | 2 | 20 | | | | 100 | | |
| 100 | ESE | | - | | | 5 | | 75 | 2 | 20 | | | | 100 | | |

Signature of the Chairman
Board of Studies - FOOd Technology

*±3%may be varied (CAT1, 2 & 3 – 50 marks & ESE- 100 marks)







| | 24FTT33- PROCESS | FLUID MECHA | NICS | | | | | | |
|---|---|---|--|---|--|---|---|---|--|
| Programme & | | | 1 | - 1 | T | | | | |
| Branch | B. Tech & Food Technology | Sem. | Category | L | T | Р | SL* | Total | Cred |
| Prerequisites | Nil | 3 | PC | 45 | 15 | 0 | 60 | 120 | 4 |
| Preamble | This course provides an introduction to the analysis and equations of Fluid flow and en | properties and bables the studen | ehaviour of its to apply i | fluids. n mixi | It intro | oduce | es dime g and n | nsiona neterin |] g. |
| Unit –I | Fluid Statics and Flow phenomena: | | | | | | <u> </u> | | 9+3 |
| continuous gra | s - Physical properties of fluids. Fluid statics -H avity decanter- storage Tank. Types of fluids: 0 ds. Flow of Fluids: Concept of flow rates, velocity and | Compressible a | brium. Appl nd incompr | icatior essibl | n of flo e fluid | uid st ds, N | tatics: r lewtonia | manom an and | eters - Non- |
| Unit -II | Equations of Fluid Flow: | 1 | | | | (*) | | | 9+3 |
| work. Friction i and rough pipe | ation - Bernoulli equation - Correction of Bernoulli e n pipes-Laminar and turbulent flow of fluids through s- Friction loss due to sudden enlargement and co | closed conduits | s - Velocity | orofile | s and | frictio | n facto | ition for r for sm | nooth |
| Unit -III | Flow Past Immersed Bodies, Agitation for flow of liquids through porous media. Motion of | | | | | | | | 9+3 |
| Flow pattern in | cle through fluid, terminal velocity, Hindered settl agitated vessel- Estimation of Power consumption | ing. Agitation of in agitated vess | r Liquias: Aç sels. | gitatio | n Ves | sels- | Types | of imp | ellers - |
| Unit –IV Classification closses and cha | agitated vessel- Estimation of Power consumption Transportation of Fluids: of Pumps. Positive displacement pumps: operational areacteristics. Calculation of power and discharge. | n in agitated vess on, capacity and Working princip | sels. I characteris le and appli | stics. (| Centrif | ugal Sear i | pump: | Perform | 9+3 |
| Unit -IV Classification closses and chases are consistent and chases are consistent and chases are chases are chases and chases are chases and chases are chases and chases are | agitated vessel- Estimation of Power consumption Transportation of Fluids: of Pumps. Positive displacement pumps: operation | on, capacity and Working princip | sels. I characteris le and appli , metering | cation | Centrifus of G | ugal Sear p | pump: pumps, | Perforr Lobe poumps. | 9+3 mance, bumps, Fans, |
| Unit –IV Classification closses and chases and chases pumps, | agitated vessel- Estimation of Power consumption Transportation of Fluids: of Pumps. Positive displacement pumps: operation aracteristics. Calculation of power and discharge. diaphragm pumps, progressive cavity pumps, | on, capacity and Working princip | sels. I characteris le and appli , metering | cation | Centrifus of G | ugal Sear p | pump: pumps, | Perforr Lobe poumps. | 9+3 mance, bumps, Fans, |
| Unit -IV Classification closses and chases and chases and chases and chase construction Unit -V Variable head of Doppler Ultr | Transportation of Fluids: of Pumps. Positive displacement pumps: operation aracteristics. Calculation of power and discharge. diaphragm pumps, progressive cavity pumps, compressors—Selection, types and applications. Final Metering of Fluids: meters: Orifice meter, Venturimeter, Pitot tube. Variasonic flow-meters, Transittime flowmeters, Magnetement flowmeters, Coriolis flowmeter and Surface | on, capacity and Working princip vacuum pumps ipelines for the riable area metestic flowmeters. | sels. I characteris le and appli , metering transportat rs: Rotamet | stics. (cation pump ion – sa | Centrifus of General Section Control C | fugal Gear peris | pump: pumps, staltic ects ar | Perform Lobe poumps. In a material applications. | 9+3 mance, pumps, Fans, erial of 9+3 eations |
| Unit –IV Classification of losses and characteristics and characteristics and construction Unit –V Variable head of Doppler Ultr Positive-displa | Transportation of Fluids: of Pumps. Positive displacement pumps: operation aracteristics. Calculation of power and discharge. diaphragm pumps, progressive cavity pumps, compressors—Selection, types and applications. Final Metering of Fluids: meters: Orifice meter, Venturimeter, Pitot tube. Variasonic flow-meters, Transittime flowmeters, Magnetement flowmeters, Coriolis flowmeter and Surface | on, capacity and Working princip vacuum pumps ipelines for the riable area metestic flowmeters. | sels. I characteris le and appli , metering transportat rs: Rotamet | stics. (cation pump ion – sa | Centrifus of General Section Control C | fugal Gear peris | pump: pumps, staltic ects ar | Perform Lobe poumps. In a material applications. | 9+3 mance, pumps, Fans, erial of 9+3 eations |
| Flow pattern in Unit –IV Classification of losses and characteristics and characteristics and construction Unit –V Variable head of Doppler Ultr Positive-displa selection, and | Transportation of Fluids: of Pumps. Positive displacement pumps: operation aracteristics. Calculation of power and discharge. diaphragm pumps, progressive cavity pumps, compressors—Selection, types and applications. Final Metering of Fluids: meters: Orifice meter, Venturimeter, Pitot tube. Variasonic flow-meters, Transittime flowmeters, Magnetement flowmeters, Coriolis flowmeter and Surface | on, capacity and Working princip vacuum pumps pipelines for the riable area mete etic flowmeters, e Acoustic Wave | sels. I characteris le and appli , metering transportat rs: Rotamet Turbine flow flowmeters | etics. (cation pumpion—sa er. Wo meter . Notc | Centrills of Cos and anitary orking s, The hes ar | ugal Gear perio y asp Princermal and We | pump: pumps, staltic ects ar iple and flowme eirs. Va | Perform Lobe poumps, and mate diapplicaters, lives— T | 9+3 mance, bumps, Fans, erial of 9+3 cations |
| Flow pattern in Unit –IV Classification of losses and chases and chases and chases and chase are pumps, blowers and construction Unit –V Variable head of Doppler Ultr Positive-displaselection, and TEXT BOOK: McCal | Transportation of Fluids: of Pumps. Positive displacement pumps: operation aracteristics. Calculation of power and discharge. diaphragm pumps, progressive cavity pumps, compressors—Selection, types and applications. Final Metering of Fluids: meters: Orifice meter, Venturimeter, Pitot tube. Variasonic flow-meters, Transittime flowmeters, Magnetement flowmeters, Coriolis flowmeter and Surface applications. | on, capacity and Working princip vacuum pumps pipelines for the riable area mete etic flowmeters, e Acoustic Wave | sels. I characteris le and appli , metering transportat rs: Rotamet Turbine flow flowmeters | er. Wo | Centrills of Cos and anitary orking s, The hes ar | ugal Gear perio y asp Princermal and We | pump: pumps, staltic ects ar iple and flowme eirs. Va | Perform Lobe poumps, and mate diapplicaters, lives— T | 9+3 mance, bumps, Fans, erial of 9+3 cations |
| Flow pattern in Unit –IV Classification of losses and chases and chases and chases and chases and chases and chases and construction Unit –V Variable head of Doppler Ultr Positive-displaselection, and TEXT BOOK: 1. McCal 2005. REFERENCES | Transportation of Fluids: of Pumps. Positive displacement pumps: operation aracteristics. Calculation of power and discharge. diaphragm pumps, progressive cavity pumps, compressors—Selection, types and applications. Final Metering of Fluids: meters: Orifice meter, Venturimeter, Pitot tube. Variasonic flow-meters, Transittime flowmeters, Magnetement flowmeters, Coriolis flowmeter and Surface applications. | on, capacity and Working princip vacuum pumps pipelines for the riable area meteric flowmeters, e Acoustic Wave | sels. I characteris le and appli , metering transportat rs: Rotamet Turbine flow flowmeters | er. Wo | Centrills of Cos and anitary orking s, The hes ar | ugal Gear perio y asp Princermal and We | pump: pumps, staltic ects ar iple and flowme eirs. Va | Perform Lobe poumps, and mate diapplicaters, lives— T | 9+3 mance, bumps, Fans, erial of 9+3 cations |
| Flow pattern in Unit –IV Classification of losses and chases and chases and chases and chases and chase are pumps, blowers and construction Unit –V Variable head of Doppler Ultr Positive-displaselection, and TEXT BOOK: 1. McCal 2005. REFERENCES 1. Gavha | Transportation of Fluids: of Pumps. Positive displacement pumps: operation aracteristics. Calculation of power and discharge. diaphragm pumps, progressive cavity pumps, ompressors—Selection, types and applications. Find the Metering of Fluids: meters: Orifice meter, Venturimeter, Pitot tube. Variasonic flow-meters, Transittime flowmeters, Magnetement flowmeters, Coriolis flowmeter and Surface applications. De W.L., Smith J.C. and Harriot P.,"Unit Operations are with the consumption of the progressive cavity pumps, or progressive | on, capacity and Working princip vacuum pumps pipelines for the riable area metestic flowmeters, a Acoustic Wave of Chemical Er | sels. I characteris le and appli , metering transportat rs: Rotamet Turbine flow flowmeters agineering",7 | etics. (cation pumpion—sater. Wometer. Notc | Centrifies of Ges and anitary orking s, The hes ar | rugal Gear perind respondented Prince Prince Prince Medical Prince Princ | pump: pumps, staltic ects ar iple and flowme eirs. Va | Perform Lobe poumps, and mate diapplicaters, lives— T | 9+3 mance, bumps, Fans, erial of 9+3 cations |

^{*}includes Term Work (TW) & Online / Certification course hours



| | SEOUTCOMES: mpletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-----|--|------------------------------|
| CO1 | Classify fluids and apply hydrostatic equilibrium | Applying(K3) |
| CO2 | Derive and apply equations of fluid-flow | Applying(K3) |
| CO3 | explain the working principle of mixers, pumps, flow meters and valves | understanding (K2) |
| CO4 | Examine the performance of agitators, pumps and flowmeters | Analyzing(K4) |
| CO5 | Select suitable agitators, pumps, flow measuring devices and valves | Applying(K3) |

| | | | * | | Mapping | g of COs | with POs | and PS | Os | | | | |
|------------------|-----|-----|-----|-----|---------|----------|----------|--------|-----|------|------|------|------|
| COs/POs/ PSOs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | - 3 | 2 | 2 | 2 | 1 | | | | 1 | | 1 | 2 | 1 |
| CO2 | 3 | 3 | 2 | 2 | 1 | | | | 1 | | 1 | 2 | 2 |
| CO3 | 3 | 2 | 2 | 1 | | | | 4 | (1 | | 2 | 3 | 2 |
| CO4 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | | 1 | | 2 | 3 | 2 |
| CO5 | 3 | 3 | 2 | 1 | | | | | 1 | - | 2 | 3 | 2 |

1-Slight, 2-Moderate, 3-Substantial, BT-Bloom's Taxonomy

| Test/Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total |
|---------------------------|-----------------------|-------------------------|-----------------|---------------------|----------------------|--------------------|-------|
| CAT1 | 1 | 50 | 50 | | | 4 | 100 |
| CAT2 | | 50 | 50 | | | | 100 |
| CAT3 | | 50 | 35 | 15 | | - 1 | 100 |
| ESE | | 50 | 40 | 10 | | | 100 |

*±3%may be varied (CAT1, 2 & 3-50 marks & ESE- 100marks)

gnature of the Chairman

Studies Form Tellinology



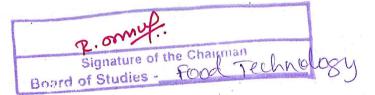


| | | 24FTT34- FOO | D CHEMIST | ΓRY | | | | | | | |
|---|--|---|--|---|--|------------------------------------|---------------------------------------|---------------------------------|---|---|--|
| Prog Branc | ramme& ch | B.Tech & Food Technology | | Sem. | Category | L | Т | Р | SL* | Total | Credi |
| Prere | equisites | Nil | | 3 | PC | 45 | 0 | 0 | 45 | 90 | 3 |
| | | | | | | | | | | | ů. |
| Prear | mble | This course deals about the importan biomolecules and chemistry of muscle | | nutrient | s, food addi | tives | s, m | odifi | catio | n of | _ |
| Unit - | -1 | Minerals and Vitamins: | | out! | | | 1 | | | | 9 |
| Selen | | rals - Calcium, Potassium, Sodium, role and deficiency. Vitamins: Definitio ms. | | | | | | | | | |
| Unit - | -11 | Changes during Processing: | | | | | | | | - | 9 |
| chang | ges in carbohydr | methods – moist heat, dry heat and ates - Gelatinization and retrogradation n-enzymatic browning reactions - caram | of starch - | proteir | ns and lipids | ts a | ind arbo | prev iling | entio of ri | n-bioc ce. En | hemica zymati |
| Unit - | -111 | Modification of Biomolecules: | | | | | | | | | 9 |
| TOOT | chemical and a | nzymatic methods. Modification of fate | Hydrogo | nation | extrin and de | nc | icon | orc | into | roctori | figation |
| winte Unit - | rization. Biochen | nzymatic methods. Modification of fats nical changes during processing of food. Food Additives, Food colours and fication and purpose - Role of thicken | s – malting Flavours: | nation - and bal | cis and traking. | ans | ison | ners | , inte | resteri | 9 |
| Winte Unit - Food flavor and f Flavo Taste Ferm | additives: class ring agents, flour Flavours: Natura purs – sensory pee and Other Sentations | nical changes during processing of food | Flavours: ners, stabilizetrants, hum y/l, caroteno nisms of Fla | zers, sv nectants bids, be | veeteners, es, preservational process, and control process. | emu ives | Isifie - e yani | ers, xam | leave | eners, Food other p | g colours colour phenois lavours |
| Winte Unit - Food flavor and f Flavo Taste Ferm Unit - | additives: class ring agents, flour Flavours: Natura ours – sensory pee and Other Stentations | Food Additives, Food colours and iffication and purpose - Role of thicken improvers, anticaking agents, seques and synthetic colourants - chlorophy erception of flavors, Molecular Mechan aporous Substances, Vegetable; Fruit Chemistry of edible muscle Tissue | Flavours: ners, stabilizetrants, hum yll, caroteno nisms of Fla t, and Spic | nation - and bal zers, sv nectants oids, be avour P ce Flav | veeteners, es, preservativetalains, and erception, sours, Flavo | emu ives hoc spec | Isifie - e yani ific fror | ers, xam ns and m L | leave pples. and o synt actic | eners, Food other p hetic f Acid- | 9 colours colour bhenois lavours Ethano |
| Winte Unit - Food flavor and Flavo Taste Ferm Unit - Struc qualit and s | additives: class ring agents, flour Flavours: Natura ours – sensory pee and Other Sentations –V sture of muscle-cety. Chemistry of pstabilization | Food Additives, Food colours and ification and purpose - Role of thicken improvers, anticaking agents, seques I and synthetic colourants - chlorophyerception of flavors, Molecular Mechanaporous Substances, Vegetable; Fruit | Flavours: ners, stabilizetrants, hum yll, carotenchisms of Flatt, and Spices: nd induced | nation - and bal zers, sv nectants bids, be avour P ce Flav postmo | veeteners, es, preservativalains, and erception, sours, Flavortem bioche | emu ives hoc spec ours | Isifie - e yani ific fror | ers, xam ns and m L | leave ples. and o synt. actic | eners, Food other p hetic f Acid- | 9 colours colour bhenols lavours Ethano |
| Winte Food flavor and I Flavo Taste Ferm Unit Struc qualit and s | additives: class ring agents, flour Flavours: Natura ours – sensory pee and Other Sentations -V cture of muscle-cuty. Chemistry of pstabilization | Food Additives, Food colours and iffication and purpose - Role of thicken improvers, anticaking agents, seques I and synthetic colourants - chlorophyerception of flavors, Molecular Mechanaporous Substances, Vegetable; Fruit Chemistry of edible muscle Tissue processed meats – curing, hydration and | Flavours: hers, stabilizetrants, hum yll, carotenchisms of Flat, and Spices: nd induced d water rete | nation - and bal zers, sy nectants bids, be avour P ce Flav postmo ntion, fo | veeteners, es, preservative dalains, and erception, sours, Flavortem bioche | emu ives hoc spec urs | Isifie - e yyaniific fron | ers, xam ns and m L | leave pples. and c synt actic | eners, Food other p hetic f Acid- | 9 colours colour phenois lavours Ethano 9 g meat ation |
| Winte Food flavor and I Flavo Taste Ferm Unit Struc qualit and s TEXT 1. | additives: class ring agents, flour Flavours: Natura ours – sensory per and Other Stentations -V etture of muscle-coty. Chemistry of pstabilization | Food Additives, Food colours and iffication and purpose - Role of thicken improvers, anticaking agents, seques and synthetic colourants - chlorophy erception of flavors, Molecular Mechan aporous Substances, Vegetable; Fruit Chemistry of edible muscle Tissue onversion of muscle to meat – natural and | Flavours: hers, stabilizetrants, hum yll, carotenchisms of Flat, and Spices: nd induced d water rete | nation - and bal zers, sy nectants bids, be avour P ce Flav postmo ntion, fo | veeteners, es, preservative dalains, and erception, sours, Flavortem bioche | emu ives hoc spec urs | Isifie - e yyaniific fron | ers, xam ns and m L | leave pples. and c synt actic | eners, Food other p hetic f Acid- | g colours colours colours bhenols lavours Ethano 9 g meat ation |
| Vinite Food flavor and Flavor Taste Ferm Unite Structed quality and s TEXT 1. | additives: class ring agents, flour Flavours: Natura ours – sensory per and Other Sentations -V Sture of muscle-cety. Chemistry of petabolization F BOOK: Srinivasan Dae ERENCES: | Food Additives, Food colours and iffication and purpose - Role of thicken improvers, anticaking agents, seques I and synthetic colourants - chlorophyerception of flavors, Molecular Mechanaporous Substances, Vegetable; Fruit Chemistry of edible muscle Tissue processed meats – curing, hydration and | s – malting Flavours: ners, stabilizatrants, hum yll, carotenchisms of Flatt, and Spice s: nd induced di water rete | nation - and bal zers, synectants bids, be avour P ce Flav postmo ntion, fo | veeteners, es, preservative dalains, and verception, sours, Flavor rtem bioche primation of grant pry", 5thEdition | emu ives hoc spec ours | Isifie - e - e - eyani ific fron | ers, xamns and m L | leave ples. and c synt actic | eners, Food other p hetic f Acid- | 9 colours colours colours bhenois lavours Ethano 9 g meat ation |

^{*}Includes Term Work (TW) & Online / Certification course hours



| | | | , the stud | ents will | be able t | 0 | | 200 | | | | Mapped hest Lev | |
|------------|---|--|---|--|--|---|--|---|--|---|---|---|---|
| sumi | marize th | e nutritio | nal importa | ance of v | itamins ar | nd min | nerals | | | = | Under | standing | (K2) |
| anal | yze the cl | nanges ir | n food com | ponents | during co | oking | and proce | ssing. | | i i | Ana | llyzing (K | (4) |
| Exar | mine the r | ole of mo | odified car | bohydrat | es, protei | ns and | d fats in foo | od processi | ng | | Ana | lyzing (K | (4) |
| iden | tify the ro | e of food | d additive, | colours a | and flavors | s in fo | od process | ing | | | Ap | plying (K | 3) |
| infer | the bioch | nemical c | hanges in | meat du | ring proce | ssing | 18. <u> </u> | | | | Under | standing | (K2) |
| | | | | Марр | oing of Co | Os wi | th POs an | d PSOs | | | | 1 | 7 |
| POs/ Os | PO1 | PO2 | PO3 | PO4 | PO5 | PO | 6 PO7 | PO8 | PO9 | PO10 | PO11 | PS01 | PSO2 |
| 1 | 3 | 2 | 1 | 1 | | 1 | | - | 1 | | 1 | 2 | 2 |
| 2 | 3 | 3 | 2 | 1 | 1 | 1 | | | 1 | | 2 | 2 | 3 |
| 3 | 3 | 3 | 2 | 1. | 1 | 2 | 1 | a e Tudij | 1 | = = | 2 | 3 | 3 |
| 4 | 3 | 3 | 2 | 1 ~ | 1 | 2 | 1 | | . 1 | | 3 | 3 | 3 |
| 5 | 3 | 3 | 2 | 1 | | 1 | | | 1 | | 1 | 3 | 3 |
| ght, 2 | – Modera | te, 3 – S | ubstantial, | BT- Bloc | om's Taxo | nomy | | 8 | | 1 | | | |
| | | | | ASS | SESSMEN | IT PA | TTERN - T | HEORY | | | 1 | | |
| | | Rei | memberin (K1) % | g Un | | - | Applying (K3) % | | | aluating (K5) % | | | Total % |
| CAT | 1 | 1 1 1 | | - | 60 | | 20 | 20 | 3 | ke je to | 1 A 3 | right gra | 100 |
| CAT | 2 | 1, 1 | V. | | 40 | | 40 | 20 | - 8 | | | | 100 |
| CAT | 3 | | 2 | | 50 | | 50 | | , i | | 8.5 | 1 | 100 |
| ESE | | | Til I | | 45 | | 35 | 20 | . 107 | 1 | | н , ш | 100 |
| | enpleti sumi analy Exar iden infer OS/ OS 1 2 3 4 5 ght, 2 CAT CAT CAT | summarize the summarize the analyze the change of the Examine the religion of the identify the role infer the bioch of the t | summarize the nutrition analyze the changes in Examine the role of modification infer the biochemical control of the biochemical | summarize the nutritional imports analyze the changes in food come Examine the role of modified car identify the role of food additive, infer the biochemical changes in the state of the biochemical changes in the state of the biochemical changes in the state of the biochemical changes in th | summarize the nutritional importance of vanalyze the changes in food components Examine the role of modified carbohydrate identify the role of food additive, colours a infer the biochemical changes in meat du Mapper Ma | summarize the nutritional importance of vitamins are analyze the changes in food components during containing the role of modified carbohydrates, protein identify the role of food additive, colours and flavors infer the biochemical changes in meat during process. Mapping of Containing Post Post | summarize the nutritional importance of vitamins and mirror analyze the changes in food components during cooking Examine the role of modified carbohydrates, proteins and identify the role of food additive, colours and flavors in for infer the biochemical changes in meat during processing Mapping of COs wind | mpletion of the course, the students will be able to summarize the nutritional importance of vitamins and minerals analyze the changes in food components during cooking and proce Examine the role of modified carbohydrates, proteins and fats in food identify the role of food additive, colours and flavors in food process infer the biochemical changes in meat during processing Mapping of COs with POs and | summarize the nutritional importance of vitamins and minerals analyze the changes in food components during cooking and processing. Examine the role of modified carbohydrates, proteins and fats in food processi identify the role of food additive, colours and flavors in food processing infer the biochemical changes in meat during processing Mapping of COs with POs and PSOs Mapping of COs with POs and PSOs Solos PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 1 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | summarize the nutritional importance of vitamins and minerals analyze the changes in food components during cooking and processing. Examine the role of modified carbohydrates, proteins and fats in food processing identify the role of food additive, colours and flavors in food processing infer the biochemical changes in meat during processing Mapping of COs with POs and PSOs | ## Impletion of the course, the students will be able to summarize the nutritional importance of vitamins and minerals analyze the changes in food components during cooking and processing. Examine the role of modified carbohydrates, proteins and fats in food processing identify the role of food additive, colours and flavors in food processing infer the biochemical changes in meat during processing Mapping of COs with POs and PSOs | Summarize the nutritional importance of vitamins and minerals Under analyze the changes in food components during cooking and processing. Analyze the changes in food carbohydrates, proteins and fats in food processing Analyze the role of modified carbohydrates, proteins and fats in food processing Analyze the role of food additive, colours and flavors in food processing April infer the biochemical changes in meat during processing Under the biochemical changes in food processing Under the biochemical changes in food processing Applying Pod POS | Second Position Position |





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| | 24GET31- UNIV (Common to All Engine | | | | | 129 | | | |
|--|--|---|---|-----------------------------|-----------------|---|---|------------|---|
| Programme & Branch | All B.E & B.Tech Branches | Sem. | Category | L | T | P | SL* | Total | Credit |
| Prerequisites | Nil. | 3/6 | HS | 30 | 0 | 0 | 30 | 60 | 0 |
| At a series of | on the market graces. | | | | | 1 1 | | | |
| Preamble | To make the student to know what t | they 'rea | ally want to | be' in | their | life a | nd profess | ion, unde | rstand the |
| | meaning of happiness and prosperit | ty for a | human bein | g. Als | so to f | acilita | te the stud | dents to u | nderstand |
| | about harmony at all the levels of hu | ıman liv | ing, and live | e acc | ording | gly | | | |
| Unit – I | Introduction | | | | - | | | 100 | 6 |
| Need and Basic | Guidelines of Value Education - Conto | ent and | Process of | Value | e Edu | cation | - Self Ex | ploration | – purpose |
| of self-Exploration | on - Content and Process of Self explo | oration - | - Natural A | ccept | ance | – Rea | alization a | nd Under | standing - |
| | Aspirations - Continuous Happiness | | | | | | | | |
| Requirement for | Fulfillment of Human Aspirations – Re | elations | hips – Phys | ical F | aciliti | es - | Right Und | lerstandir | ıg. |
| Unit – II | Harmony in the Self and Body | | | | | | | | 6 |
| Human Being a | nd Body – Understanding Myself as C | Co–exist | ence of Se | lf ('l') | and I | Body, | Needs of | the Self | and Body |
| Activities in the | Self and Body, Self ('I') as the Conscious | us Entity | y, the Body | as th | e Mat | erial E | ntity – Ex | ercise – E | Body as ar |
| | | | | | | | | | |
| Instrument- Har | mony in the Self ('I) – Understanding N | /lyself – | Harmony w | ith B | ody. | | | | |
| Instrument- Har Unit - III | mony in the Self ('I) – Understanding N Harmony in the Family and Socie | | Harmony w | ith B | ody. | Lilo 1 | - 1 | | 6 |
| Unit – III | | ty | i my n | 1-62 | | lation | ship from | Family to | |
| Unit – III Harmony in the | Harmony in the Family and Socie | ty in Huma | an Relations | 1-62 | | lation | ship from | Family to | |
| Unit – III Harmony in the | Harmony in the Family and Socie Family – Justice – Feelings (Values) | ty in Huma nan Enc | an Relations | 1-62 | | lation | ship from | Family to | |
| Unit – III Harmony in the Identification of Unit – IV | Harmony in the Family and Socie Family – Justice – Feelings (Values) Human Goal – Five dimensions of Hum | ty in Huma nan End | an Relations deavour. | ships | – Re | | - | | Society - |
| Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Confo | Harmony in the Family and Socie Family – Justice – Feelings (Values) Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co– | ty in Huma nan Ence eng the F | an Relations deavour. | ships - Inna | - Re | ss – N | Natural Ch | aracterist | Society - |
| Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Conformo-activity – Ex | Harmony in the Family and Socie Family – Justice – Feelings (Values) Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co- istence is Co-existence. | ty in Huma nan End e ng the F existend | an Relations deavour. Four order - ce of units o | ships - Inna of Spa | – Re | ss – N Limite | Natural Ch | aracterist | Society – 6 tic – Basic Active and |
| Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Confor No–activity – Ex Unit – V | Harmony in the Family and Socie Family – Justice – Feelings (Values) Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co- istence is Co-existence. Implications of the above Holistic Professional Ethics | ty in Huma nan End e ng the F existen c Under | an Relations deavour. Four order - ce of units o | ships Inna of Spa | - Reateneatenea | ss – N Limite | Natural Ched and un | aracterist | Society - 6 iic - Basic Active and |
| Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Conford No-activity – Extended Interval Int | Harmony in the Family and Socie Family – Justice – Feelings (Values) Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co- cistence is Co-existence. Implications of the above Holistic Professional Ethics Int dimensions of Human Living – Defin | ty in Huma nan End e ng the F existend c Under | an Relations deavour. Four order - ce of units of standing o | ships - Inna of Spa f Har | - Reateneace - | ss - N Limite y on | Natural Ched and un | aracterist | Society - 6 tic - Basic Active and 6 |
| Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Confor No-activity – Ex Unit – V Values in different Living – Identification in the III Living – Identification in the IIII Values in different Living – Identification in the IIII Harmony in the IIII Unit – III Unit – IV | Harmony in the Family and Socie Family – Justice – Feelings (Values) Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co- istence is Co-existence. Implications of the above Holistic Professional Ethics Int dimensions of Human Living – Definication of Comprehensive Human Goal | ty in Huma nan End e ng the F existend c Under | an Relations deavour. Four order - ce of units of standing o | ships - Inna of Spa f Har | - Reateneace - | ss - N Limite y on | Natural Ched and un | aracterist | Society - 6 tic - Basic Active and 6 |
| Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Conformo-activity – Ex Unit – V Values in different Living – Identificant Issues in Prince In the III Unit – V | Harmony in the Family and Socie Family – Justice – Feelings (Values) Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co- cistence is Co-existence. Implications of the above Holistic Professional Ethics Int dimensions of Human Living – Defin | ty in Huma nan End e ng the F existend c Under | an Relations deavour. Four order - ce of units of standing o | ships - Inna of Spa f Har | - Reateneace - | ss - N Limite y on | Natural Ched and un | aracterist | Society - 6 tic - Basic Active and 6 |
| Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Confor No-activity – Ex Unit – V Values in differe Living – Identification and Issues in Pr TEXT BOOK: | Harmony in the Family and Socie Family – Justice – Feelings (Values) Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co- istence is Co-existence. Implications of the above Holistic Professional Ethics ent dimensions of Human Living – Definitation of Comprehensive Human Goal - ofessional Ethics. | ty in Huma nan End e ng the F existend c Under itivenes – Huma | an Relations deavour. Four order - ce of units of estanding of ss of Ethical nistic Educa | ships Inna of Spa f Har Hum | - Re atene | ss – N Limite / on onductiversal | Natural Ched and unle t –Implicat Human C | imited – A | Society - 6 Active and 6 alue based |
| Unit – III Harmony in the Identification of Unit – IV Order of Nature Activity – Confor No–activity – Ex Unit – V Values in differe Living – Identificand Issues in Pr TEXT BOOK: Gaur | Harmony in the Family and Socie Family – Justice – Feelings (Values) Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co- istence is Co-existence. Implications of the above Holistic Professional Ethics Int dimensions of Human Living – Definication of Comprehensive Human Goal | ty in Huma nan End e ng the F existend tunder itivenes - Huma | an Relations deavour. Four order - ce of units of estanding of ss of Ethical nistic Educa | ships Inna of Spa f Har Hum | - Re atene | ss – N Limite / on onductiversal | Natural Ched and unle t –Implicat Human C | imited – A | Society - 6 Active and 6 alue based |
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^{*}includes Term Work(TW) & Online / Certification course hours

| | E OUTCOMES: pletion of the course, the students will be able to | BT Mapped (Highest Level) |
|-----|--|---------------------------|
| CO1 | identify the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society | Applying (K3) |
| CO2 | interview between the Self and the Body, understand the meaning of Harmony in the Self, the Co–existence of Self and Body | Applying (K3) |
| CO3 | build harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society | Applying (K3) |
| CO4 | experiment with themselves to co-exist with nature by realising interconnectedness and the four orders of nature | Applying (K3) |
| CO5 | identify the differences between ethical and unethical practices, and apply ethical and moral practices for a better living | Applying (K3) |

Mapping of COs with POs and PSOs

| COs/POs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---------|-----|-----|-----|-----|---------|-----|-----|------------|---------------------------------------|--------------|------|------|------|
| CO1 | 3 | 2 | 2 | 2 | L 11 == | 1 | 2 | i k | | <i>y</i> 1 - | 2 | 3 | 2 |
| CO2 | 3 | 2 | 2 | 2 | | 1 | 2 | LK = TEDES | i i i i i i i i i i i i i i i i i i i | Le sessions | 2 | 3 | 2 |
| CO3 | 3 | 2 | 2 | 2 | | 1 | 2 | 1 | - | - 61 | 2 | 3 | 2 |
| CO4 | 3 | 2 | 2 | 2 | | 1 | 2 | | THE R | - 1 | 2 | 3 | 2 |
| CO5 | 3 | 2 | 2 | 2 | C FALL? | 1 | 2 | - | | - Ocsi- | 2 | 3 | 2 |

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN – THEORY

| Test / Bloom's Category* | Remembering (K1) % | Understanding (K2) % | Applying (K3) % | Analyzing (K4) % | Evaluating (K5) % | Creating (K6) % | Total |
|-----------------------------|-----------------------|-------------------------|-----------------|---------------------|----------------------|-------------------|-------|
| CAT1 | | 80 | 20 | | | टचे अनुनामाः र | 100 |
| CAT2 | 7 41 7 144 | 80 | 20 | rpigare in right | in the second of the | n 2 | 100 |
| CAT3 | | 80 | 20 | | | | 100 |
| ESE | 6 | | 1 | ۱A | | | |

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks)

SA

Signature of the Chairman

Board of Studies -

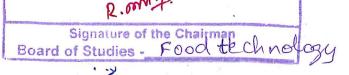


| Progra Branc | amme& h | | B.Tech | & Food Technolo | gy Ser | n. (| Catego | ry | L T | Р | SL* | Total | Cred |
|--------------------------------------|---|--|---|--|---|--|--|-------------------------------------|-----------------|----------------------------|---|---|---|
| Prerec | quisites | | Nil | | 3 | | PC | | 0 0 | 30 | 0 | 30 | 1 |
| Pream | ble | | To impa | art practical knowle | dge required | or har | ndling N | Vewtor | ian Flu | ds. | | | |
| LISTO | F EXPERI | | | | | | | | | | | | |
| 1. | Determina | ation of | discharg | e coefficient of Ver | nturi meter | | | | | × '' | | 57 | |
| 2. | Determina | ation of | discharg | e coefficient of Orit | fice meter | | | | | | | | |
| 3. | Verifying | relation | ship betw | veen friction factor | and Reynolds | numb | er for f | low th | rough s | quare | duct | S | |
| 4. | Determina | ation of | loss co-e | efficient of valves a | nd pipe fitting | S . | | | | , | | | |
| 5. | Determina | ation of | critical R | eynolds number fo | or flow through | helica | al coils | | | | | 7 | |
| 6. | Determin | ation of | discharg | e coefficient of V- | notch | | - V | | | | - | | |
| | Verifying | relation | ship betv | veen friction factor | and Reynolds | numb | er for f | low th | rough a | nnula | ar pipe | es | |
| 7. | Estimatio | n of Pov | wer cons | umption in Agitatio | n Vessel | | | | | | | - | |
| 8. | | | | e characteristics of | | mp | | | - | - | | | |
| 9. | | | | e characteristics of | | 10 T | | | | | | - | |
| 10. | Virtual : | ., o, po, | | | . co.p. coatg | ротр | | - | | | 0 | × | |
| | b. Demoi | nstration | n and det | imation of discharg ermination of energimation of Co-effici | gy loss in pipe | • | | er | | | | | |
| | b. Demoi c. Demoi | nstration nstration | n and det n and est L /SOFT | ermination of ener imation of Co-effici | gy loss in pipe | • | | er | | V- | x x | × | |
| 1. | b. Demor c. Demor RENCES/M Laborator McCabe | nstration nstration MANUA ry Manu W.L., S | n and det n and est L /SOFT ral mith J.C. | ermination of ener imation of Co-effici | gy loss in pipe ient of Viscosi | ty of fl | uid | 4 | neering" | , 7 th E | Edition | n, McGr | aw Hill, |
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*Includes Term Work (TW) & Online / Certification course hours

B.TECH. – Food Technology, Regulation, Curriculum and Syllabus – R2024

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| 9. | Estimation | n of antic | xidant a | activity and Vi | tamin C in fru | uits/vege | etables | | | | | | | |
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